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RESEARCH PAPER

Explorations in the proto-metaverse: EFL learners' experiences and perceptions of immersive virtual reality for language learning

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Abstract

Some people believe that immersive virtual reality (VR) and, by extension, the metaverse, will become integral parts of daily life. There have also been suggestions that the metaverse could become a virtual world where language learners have alternate identities as second language (L2) speakers. Considering the potential implications of immersive VR and the metaverse on L2 learning, the aims of this study were twofold: (1) to understand the types of interactional acts L2 learners use in immersive VR when communicating with others in the target language and (2) to evaluate their perceptions toward L2 interaction in immersive VR. Four L2 English learners at a Japanese university participated in the study. Each participant interacted with others through VRChat, a popular social VR platform that has been described as a proto-metaverse. Interactions in VRChat were video recorded and analysed using interactional framework (Benson 2015a, 2015b). Semi-structured interview data was also collected following the participants' interactions in VRChat. Findings from the study revealed that the learners used a variety

of interactional acts when communicating with others in VRChat. Results also showed that the participants had largely favourable perceptions of L2 interaction in the proto-metaverse. That is, while negative interactions and physical discomfort were potential issues, the English learners believed the virtual environment promoted authentic language learning and learner autonomy.

Keywords

Virtual reality (VR); metaverse; informal language learning; virtual environments

1. Introduction

2021 has been described as the year when virtual reality (VR) became widely acknowledged as "the gateway to the metaverse" (Rospigliosi, 2022, p. 1). While there is no definitive definition of the metaverse, technologists and researchers alike seem to agree that it involves multiple emerging technologies, namely, VR, augmented reality (AR), mixed reality, and artificial intelligence (AI) in a virtual universe where users interact through digital avatars (Hwang & Chien, 2022; Snider & Molina, 2021). Although virtual environments with digital avatars have existed for the past few decades (e.g., Second Life, Minecraft, World of Warcraft) Hwang and Chien assert that there are three key elements that make the metaverse distinctive from these digital environments, i.e. that it is: *shared*, *persistent*, and *decentralised*. In other words, metaverse applications should allow multiple users to interact within a *shared* virtual environment. In addition, digital spaces and objects within the metaverse need to be *persistent*, that is, users should be able to leave and return to the metaverse while still being able to interact in the same digital spaces and use the same digital objects, thus creating a sense of continuity. Lastly, a virtual environment within the metaverse must be *decentralised,* in that users should have the ability to freely interact, socialise, and trade between multiple digital spaces without being tied to a single platform. Considering these three elements, Hwang and Chien admit that most existing virtual platforms that market themselves as the metaverse fall short of their definition and instead fall under AR or VR. Nonetheless, the researchers state that today's AR and VR platforms set the stage for the future of the metaverse, "the effectiveness and success of these applications set the potential of the metaverse (p. 2)". Another trait that distinguishes the metaverse from other virtual environments is *presence*. As noted by Mark Zuckerberg (2021), the CEO of Meta, social presence will allow users to feel as if they are with others even though they may be worlds apart: "The defining quality of the metaverse will be a feeling of presence – like you are right there with another person or in another place. Feeling truly present with another person is the ultimate dream of social technology" (para. 4).

So, what does this mean for second language (L2) and foreign language (FL) learning? Some believe that VR, and by extension, the Metaverse, will inevitably become key parts of social and professional life (Rospigliosi, 2022). Accordingly, it will become important for educators to train L2 learners on how to effectively communicate in VR so that they can have successful interactions in the metaverse. Hwang and Chien (2022) take this a step further and posit that the metaverse will allow L2 learners to have new identities that revolve around their FL-interactions in virtual spaces:

> *…from the perspective of the metaverse, the aim of language learning is more than a course or a learning activity; instead, it aims to enable EFL learners to have another life, a living environment using English for working, learning, social events and entertainment, just as if they were native English speakers* (p. 2).

