AERA Proposal

Presentation Title: Speaking Simulations in Virtual Reality for EFL Learners Developing Conversation Skills for Situated Learning

Abstract (120 words)

This mix-method research aims to investigate the effect of speaking simulations in the virtual reality application *Immerse* on EFL (English as a Foreign Language) learners' conversation skills, including vocabulary, grammar, fluency, accent and comprehension, and the instructor and students' perceptions of VR-assisted learning experience for situated learning. Sixteen freshmen at a Chinese public university participated in six task-based speaking simulations. Data collection instruments included a pre and post-test, a pre and post-survey, the instructor's reflective journal entries, and semi-structured interviews with the students and the instructor. The results indicate that the students' conversation performance improved after the six speaking simulations and that the instructor and the students had a positive perception of the VR-assisted learning experience for situated learning.

Purpose

Language learners need to have good conversation skills as conversation can foster and enhance overall language proficiency and communication abilities. Conversation can be described as "informal, interactive talk between two or more people, which happens in real-time, is spontaneous, has largely interpersonal functions, and in which participants share symmetrical rights" (Thornbury & Slade, 2006, p. 25). Exposure to a target foreign language environment allows language learners to experience and react to context-related factors when learning to converse in a language (Moeller & Catalano, 2015). Therefore, providing language learners with authentic, interactive, immersive, and meaningful learning experiences in realist contexts can support their improvement in conversation skills (Lowell & Yan, 2023). However, foreign

language learners often lack access to an authentic environment for practicing conversation, which lead to low performance (Chen & Hwang, 2020).

Traditionally, EFL learners receive language support through textbooks, videos, demonstrations, and role-playing (Richard & Rodgers, 2014). English conversation skills cannot be effectively developed with conventional multimedia instruction because it does not provide an opportunity for authentic, interactive, and meaningful learning (Yang et al., 2020). However, virtual reality (VR) can provide learners an authentic learning environment to improve their English conversation skills (Lan, 2020; Scavarelli et al., 2021).

VR is described as associated devices and functions as 3D graphics users interact with through a computer or mobile device (Barrett et al., 2020). As an alternative to real-life settings, VR can allow students to engage in simulated learning environments in disciplines where a realistic environment is unavailable (Huang & Liaw, 2011). Simulations in the classroom are beneficial for students since they provide an experience that is close to an authentic one in a controlled environment. As a result, learners are prepared for real-life situations or exposed to interactive learning that allows them to make choices and manipulate information (McHaney et al., 2018).

Despite these promising findings, more research examining VR and language learning is needed (York et al., 2021) since the studies thus far have focused on learners' perceptions of how VR technology impacts their performance via qualitative feedback and have not provided much empirical evidence about whether VR tools could improve students' oral proficiency in various aspects (Thrasher, 2022). As Parmaxi (2020) pointed out, more quantitative studies are needed to better understand how VR affects learning, and research is needed to explore how VR can be used in conjunction with specific real-life tasks grounded in pedagogical principles. In addition,

most studies investigating the impact of VR on language speaking focus on students' perception (Kassim et 2019; Liu & Hou, 2020), while there are few studies on instructor's perception of teaching experience in VR environments. Therefore, this mix-method study investigated speaking simulations in a VR environment *Immerse* to understand the instructor and students' perceptions of the affordances and challenges of VR-assisted instruction for situated learning.

Theoretical Framework

Challenges of Improving Conversation Skills Faced by EFL Learners

Engaging in conversations is an integral part of language learning as it helps learners practice and apply their acquired skills. Conversation allows learners to develop their speaking and listening skills, improve their vocabulary, and gain fluency in English. However, it is challenging to develop conversation skills because language learners must pay attention to their fluency, pronunciation, vocabulary, grammar, and comprehension (Leong & Ahmadi, 2017). Various studies have found that insufficient exposure to the target language environment and limited opportunities to practice speaking outside of class can inhibit language speaking abilities (Chen et al., 2022; Chen & Hwang, 2020).

