LANGUAGE LEARNING AND VIRTUAL REALITY CURRICULUM GUIDE

Submitted by:
Donna-Marie Hamilton,
Jakin Lam,
Yuki McMillan,
Rodney J. St-Pierre

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Chelsey Hauge

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Introduction

Methods of learning another language has transformed over the decades. From learning through books, audiotapes, tutors, classrooms and simply immersing oneself in the country are all evidence that learning another language is important and advantageous. However, these old ways of learning fall short of making the language viable for everyday use.

Language learning and acquisition requires an immersive and meaningful environment with attainable yet challenging situations. These situations and challenges are unique for every learner and while immersing oneself into a country affords this environment, it is demanding on time and costs and is not a feasible educational alternative (Ibanez, et al., 2011). However, considering language immersion as an educational design focus does make us question how technology can bridge the gap between learning language and immersive environments.

Technology and all its advancements are narrowing this gap with innovations such as advanced speech recognition (ASR), virtual and augmented realities (VR and AR) and artificial intelligence (AI). The tools to implement these technologies are rapidly becoming available in the commercial and educational realms. Although still in their infancy, applications for real world solutions are being researched and prototyped today.

Furthermore, these technologies are challenging how learning is approached and educational spaces are designed. In particular, it has broken down the limitations of language learning. Online virtual worlds, such as Second Life and OpenSim immerse learners into the virtual worlds using a digital representation of themselves called avatars. Virtual reality gears,

such as Google cardboard, Oculus Rift and HoloLens, offers another entry point into virtual worlds by looking into these headsets and experiencing a 360 degree view of the environment.

Virtual reality and language learning are at a revolutionary crossing point; it is bridging immersive learning with virtual spaces and delivers an experiential, multimodal educational space. Our focus is to offer a futuristic curriculum guide for educators and educational designers of virtual worlds. More specifically, we focus on the pedagogy of language learning in virtual environments. This guide is based off of the Six Learnings framework, a theoretical framework that offers guiding principles for VR learning environments. We then suggest the potential learnings and interactivities that correlate to the framework. It is important to note our learning space is situated 10 to 15 years in the future. We are looking at what will be possible at that time when VR and AI are further developed. To explore deeper into this guide's vision, a companion website can be located here: http://510designproject.weebly.com.

The Curriculum Guide

Experiential Learning

Learning language in a virtual world embodies situated learning, role playing, cooperative/collaborative learning and problem-based learning. Learning in a virtual world allows for a replication of the real life context in which the language will be used, "3DVWs become the ideal environment for deep linguistic immersion and realistic situated learning, without the need to travel to the places where the language to be learned is spoken" (Ibanez, et al., 2011). It allows language learners in a virtual reality space with existing and emerging

technologies to have the effect of being there, which offsets boredom and keeps learners engaged and motivated. According to Wang (2012), "embodied in avatars, language learners may be fully immersed in the simulated virtual life and go beyond context boundaries to learn a foreign language without physically stepping out of their home countries" (p.23). Self-representation via an avatar offers language learners the opportunities to shed many baggage. She also states, "Embodiment makes virtual worlds potentially ideal spaces for language teaching and learning" (p.23). Language learning embodied in avatars and having a virtual presence helps to reduce apprehension and embarrassment, reduces the user's level of anxiety and fosters authentic language learning experiences (Wang, 2012).

One of the important social currencies one can have is the ability to communicate within our global village. In order to do this language learning is still a priority; 'In short, language learning, be it for native or second language speakers, is an important social practice through which a society constructs and reproduces its dominant beliefs, values, and social relations" (Lam, 2004, p.44).

Learning a language in the traditional ways can be achieved depending on the learning environment and the determination of the learner. There are many affordances of learning in a virtual world; It allows for "four freedoms of play, including freedom to experiment, freedom to fail, freedom to assume different identities and freedom of effort" (Berdik, 2015). Language learning in a virtual world also allows for the development of many media skills. People learn best by doing, which facilitates the development of many 21st century skills. Media literacy skills synthesize with the framework for language learning in a virtual world. The table below attempts to show the connection between key media literacy skills (Annetta, 2008) and Lim's framework for language learning (Lim, 2009).

Media Literacy Skills	The Learner	Framework
Play: the capacity to experiment with one's surroundings as a form of problem-solving	Users will develop their ability to gain agency through exploration and manipulation of the virtual environment as they become more familiar with the affordances of the virtual space	Learning by exploring
Performance: the ability to adopt alternative identities for improvisation and discovery	Use of avatars will allow learners to become embodied in their characters and to be fully situated in the virtual learning space	Learn by being
Simulation: the ability to interpret and construct dynamic models of real-world processes	Interactions with the affordances of the virtual space will help to create authentic processes that embodies users world view	Learn by building
Networking: the ability to search for, synthesize, and disseminate information	Learner will hone their collaboration skills in virtual environment as they learn to navigate the space and work with other learners to make meaning of information	Learn by collaborating
Distributed: cognition- the ability to interact meaningfully with tools that	Learner will use their metacognitive skills to provide feedback to	Learn by championing

Introduction to the Framework

While using virtual reality for language learning is still at its infancy stage, its

educational value has been explored and researched based on the current available means of

virtual reality. In this guide, suggestions on learning a foreign language using virtual reality will be situated in the following six frameworks developed by Lim in his research on education and Second Life (Lim, 2009).

It is suggested, when designing the learning space, not to attempt using all six frameworks. Rather than trying to exhaust all six frameworks in a particular activity, it is best to align a few frameworks based on the learning objective (Lim, 2009).

By adapting these six frameworks for language learning in the virtual reality of the future, it will provide a glimpse into what the future of language learning will be like.

