Visualizing Objects, Places, and Spaces: A Digital Project Handbook

Farmers' Market English Experience

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Team

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Project URL

<https://hubs.mozilla.com/5fAhD3i/ecstatic-youthful-room>

Project Abstract

We created a Virtual Reality “farmers’ market” lesson as a case study for teaching the use of thematic (in this case English) vocabulary in an interactive context following the Task-Based Language Teaching (TBLT) framework.¹ There are numerous definitions of what TBLT is, but a consistency across all is that this framework is student-centered, meaningful to everyday life, and has an outcome. Virtual Reality lends itself well to TBLT because students are able to use an infinite range of real-life contexts to support the way they develop their speaking and listening skills. As highlighted by Nunan, “target tasks refer to the uses of the language in the world beyond the classroom; pedagogical tasks are those that occur in the classroom.”² The objective for this VR task is to provide students with an opportunity individually, in a group of students, or with a teacher to work their way through a series of pre-tasks using typical food items in a farmer’s market, leading up to a final task itself where they are required - in either immersive or non-immersive virtual reality - to purchase items from a virtual market stall. Using the TBLT framework, we structured the lesson to answer our three major

research questions regarding the effects of movement within the environment, manipulation of virtual objects, and role playing on language learning efficacy.

Structure of the Virtual Experience

Entrance to the VR Farmers' Market

Activity for students to work individually, in a group, or with a teacher to place food items into the baskets to “frame” the upcoming task where students are required to buy some fruit or vegetables at a market stall.

In the pre-tasks, ESL students are guided by an English language teacher through a VR recreation of a farmers market, wherein they undertake a series of activities to scaffold important vocabulary and grammar relevant to the later task itself. The main task consists of a market stall with a range of fruit and vegetables for students to practice, with a teacher, the buying of some of those items, hopefully using the language items learned during the pre-tasks. Some of these pre-tasks expose students in a fun way to some uncommon facts about fruit and vegetables (reading comprehension activity) and other pre-tasks consist of listening to real-life audio recordings (so-called “authentic material”) to build their understanding of how one might go about paying for items they have selected. In another pre-task activity, they are required to “pick up” 3D models of fruits and vegetables and drop them into bins labeled with the vegetable English name. The inclusion of such interactivity within the pre-tasks was considered to be an important non-linguistic aspect of the overall experience because in the task itself students would be required to pick up items they wanted to buy thereby adding more realism to the activity. By enacting a commercial transaction in a VR environment that closely replicates an instance where the target language would be used in real life, greater awareness of the interpersonal and

intercultural nuances embedded in the interaction per se enhance the student practice of the language in context. It is hoped that the real recordings obtained from an American farmers' market, and integrated within the pre-tasks, serve as a basis for students to implement more common, everyday expressions while trying to achieve the objective of making a purchase.

Rough sketch provided from Client (Michael McDonald) to Programmer to communicate the required flow of the experience.

Time Needed

When did you begin this project? When did you complete this project?

Time Span: September 22, 2020 - present

Length: 4+ months

Outcomes

What is the outcome of the project?

Complete case study #1 (teach basic language applying TBLT in 3D environments) for UNC's Immersive Learning Collective toolkit.

Enable teachers of English as a foreign language to be able to use this market as a viable lesson within the language-learning classroom (be it physical or remote). The finished product will first be used with Italian high-school students (aged around 16 years old) to support their understanding of how they could approach a situation like this in real life.

Gather feedback from the initial students in Italy and refine the existing experience.

Resources

What tools, resources, programs, or equipment did you use for this project?

[Mozilla Hubs](#): A platform to host virtual reality meetings. Used in the project to host the Farmer's Market experience where teachers can create a room with the scene and meet inside with their students via headsets, PCs, or mobile devices.

[Mozilla Spoke](#): A development environment to create 3D scenes that can be published to Mozilla Hubs.

[Sketchfab](#): A library of 3D objects from which we have chosen to incorporate in the Farmer's Market environment.

Task-Based Language Teaching: Provided structure for entire lesson, as shown above section (Structure of the Virtual Experience).

[Zoom](#), [Slack](#), [Google Docs](#): Collaboration and communication platforms.

WebXR: Terminology used to describe all Extended Reality technology (in this case, Virtual Reality) available for use online without any additional software necessary other than a web browser such as Google Chrome.

Funding

Please describe any costs incurred for this project, and (if relevant) how you secured funding for these costs.