Although the metaverse has the potential to radically transform L2 learning, there are reasons to be concerned about its emergence. Much like other virtual environments, there is a risk of deception, stalking, and harassment (Cheong, 2022), and the immersive

quality of the metaverse may magnify the negative experiences users have when interacting with others. As noted by the Pew Research Center (2022), some believe that financial motives are behind the promotion of the metaverse "The purpose is to quantize and monetise more aspects of our world and experience. In the metaverse, these words I'm typing, and the air I'm breathing, are all intellectual property" (p. 28). Despite these potential issues, it is likely that the metaverse will take on a more prominent role in people's lives going forward. Thus, it is necessary to study the metaverse and its related technologies to better understand if they can be utilised for L2 learning purposes. Accordingly, this study will examine the experiences and perceptions of English as a foreign language (EFL) learners of immersive VR-based interactions in the proto-metaverse.

2. Immersive VR for L2 learning

According to Chun et al. (2022), VR comes in three different forms: non-immersive VR, semi-immersive VR, and immersive VR. Non-immersive VR pertains to 3D virtual environments displayed on a computer screen, whereas semi-immersive VR describes 3D graphics which are shown on a large screen. In contrast, immersive VR involves head-mounted systems which are worn by users so that their vision is fully enveloped in a 3D, 360-degree virtual environment. The following section looks at studies that relate to immersive VR for L2 learning as this body of research directly relates to the current study.

Given that computer-assisted language learning (CALL) has been shown to decrease foreign language anxiety (FLA) (e.g., Xiangming et al., 2020), it is unsurprising that VR studies have also examined the effects of this medium on language-related anxiety. Using a counterbalanced design, York et al. (2021) conducted a comparison of VR, voice, and video interactions with regard to FLA. Although no significant differences pertaining to FLA were found between the three mediums, in a post-experiment study the participants in their study stated that VR was the most enjoyable and effective environment for L2 learning. Thrasher (2022) has also investigated the effects of immersive VR on FLA; L2 French learners took part in consensus building tasks in small groups, both in a physical classroom and in VR. Results from the study indicated that the participants had lower levels of FLA in VR than in the traditional classroom, as measured by their self-reported FLA and cortisol levels. Similarly, Chen (2022) examined the topic of anxiety and VR in the context of public speaking anxiety (PSA). EFL students in Taiwan were divided into three groups: a control group, a mobile-assisted language learning (MALL) group, and a VR group. Findings revealed that only the VR group was able to demonstrate a significant reduction in PSA in the post-test compared to the pre-test. These three studies indicate that immersive VR has the capacity to lower language-related anxiety. This is significant as research indicates that foreign language anxiety is a key inhibitor of L2 learning outcomes (GhorbanDordinejad & Nasab, 2013; Hu et al., 2021).

Several language-related outcomes have been studied in the context of immersive VR. Thrasher (2022) found that VR supported greater L2 French comprehensibility than a traditional classroom environment. In other words, when the participants were in VR, their L2 speech was easier to understand than when they performed similar tasks in a physical classroom. Xie et al. (2021) studied the impact that VR had on L2 Chinese speaking proficiency. Statistical analysis of the presentation data showed that the participants' vocabulary and content were significantly better when they had access to VR than without it. Tai et al. (2020) investigated the efficacy of a VR-based language learning app on English vocabulary learning. Results from the study indicated that those who engaged in VR were able to learn and retain new vocabulary significantly better than those who watched a video recording of VR. These studies illustrate that immersive VR has the potential to help support L2 knowledge and skill development.

Although research in this area is limited, VR has been shown to have a positive influence on the learning of L2 cultural norms. In a novel study, Cheng et al. (2017) examined if a VR-based video game could help L2 Japanese learners better understand how and when to bow during Japanese interactions. Each participant played two versions of the game: a non-VR version and a VR version. According to the collected survey data, VR better promoted involvement in Japanese culture. In addition, an analysis of bowing data (how

long it took to bow, time of bow, and angle of bow), indicated that VR helped the learners understand when to bow. According to the researchers, findings from this study highlight the significance of social presence within VR as the concept "is particularly useful for games and simulations for language learning due to the importance of physical interaction" (p. 547). While the results from Cheng et al. are promising in terms of VR's impact on intercultural understanding, it is important to note that nearly a quarter of their 68 participants reported feeling some sort of physical discomfort, namely, dizziness and sickness.

