

RESEARCH IN PROGRESS

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# Virtual reality in the EAP classroom: Creating immersive, interactive, and accessible experiences for international students

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## 1. Introduction

### 1.1 Motivation

In English for Academic Purpose (EAP) speaking courses, tasks are designed to give students opportunities to practice academic communication skills and meet specific learning objectives. In-class activities are often designed to mimic authentic interactive contexts in which students find themselves throughout their academic careers, such as study groups, networking events, and office hours.

Although EAP instructors can replicate these ‘real-world’ scenarios to an extent in activities such as role plays, there will always remain a gap between what can be practiced in the classroom and what is actually expected of students. In recent years, this gap has been exacerbated for many international students affected by pandemic-related travel restrictions, social distancing, and remote learning.

Fortunately, virtual reality (VR) has the potential to help close this gap. While VR has not yet been widely explored in EAP contexts, it has clear educational potential, affording access to authentic language and the ability to experience it in an immersive and interactive way. Now that VR technology has developed to the point where non-programmers are able to create content uniquely suited to the needs of different audiences, teachers and curriculum developers can create VR experiences that more closely simulate real life, requiring less of an imaginative leap for students than traditional roleplays.

### 1.2 Why VR?

Studies show several advantages to using VR in the language classroom. VR tasks have been shown to increase student motivation and engagement (Han, 2019; Parmaxi, 2020), which can then positively impact higher order thinking (Sun et al., 2021). VR tasks can be designed to provide safe learning environments for students, which could lower their affective filters and thus reduce anxiety and improve performance (Lan, 2020).

VR tasks in the language classroom can cultivate learner autonomy, self-efficacy, and communicative and linguistic competence (Parmaxi, 2020; Wang et al., 2020) and allow for meaningful, place-based learning while providing students with current, contextually relevant cultural information (Han, 2019). With VR, this rich learning is now accessible to those who are not physically present, creating opportunities for more learners (Han, 2019; Lan, 2020; Parmaxi, 2020), especially in this time of social distancing and remote learning.

Accessibility continues to improve as VR headsets become more affordable and low-cost options become widely available (e.g., Google Cardboard). In fact, VR headsets are no longer required for participation, as users are often able to use PCs to control the 3D environments (Lan, 2020). VR task

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development is more accessible as well, as 360° cameras are becoming more affordable and widely adopted (Sun et al., 2021), allowing non-expert users to create immersive experiences in authentic contexts that simulate real-world environments (Lan, 2020; Wang et al., 2020).

### 1.3 Project goals

In this project, we aim to take advantage of the affordances of VR for language learning by creating immersive, interactive, and accessible tasks for international university students. These VR tasks will give students opportunities to access authentic language and practice academic language skills in realistic and non-threatening spaces, thus promoting full and successful participation in their academic and social communities.

Students are matriculated graduate and undergraduate international students enrolled in interactive speaking courses at the University of Michigan's English Language Institute (U-M ELI). Students come from a variety of linguistic and cultural backgrounds and typically enroll in these courses to hone their speaking and listening skills to prepare them for the communicative demands of their academic programs.

## 2. Methods

The three phases of our project include: developing the initial VR task, piloting activity and gathering feedback, and expanding offerings.

### 2.1 Developing VR tasks

The important first step of developing VR tasks for language learning is to define learning goals and objectives. The overall goal of this activity is for students, after completing the activity, to be able to successfully navigate an office hour appointment with a professor. Specific learning objectives include being able to ask questions, elicit information, initiate and sustain interactions, and listen effectively in interactive contexts. The task itself involves a student navigating a campus building to find their professor for an office hours appointment. Along the way, they interact with multiple individuals, asking for directions, providing relevant information, and engaging in small talk. When meeting with the professor, the student has the option of asking for a letter of recommendation, an extension on an assignment, or a summer internship.

Once objectives, goals, and tasks are defined, a detailed script is written. Using this script, storyboard creation is helpful in visualizing scenes before filming. Then, appropriate locations for filming are scouted, permissions obtained, and lighting and audio needs determined. Finally, actors are recruited, scheduled, and coached.