VR and Its Main Affordances for Language Learning

VR is a viable technology tool to present an authentic learning environment for language learners to practice and improve their conversation skills and develop their linguistic competence and confidence (Lan, 2020; Scavarelli et al., 2021). VR can be defined as a 3D computer-generated environment—highly imaginative or a realistic simulation—that can be experienced via a computer or mobile device screen, a surround-screen projection room, or via a head-mounted display (a VR headset or goggles) (Southgate, 2023). Research indicates that VR is

invaluable in the language classroom (Parmaxi, 2020). The main affordances of VR technology in language learning include immersing learners in an authentic learning environment, manifesting a strong sense of presence and enabling learning through embodied cognition (Chun et al., 2022), enhancing motivation, creating interaction, reducing learning anxiety and increasing learners' engagement (Chen et al., 2022; Dhimolea et al., 2022).

Application of VR on English Conversation Learning

VR has been proven to be an effective pedagogical tool to facilitate the communicative ability of EFL speakers (Gruber, 2021; Shorey et al., 2020). Researchers have found that VR has the potential to transform the conventional approach towards language teaching and learning, as the affordances of VR, such as immersion, authenticity, participation, and interaction, provide a unique learning environment for improving English speaking skills (Damio & Ibrahim, 2019). Students also find that compared to the academic environment, VR can create a more natural conversation setting to enhance the target-language speaking experience (Enkin, 2022), reduce speaking anxiety (Abal, 2012; Chen & Hwang, 2020; Melchor-Couto, 2017; Thrasher, 2022), and promote motivation (Chen & Hwang, 2020; Liaw, 2019). Students find greater enjoyment in the speaking activities in VR (Enkin, 2022; Kassim et al., 2019) and a strong sense of presence (Kassim et al., 2019). Some students find their speaking sessions realistic and immersive (Davis et al., 2020), motivating them to learn the material more authentically (Wu & Hung, 2022). VR can allow the users to build the skills necessary to carry out a conversation without the fear of social consequences present in the physical world (Stewart Rosenfield et al., 2019). Therefore, VR is a promising avenue for improving English conversation skills to dynamically create believable scenes for conversational training and role-play (Chang et al., 2012).

Situated Learning Theory and VR

The theoretical framework underpinning this study is the Situated Learning Theory (SLT). Lave and Wenger (1991) suggested that learning occurs through learners' participation in socially constructed worlds of practice embedded in authentic activities, contexts, and cultures. The two most widely recognized SLT components are Legitimate Peripheral Participation (LPP) and Communities of Practice (CoPs) (Lave & Wenger, 1991).

SLT emphasizes that human activities are contextualized (Arnseth, 2008) and learning activities are social, culturally interactive, and collaborative (Su & Zou, 2020). In SLT, language learning can be scaffolded through social interaction and collaboration (Warschauer, 2005) and real-life situations (Kim & Kwon, 2012). Therefore, instructors should provide authentic contexts that reflect how the knowledge will be used in real life and authentic activities to enable situated learning (Herrington & Oliver, 2000). According to Falconer (2013), exercises in VR can offer practical opportunities for situated learning as VR can satisfy two vital elements of situated learning-authenticity and social interaction. Because all learning occurs in a specific context and the context significantly impacts learning, VR can be an ideal technology tool to help enhance conversation skills through situated learning (Yasin et al., 2012).

Research Questions

Q1: Did speaking simulations in the VR application *Immerse* improve EFL learners' conversation performance?

Q2: How did the instructor and students perceive their experience with *Immerse* in speaking simulations for situated learning?

Methodology

This research adopted an explanatory sequential mixed-method design. Quantitative and qualitative data were collected for triangulation and interpretation, as qualitative methods can help explain quantitative findings and surprising results (Bryman, 2006). According to Creswell and Clark (2017), collecting, analyzing, and mixing quantitative and qualitative data in a single study can better understand the research problem.