The studies detailed above highlight some of the language learning affordances of immersive VR as well as a recognised constraint (i.e., physical discomfort). Nonetheless, there is still an important gap that has yet to be addressed. The aforementioned body of research was conducted in structured VR environments. Specifically, in several of the studies, participants were tasked with completing specific VR-based tasks with an L2 peer or a small group (Chen, 2022; York et al., 2021; Thrasher, 2022; Xie et al., 2021). In the remaining studies, participants received automated feedback within a VR app (Tai et al., 2020) or interacted with non-playable characters (NPCs) within a VR-based game (Cheng, 2017). Consequently, there is a need to examine the behaviour and experiences of L2 learners when interacting in informal VR environments where they are free to interact with other speakers in the target language. This type of context has implications for informal L2 learning outside of the classroom as social VR will likely become more widespread in the future. Given these considerations, the current study examined the following research questions:

1. What types of interactional acts do EFL learners use when interacting with target language speakers in immersive VR?

2. What are the EFL learners' perceptions towards L2 interaction in immersive VR?

3. Methodology

3.1. Research design

This study adopted an exploratory case study design to understand EFL learners' behaviour, experiences, and views of L2 interaction in immersive VR. According to Yin (2018), case study research "investigates a contemporary phenomenon (the "case") in depth and within its real-world context" (p. 15). The phenomenon being examined in the current study is the use of immersive VR for informal L2 learning by EFL learners. Informal L2 learning in this context refers to unstructured and naturalistic language learning that is not connected to formal instruction. As Yin notes, direct observation and interviews with participants are the most heavily relied upon sources of data used in case studies (p. 12). Accordingly, the data analysed in this study comes from video recordings of the participants' interactions in a social VR application (VRChat) as well as semi-structured interviews with the participants.

3.2. Participants

Four EFL learners (three males and one female) at a private Japanese university volunteered to participate in the study. Informed written consent was obtained from each participant. At the time of the study, the participants were enrolled in an EFL class taught by one of the researchers. The learners came from varying cultural and linguistic backgrounds. Specifically, two were first language (L1) Tagalog speakers, one was an L1 Burmese speaker, and another was an L1 Japanese speaker. Although no specific data pertaining to L2 English proficiency was collected, the participants were chosen due to their intermediate level of L2 English proficiency. In other words, they were enrolled in a course designed for learners with Test of English for International Communication (TOEIC) scores of over 700, which roughly translates to B2 on the Common European Framework of References for Languages (CEFR) scale (Tannenbaum & Wylie, 2013).

3.3. Procedure

After providing informed consent, each participant met with one of the researchers in April 2022. The procedure followed three stages. First, the participants underwent a training session which familiarised them with the VR headset, the Meta Quest II. This VR headset was chosen due to its popularity and affordability, and because it can be used without any additional hardware. After a brief orientation on the hardware, the learners put on the VR headset and were instructed to open VRChat. While other popular social VR platforms exist, such as Horizon Worlds by Meta and AltspaceVR by Microsoft, the former was not available to the Japanese market at the time of the study, and the social hubs within the latter were shut down in early 2022 (Bonifacic, 2022). Thus, VRChat, which has been described as a proto-metaverse (Hardawar, 2022), was chosen.