Materials used to capture the video and audio needed for the VR activity include a 360° camera (Insta360 One X2), a smartphone, tripod, and lavalier microphones. In keeping with best practices for capturing images and video with a 360° camera, each scene is shot multiple times, being mindful of what could be seen when students 'look around' in VR. Scenes are filmed from the student's point of view, so 'personal space' is important to consider: all actors and objects should be positioned about 3–7 feet away from the camera. Still 360° images are taken along the 'path' from one scene to the next so the participant can 'walk' around in a manner similar to Google Street View.

After filming is complete, the audio, video, and image files are downloaded from the camera onto our personal laptops and uploaded to the VR editing software Uptale (<https://www.uptale.io/>). Within this platform, footage is edited and interactive learning elements added, such as text overlay, voice-overs, voice analysis, and tags triggering new images, prompts, and scenes. Voice analysis can be added throughout the activity as a way of increasing the feeling of interaction with interlocutors. For example, at one point in the activity, the student asks someone for directions to the elevators, and when the software hears the pre-programmed key word 'elevator,' the interlocutor's 'response' is automatically played. The task can be repeated as many times as desired.

User testing is conducted throughout the development process, allowing us to iterate on the design and edit the task as necessary before implementation.

### 2.2 Piloting the activity and gathering feedback

When development of the pilot VR task was complete, the activity was introduced to students in two EAP interactive speaking courses, who were invited to participate using either a VR headset or a web browser (all students chose the latter). A survey was then administered to participants in which they were asked to provide feedback on the task, indicating on a Likert scale the degree to which they agreed or disagreed with statements such as ‘I gained confidence speaking English as a result of this activity.’ Open-ended questions about their reactions to the task were also included in the survey.

### 2.3 Expanding VR offerings

Our goal is to use this feedback to continue iterating on our task design and create additional VR experiences addressing additional learning objectives in a wider variety of academic and social settings.

## 3. Results

Survey data showed overwhelmingly positive responses from students. Over 75% of all students ( $n = 13$ ) either ‘agreed’ or ‘strongly agreed’ with the following statements:

1. I learned something new about campus culture.
2. I gained confidence speaking English as a result of this activity.
3. I was able to practice English speaking skills.
4. I was able to practice English listening skills.
5. I felt comfortable speaking when asked to.
6. The language I heard was realistic, or similar to how people really talk.

In open-ended responses, many students stated that the activity was interesting and realistic, instructions were clear, and that it was overall a worthwhile learning experience.

However, some students noted their frustrations with certain technological issues, such as computer microphones not recording properly, or longer video scenes being slow to load. One student noted that the software did not recognize their speech, so they ‘could not escape’ and had to restart the activity.

## 4. Discussion and conclusion

As indicated by student feedback, the design and implementation of this VR activity was largely successful. Our plans to expand the project will continue, guided by student feedback, best practices, and our takeaways, as outlined below.

For our project, it will be necessary to develop additional methods of assessing learning outcomes to provide quality feedback to the student (e.g., pre- or post-tests, in-activity questions, self-reflection). A peer assessment strategy described by Chien et al. (2020) looks promising, as it was shown to be effective in enhancing student motivation, self-reflection, critical thinking, and decreasing anxiety.

When developing future VR tasks, it is also essential to consider diversity and equity in the context of VR task design, including who (and whose ‘English’) is represented in the scenes. And when implementing these tasks in the classroom, it is important to recognize that physical or emotional challenges may arise that require accommodations, such as dizziness or anxiety (Lan, 2020).

Lastly, we found that VR activity design and production requires significant resources and can be time consuming, which may discourage some teachers or programs from pursuing this educational technology. As we go forward with our project, efforts will be made to streamline tasks, find additional support where possible, and explore pre-made VR tasks that would also suit our needs.

Future research exploring the effect of VR tasks on student success in academic speaking contexts would be beneficial, as well as how the language produced by students in VR tasks compares with that of traditional role-plays and equivalent ‘real-world’ speech events.

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## Endnote

<sup>1</sup> A reproduction of the poster discussed is available in the supplementary material published alongside this article on Cambridge Core.

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