Our costs were mostly calculated in human work hours. To date:

400 hours * average \$40 per hour = \$16,000

Mozilla Hubs and Spoke are open source and free to use. Sketchfab has 3D objects that are open access or available by purchase. We have chosen open access and free Sketchfab models for the project. We needed an Oculus Quest 2 to test in a VR headset, accessed via partnerships with the UNC AR/VR club. We also used our personal PCs and mobile devices to test.

Workflow

Please give an overview of the workflow or process you followed to execute this project, including time estimates where possible.

We started by identifying our main research questions, which for this use case were:

1. Does the possibility of moving around a virtual environment that simulates a real environment enhance a sense of language placement?
2. Does the possibility of manipulating virtual objects enhance vocabulary memorization?
3. Does the possibility of role playing via an immersed avatar enhance the proficiency of a communicative interaction? Does VR increase the learning curve of TBLT?

Once we set our research questions, we wrote a language lesson that would allow us to test our assumptions with real students (Michael McDonald's ESL students), namely that the answer is "yes" to all three questions. We created a final script of the entire learning activity scaffolded into 3 iterations, a script draft 1 for the pre-task, a script

draft 2 for the task, and a script draft 3 for the post-task. Together these three modules comprise a final script for a 'lesson'. The final script complies with the learning goals, expected proficiency, and communication complexity of a lesson for ESL students with a level of B1 according to the Common European Framework of Reference for Languages.

Once we had a solid lesson script, we passed on the work of creating the physical environments and pre-task experiences to Rida. As she did this, we continued to work on the task and post-task lesson scripts, so that as she finished the pre-tasks, we immediately had the tasks ready for implementation. Gradually each task and post-task was implemented until the Farmers' Market Lesson was completed. With the first draft of the lesson finished, Michael implemented it in his own lessons and gathered results from which we can, in the future, improve upon the lesson. That is where we are currently as of April 2021.

Challenges & Opportunities

What, if anything, changed between beginning your project and its current/final form?

We began the project with the goal of applying the TBLT framework to immersive learning in VR. This initially took the form of a historical project set in Trajan's Market, but we soon found that the goal of teaching English would be best served by VR in the form of a contemporary American or English-speaking setting as those better coincide with the real-world environment in which English would be used. A farmers' market fit this need well.

Is there anything specific you wish you had known when beginning your project that might help other people to know?

This is a difficult answer, as our plan and our work were greatly impacted by the unpredictable conditions set by COVID-19. For instance, it is very possible that we would have chosen to build in [FB Horizon](#), had we had easy access to Oculus headsets. Instead we chose [Mozilla Hubs](#) because those VR environments are accessible via any computer screen.

We also realized in increments the importance to design and build with a specific user and with clear goals in mind. The user experience of a beginners' language learner in

VR needs to be designed and to follow quite a different flow than when creating, for example a 'temporal' environment for a history lesson.

Next Steps

Do you have any plans to follow up on this project or work on something similar in the future?

The Immersive Learning Collective is developing an interactive toolkit for teaching the integration of immersive learning technologies and tools in Higher Education teachers' and students' projects. The toolkit, a virtual/augmented reality experience itself, introduces basic literacy in immersive learning methodologies and their application when building on associated platforms, specifically those that provide open access in WebXR (for instance, [Mozilla Hubs](#)). A total of five lessons address immersive learning theory, immersive learning goals, asset collection and use, design thinking, and project creation. The goal of the toolkit is to increase understanding, and thus accessibility, of immersive learning tools, while also inspiring its use in educational settings and beyond. The described project is the first case study in a sequence of four that illustrate in practice the mindset, techniques, and curricular suggestions described in the toolkit.

Publications & Presentations

Presented at the Digital Humanities Collaborative of North Carolina, December 11, 2020. <https://dissh.ecu.edu/dhinstitute/>.

Footnotes

- 1.

For more on TBLT, see:

SEEDHOUSE, P.; HESLOP, P.; PRESTON, A.; PLOETZ, T.; The French Digital Kitchen: Implementing Task-Based Language Teaching Beyond the Classroom. **International Journal of Computer-Assisted Language Learning and Teaching**, v. 2, p. 50-72, 2013.

SKEHAN, P. A cognitive approach to language learning. **Oxford University Press**, Oxford, UK, 1998. [↵](#)

2. Nunan, D. (2004). Task-Based Language Teaching (Cambridge Language Teaching Library). Cambridge: Cambridge University Press.
doi:10.1017/CBO9780511667336 [↵](#)