Stage 2 of the study consisted of the learners' interactions within VRChat. While the learners were given the freedom to explore other areas in the application, they were instructed to first enter *No Time Two Talk,* one of the social hubs within VRChat. The primary reason this social hub was chosen was because it offered affordances that promoted interaction between avatars. For example, users are randomly partnered with another avatar every two minutes within *No Time Two Talk*; thus, decreasing the likelihood of conversation becoming stale or unengaging. Most importantly, each virtual room within the application featured a profile wall that displayed the respective avatars' backgrounds and interests (see Figure 1). Therefore, users can use this information to find commonalities between them and their partner and use these shared traits as conversation starters. Once the participants had completed a few rounds within *No Time Two Talk,* they were free to visit other social hubs in the application. This option was given in order to facilitate learner autonomy and a naturalistic learning environment.

Figure 1.

Profile wall within No Time Two Talk

Immediately following their interactions within VRChat, each participant took part in a semi-structured interview with one of the researchers; this was the third stage of the study. The participants were asked four interview questions that were designed to elicit their views on L2 English interaction in the metaverse (see Appendix).

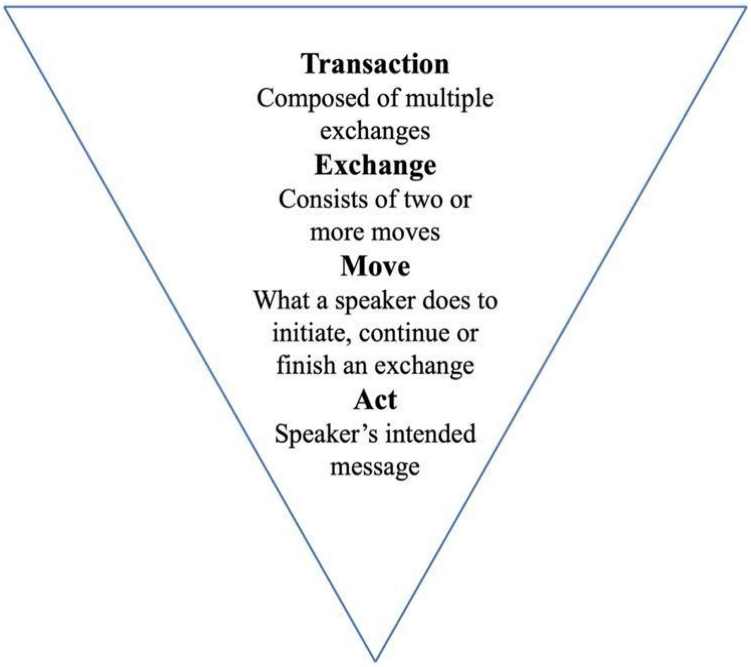
3.4. Data collection and analysis

As stated previously, the primary forms of data collected were the participants' video recorded interactions in VRChat and the interview data collected after their time in the immersive VR environment. The average time spent in VRChat by each participant was approximately 39 minutes, while the individual semi-structured interviews averaged 10 minutes.

To answer the first research question pertaining to the interactional acts the learners used when conversing with other L2 speakers in immersive VR, Benson's taxonomy (2015a, 2015b) was used. Benson's interactional framework was created by combining two separate taxonomies, i.e. Sinclair and Coulthard (1975) and Stenström (1994). Within Benson's framework, there are four hierarchal units: transaction, exchange, move, and act (see Figure 2). In the current study, only acts are analysed as this was the primary unit of analysis in Benson (2015a). An act represents the intended message of the speaker and is the smallest unit within the interactional hierarchy. According to Benson, there are two types of act: primary and secondary. Primary acts can be used on their own as a single move, whereas secondary acts accompany a primary act to form a move. Benson identified 32 interactional acts in his original framework, but an additional act was added to the taxonomy by the authors during analysis, thereby bringing the total to 33.

Figure 2.

Illustration of Benson's (2015a, 2015b) interactional hierarchy



Audio recordings of the interviews were uploaded to Otter.ai, an automated transcription service. Following transcription of the interviews, the researchers used content analysis (Hsieh & Shannon, 2018) to analyse the data. The reliability of the coding process was enhanced using guidelines outlined by Campbell et al. (2013). That is, the second author who conducted the experiment and interviewed the participants first coded the interviews. The marked text was then given to the first author minus the actual codes, and they coded this data independently. Afterwards, the two researchers shared the results of their coding, discrepancies were resolved and the finalised codes were formed into the themes that are reported in this analysis.