Participants and Context

The participants were freshmen English majors at a large public university in China. The students voluntarily participated in six sessions provided as supplementary language enhancement activities to improve conversation skills on a no-credit basis. Participants were randomly assigned to two groups, with eight participants in each group. The two groups engaged in the same speaking simulation activities in *Immerse* each week and were taught by the same instructor who has been teaching online ESL courses for over five years. Although he uses some online platforms such as Zoom, Tencent Meeting, and WeChat, he has never used any VR applications.

Research Procedure

The project lasted for ten weeks. In the first week, the participants were asked to complete a 30-minute presurvey concerning their demographic information and experience with VR. In addition, three sessions of VR training were provided to students and the instructor, each lasting one hour, to teach them how to navigate and interact with other participants and objects in *Immerse*. In the second week, after the researchers randomly divided the 16 participants into two groups with eight students in each group, each group had a pre-test in *Immerse.* From the third week to the eighth week, each group had 90-minute task-based speaking simulations on six

topics in six scenes in *Immerse*. In the ninth week, participants had a post-test in *Immerse and* completed the post-survey concerning their overall perception of *Immerse* on impacting their conversation skills. In the tenth week, the researcher conducted semi-structured interviews with participants and the instructor to understand further their perceptions of using *Immerse* to improve conversation skills for situated learning.

Data Sources

Instruments for this study include a pre-test and a post-test on two task-based speaking simulation activities were adopted to measure learning performance. Rubrics based on the FSI Proficiency Rating (as cited by Higgs & Clifford, 1982) were used to evaluate students' performance in conversation skills. The proficiency description covers five areas: accent, grammar, vocabulary, fluency, and comprehension. There are six statements under each criterion, with the best performance rating of 6 and the worst performance rating of 1. Two experienced raters rated the speaking test scores. Regarding data analysis, independent-sample t-tests were performed on the pre-test and the post-test scores.

A pre-survey and a post-survey adapted from Enkin (2022) and Liaw (2019) concerning students' perception of VR in improving conversation skills were filled out. The pre-survey included two parts: participants' demographic information such as their names, class, gender, their English learning duration, and prior experiences of VR. The post-survey investigated their overall perception of using *Immerse* in this language learning experience with all the items presented on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items on the questionnaire regarding students' perceptions of VR were calculated by percentage to determine the extent of agreement.

Five volunteering students and the instructor participated in the semi-structured interview. The interview protocol was adapted from Herrington and Oliver (2000) on situated learning. The qualitative data obtained from the semi-structured interview and the instructor's reflective journal entries were transcribed verbatim and analyzed using content analysis (Thomas, 2006) which could be used to understand their perception by grouping the categories and themes.

Results and Discussion

Students' conversation performance improved after six speaking simulations in *Immerse*, especially in vocabulary and comprehension. The result supported the finding that VR can facilitate knowledge acquisition and retention. Overall, the instructor and the students had a positive perception of their learning experience in *Immerse*. Students described *Immerse* as "very realistic scene, vivid, friendly," offering chances to see a lot of different things in one class, helping to remember words and sentences better" because "we can really "experience" the scenic spot and learn practical words with ease." We will present the complete findings of the students' and instructor's perceptions and the students' performance at the AERA conference.

Scientific Significance

The study was significant to the field in several ways: First, the current research fills the gap that scant quantitative research has been done to investigate whether the use of VR can improve EFL learners' conversation skills and to understand the VR-assisted learning experience from the instructor's and students' perspectives. Second, the findings align with reports of (Bahari (2021) that VR can be used as a pedagogical tool for situated learning as it can offer a more interactive, context-embedded, and immersive learning environment. Furthermore, the perceptions from the instructor and the students are likely to inform best practices about how to implement VR technology in language classrooms for situated learning.

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