4. Results

4.1. RQ1: What types of interactional acts do EFL learners use when interacting with target language speakers in immersive VR?

A total of 408 interactional acts were identified in the analysis based on Benson's framework. These acts accounted for 23 unique acts. Table 1 below lists the top 11 most frequently used acts by the participants while they were conversing in L2 English in VRChat. As shown in the table, question, acknowledge, and answer were the most used interactional acts, making up 50.1% of the total number of interactional acts identified.

Table 1

Top interactional acts used by the participants.

Interactional acts	**Frequency (%)**
1. Question	101 (24.8%)
2. Acknowledge	55 (13.5%)
3. Answer	48 (11.8%)
4. Inform	37 (9.1%)
5. Expand	30 (7.4%)
6. Alert	28 (6.9%)
7. Query	14 (3.4%)
8a. Check (clarify)	13 (3.2%)
8b. Thank	13 (3.2%)
10a. Check (confirm)	11 (2.7%)
10b. Opine	11 (2.7%)

Table 2 represents an extract from one of the learner's interactions in VRChat. Below each statement by the participant is the coded analysis using Benson's taxonomy. This sample interaction illustrates the types of conversations that were typical within *No Time Two Talk.* Namely, interactions within this social hub tended to be fairly superficial, mainly consisting of greetings and conversations based on the two interlocutors' interests.

Table 2

Sample interaction with coded analysis.

***S1**: Hello. Nice to meet you. I'm from Japan. How are you?
ALERT | THANK | INFORM | QUESTION
Avatar: I'm good. How about you?
S1: I'm good. Thank you. So, what did you do today?
ANSWER | THANK | QUESTION
Avatar: I played games all day and then hopped on VRChat.
S1: Oh, what kind of game?

ACKNOWLEDGE | QUESTION

Avatar: I played Smite today

Note. S1 = Student 1

4.2. RQ2: What are the EFL learners' perceptions towards L2 interaction in immersive VR?

As shown in Table 4, four positive themes were identified from the content analysis as it pertains to the learners' views on VR-based L2 interaction. The first theme, authentic language learning, was noted by all four of the participants in the case study. Two themes, learning new information and learner autonomy, were mentioned by three participants each. Lastly, two participants noted how immersive VR supported greater social presence compared to other computer-mediated communication (CMC) tools.

Table 3

Positive themes identified from the interview data.

Theme	**Number of participants**	**Example quotation**
Authentic language learning	4	Like, it's a good form of English learning in a way, right, like trying and listening to different accents.
Learning new information	3	I also noticed there was some good content like the person who mentioned or gave me the history of Tang [the drink], and oh, yeah, talking about drinks. Did you did you know that it was first used as an astronaut drink?
Learner autonomy	3	I could do, you know, I can do whatever I want if I can understand English.
Social presence	2	We do a lot of Zoom meetings online. But none of them feel real. You know? So the metaverse is kind of better.

Fewer participants expressed negative views on the use of immersive VR for L2 communication. Nonetheless, two negative themes were identified (see Table 4). The first one, which was mentioned by two participants, related to the possibility of interactions that were perceived to be harmful. Although most of the interactions in VRChat were innocuous, there were a few instances that could have been perceived as negative. For example, it is unclear if Student 1 was referring to this particular conversation, but Table 5 illustrates an interaction that could have been viewed in a negative light. In the excerpt, an avatar repeatedly refers to a specific body part. Figure 3 displays a screenshot from this interaction. It is important to note how the user positioned their avatar within VR so that this body part was directly facing the participant, thereby making it more prominent.

Table 4

Negative themes identified from the interview data.

Theme	Number of participants	Example quotation
Negative interactions	2	*You might have also experience with people who is weird, like kinda like, say negative words.*
Physical discomfort	2	*It's also heavy on your head and neck. Made me a bit dizzy.*

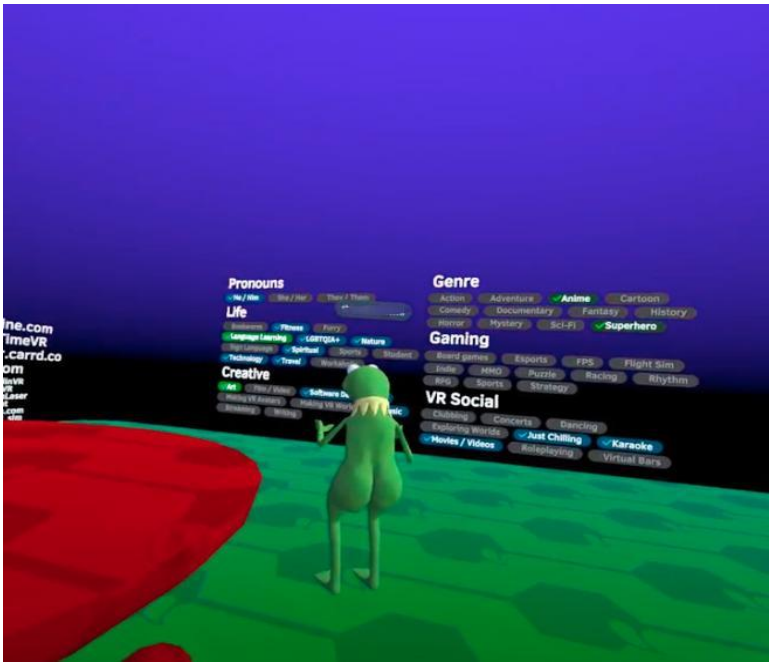
Table 5

Sample negative interaction.

Avatar: Do I have a big booty?
S1: Booty? What is a booty?
Avatar: Do I have a big booty?
S1: Booty?
Avatar: Is my butt big?
S1: What?

Figure 3

A possible negative participant interaction within No-Time-To-Talk.



5. Discussion

5.1. RQ1: What types of interactional acts do EFL learners use when interacting with target language speakers in immersive VR?

As noted in the results section, 408 interactional acts were identified using Benson's framework. Twenty-three of these were distinct interactional acts, with question, acknowledge, and answer being the most frequently used acts. These results differ from Benson (2015a) as his analysis revealed that opine, evaluate, and challenge were the most frequently used interactional acts in YouTube comments that exhibited translanguaging (i.e., use of the L1 and L2). The most likely reason for this discrepancy relates to the nature of the studies. Specifically, this study examined L2 English interactional acts used by speakers in a VR environment, whereas Benson investigated translanguaging in L1 Chinese and L2 English YouTube comments. It is not surprising that that the interactional acts used by the participants in the present study were less complex compared to those used in Benson as the learners in this study interacted with other speakers solely in the target language, while the users in Benson's research made use of their native language.

While there was a tendency to use the same interactional acts within immersive VR, this analysis indicates that the EFL learners used a wide range of speech acts (see Table 1) to express themselves in the target language. That is, their conversations in immersive VR encouraged the learners to convey meaning in a variety of ways. Although the conversation topics tended to be light, there were some instances that forced the participants to engage in more serious conversation, such as the one shown in Table 6 below.

Table 6

Sample interaction of an in-depth discussion

Avatar: The people I was friends with at first, hate me. I be myself and they hate me.
S2: They don't. If they just don't like you or something you don't be sorry. They don't deserve you.
Avatar: I've got one friend at school that I think is truly my friend. And I still don't even know. I don't know who to trust anymore.
S2: You don't have to trust anyone. Trust yourself. Just trust yourself.
Avatar: I will take that advice to the grave. Most likely. Thanks.

5.2. RQ2: What are the EFL learners' perceptions towards L2 interaction in immersive VR?

Four positive themes and two negative themes were identified from the content analysis. These themes largely mirror previous studies on VR. Specifically, the present study and past research underscore that VR is an authentic and engaging L2 learning environment (Lan, 2020; York et al., 2021). The current study also reinforces the positive impact that social presence can have on L2 learning in immersive VR (Cheng et al., 2017). However, there were concerns. Specifically, this study highlights an issue that is widespread in digitally mediated communication, namely, the potential for negative interactions and harassment (Cheong, 2022). Furthermore, similar to Cheng et al. (2017), this study found that immersive VR may induce physical stress among learners. This finding indicates that immersive VR may not be suitable for all L2 students; thus, alternative digital approaches that involve less physical stress such as AR or digital game-based language learning should be considered before implementing a VR-based intervention.

6. Conclusion

While studies on immersive VR have been increasing in recent years, there is a paucity of research on VR in informal L2 learning contexts. Thus, this study addressed this gap in the literature by investigating the experiences and perceptions of EFL learners' views concerning immersive VR. To this end, four EFL learners from a private Japanese university were recruited, and they conversed with other L2 speakers through VRChat, a popular social VR platform. Their L2 English output in VR was analysed using Benson's framework (2015a, 2015b) to better understand the types of speech acts learners use in VR. Semi-structured interviews were conducted, and based on a content analysis of this data, it was found that the EFL learners generally had positive attitudes towards immersive VR and the metaverse for informal L2 learning.

The results of this study are significant as it bolsters the limited research on immersive VR, particularly in the context of informal L2 interaction via social VR platforms. However, due to the inherent constraints of the case study design, the study suffers from some limitations. For instance, because of the small number of participants, broad generalisations cannot be made from the findings. As a result, future research involving immersive VR for informal language learning should incorporate larger sample sizes. Moreover, this study did not measure any L2 learning that might have occurred incidentally through the use of immersive VR. Therefore, it would be interesting to conduct a L2 study involving social VR platforms that utilised an experimental design to evaluate the effect on specific language learning outcomes such as oral development and vocabulary learning. Lastly, the participants in this study used immersive VR in a single session. Thus, another interesting avenue of research would be to conduct a long-term study on the impact of L2 interaction on social VR platforms.

Ethical statement

The authors declare that they have no competing financial interests or personal relationships that could have influenced the work reported in this paper.

References

Benson, P. (2015a). Commenting to learn: Evidence of language and intercultural learning in comments on YouTube videos. *Language Learning & Technology 19*(3), 88–105. http://dx.doi.org/10125/44435

Benson, P. (2015b). YouTube as text: Spoken interaction analysis and digital discourse. In R. Jones, A. Chik, & C. Hafner (Eds.), *Discourse and digital practices* (pp. 81–96). Routledge.

Bonifacic, I. (2022, February 17). *Microsoft shuts down AltspaceVR's social hubs to combat harassment*. TechCrunch. https://tcrn.ch/3rRPO0z

Cheng, A., Yang, L., & Andersen, E. (2017). Teaching language and culture with a virtual reality game. *Proceedings of the 2017 CHI conference on human factors in computing systems* (pp. 541–549). https://doi.org/10.1145/3025453.3025857

Cheong, B. C. (2022). Avatars in the metaverse: Potential legal issues and remedies. *International Cybersecurity Law Review*, 1– 28. https://doi.org/10.1365/s43439-022-00056-9

Chun, D. M., Karimi, H., & Sañosa, D. J. (2022). Traveling by Headset: Immersive VR for Language Learning. *CALICO Journal*, *39*(2), 129–149. https://doi.org/10.1558/cj.21306

Ghorban Dordinejad, F., & Nasab, A. H. F. (2013). *Examination of the relationship between perfectionism and English achievement as mediated by foreign language classroom anxiety. Asia Pacific Education Review, 14(4), 603–614.* *https://doi.org/10.1007/s12564-013-9286-5*

Hardawar, D. (2022, January 21). *'We Met in Virtual Reality' finds love in the metaverse*. Engadget. https://www.engadget.com/we-met-in-virtual-reality-review-sundance-vrchat-234048235.html

Hu, X., Zhang, X., & McGeown, S. (2021). Foreign language anxiety and achievement: A study of primary school students learning English in China. *Language Teaching Research*, Advanced online publication. https://doi.org/10.1177/13621688211032332

Hwang, G.-W., & Chien, S.-Y. (2022). Definition, roles, and potential research issues of the metaverse in education: An artificial intelligence perspective. *Computers and Education: Artificial Intelligence*. Article 100082. https://doi.org/10.1016/j.caeai.2022.100082

Hsieh, H.-F., & Shannon, S. E. (2018). Content analysis. In B. B. Frey (Ed.), *The Sage encyclopedia of educational research, measurement, and evaluation* (pp. 393–394). Sage.

Pew Research Center. (2022). *The Metaverse in 2040*. https://www.pewresearch.org/internet/wp-content/uploads/sites/9/2022/06/PI_2022.06.30_Metaverse-Predictions_FINAL.pdf

Rospigliosi, P. (2022). Metaverse or Simulacra? Roblox, Minecraft, Meta and the turn to virtual reality for education, socialisation and work. *Interactive Learning Environments*, *30*(1), 1– 3. https://doi.org/10.1080/10494820.2022.2022899

Sinclair, J. M., & Coulthard, M. (1975). *Towards an analysis of discourse*. Oxford University Press.

Snider, M., & Moilina, B. (2021, November 10). *Everyone wants to own the metaverse including Facebook and Microsoft. But what exactly is it?* USA Today. https://www.usatoday.com/story/tech/2021/11/10/metaverse-what-is-it-explained-facebook-microsoft-meta-vr/6337635001/

Stenström, A.-B. (1994). *An introduction to spoken interaction*. Longman.

Tai, T.-Y., Chen, H. H.-J., & Todd, G. (2020). The impact of a virtual reality app on adolescent EFL learners' vocabulary learning. *Computer Assisted Language Learning*, *35*(4), 892–917. https://doi.org/10.1080/09588221.2020.1752735

Tannenbaum, R. J., & Wylie, E. C. (2019). *Mapping TOEIC and TOEIC Bridge Test scores to the Common European Framework of Reference*. Educational Testing Service. https://www.ets.org/Media/Research/pdf/TC2-06.pdf

Thrasher, T. (2022). The impact of virtual reality on L2 French learners' language anxiety and oral comprehensibility: An exploratory study. *CALICO Journal*, *39*(2), 1–20. https://doi.org/10.1558/cj.42198

Xiangming, L., Liu, M., & Zhang, C. (2020). Technological impact on language anxiety dynamic. *Computers & Education*, 150, 1–12. https://doi.org/10.1016/j.compedu.2020.103839

Xie, Y., Chen, Y., & Ryder, L. H. (2021). Effects of using mobile-based virtual reality on Chinese L2 students' oral proficiency. *Computer Assisted Language Learning*, *34*(3) 225–245. https://doi.org/10.1080/09588221.2019.1604551

Yin, R. (2018) *Case study research: Design and methods* (6th Ed.). Sage.

York, J., Shibata, K., Tokutake, H., & Nakayama, H. (2021). Effect of SCMC on foreign language anxiety and learning experience: A comparison of voice, video, and VR-based oral interaction. *ReCALL*, *33*(1), 49–70. https://doi.org/10.1017/S0958344020000154

Zuckerberg, M. (2021). *Founders Letter*. Meta. https://about.fb.com/news/2021/10/founders-letter/

Appendix

Semi-structured interview questions

1. As an English language student, what did you think about your experience in the metaverse?
2. Do you think your time in the metaverse had a positive or negative influence on your English? Please give examples of each.
3. Are there any similarities or differences between communicating in the language classroom versus communicating in the metaverse? Please give examples of each.
4. Do you have any other comments or thoughts about your time in the metaverse?