Learning by exploring: is a key objective in language immersion through exploring various structured environments, students are guided through specific situated tasks that imitate the environment of the country of the language being studied.

Learning by collaborating: will be achieved through interacting with an AI or human character. Collaborating in a virtual world could be in the form of creating something in common (e.g. Sim City) with other learners. It could also be achieved through completing a task such as buying groceries at a supermarket.

Learning by being: is an exploration of self and identity within a foreign environment. Understanding of self and interaction with the norms of a foreign environment is an important aspect of language immersion that cannot be reproduced by studying a textbook.

Learning by building: is a constructionists approach to acquiring knowledge. By allowing learners to create or add-on to the virtual world, it can become part of the learning initiative that help form their freedom of purpose.

Learning by championing: is where learners become part of the scaffold that is available to assist other students. They can become part of the virtual reality by championing a specific cause or raise awareness regarding concerns of the appropriate use of a foreign language.

Learning by expressing: focuses on the learner's ability to articulate their thoughts in the virtual world. Whether it is interacting with an AI or human character, meanings are

made through "multi-modal forms of expressions" (Lim, 2009). Learners are guided into various day-to-day scenarios that can encourage the expression of oneself.
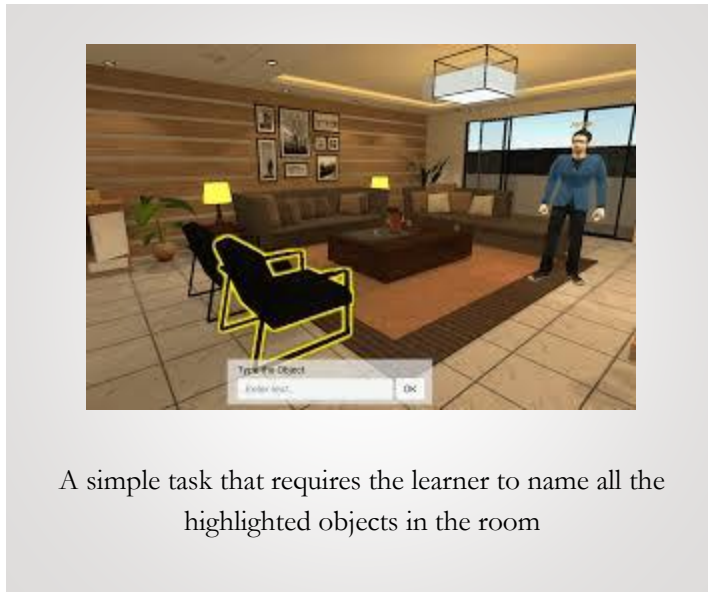
Interactivities

Game-Based Learning Approach

In addition to the immersive experience that virtual worlds affords, the interactivities within these virtual worlds must deliver the language learning. This guide will integrate gamification into the learning context. Good game designs are highly motivational, cognitively engaging and rewarding with its ability to provide immediate feedback (Dourda, Bratitsis, Grivia, & Papadopoulou, 2014).

Gee posits that video games are just a set of problems that you must solve in order to win (Gee, 2011). Within the context of VR and language education, games are the multimodal process for the construction and acquisition of language learning. Likewise, the interactivities of this guide are tasks, defined as situational problems the learner must solve. The purpose of the tasks are three fold; they provide a meaningful situation the learner can be engaged in, they challenge the learner to negotiate a situation and assessments occur through the performance and ability to complete the tasks.

Virtual tasks are situational problems that are performed and solved by the learner. These tasks can be as simple as naming three items in a virtual room, to a more complex

situation such as persuading business clients for a merger deal. The design of each tasks is based off of one or more of the six frameworks for language learning.

A simple task that requires the learner to name all the highlighted objects in the room

A task to mail a letter at the post office in Germany

Virtual Tasks Activities

	Task: The Art of Persuasion		
Details	**Difficulty:** Intermediate to Advanced **Learning Outcomes:** To express and defend an opinion **VR Environment:** Café or restaurant interior **Interactions:** The learner will interact with at least one AI controlled character. Additional AI characters and other human users may be participating as well. AI will initiate and guide a conversation during which the opinions of the learners will be solicited on a number of topics that lend themselves to spirited discussion. The AI character will take a position on an issue and attempt to challenge the opinions presented by the learners. *Structure and Vocabulary:* Expressions of opinion such as: "I disagree", "have you considered", "in my opinion", "in my view", "if you ask me", "do you know what I think". A variety of grammatical structures will be employed.		
Assessment	The learner is able to correctly use a number of different expressions relating to giving and defending opinions		
Applied Frameworks	Learning by exploring		
	Learning by collaborating	X	During this activity the learner may be constructing
	Learning by being	X	Embodiment of avatar
	Learning by building		
	Learning by championing	X	Through the expression of opinion, learners can speak about issues that are important to them and encourage other user to support their cause
	Learning by expressing	X	Speaking to others, expressing one's point of view

	Task: How's It Goin?
Details	**Difficulty:** Beginner

Learning Outcomes: To correctly use and respond briefly to common greetings

VR Environment: Street or public interior such as a shopping mall

Interactions: This is a basic level activity in which the learner needs only to use a few commons phrases. No conversational skill is needed. The learner will interact with at least one AI controlled character. Additional AI characters and other human users may be participating as well. The AI character plays the role of an acquaintance and will engage the learner in a brief exchange. The learner will also be asked to initiate a brief exchange with another character. For example:

AI: Hey, Saba! What's up?

Learner: Not much.

AI: I'm just picking up a few groceries for supper.

Learner: Oh, me too.

AI: Well, I've got to run. Take care!

Learner: See ya!

Structure and Vocabulary: No specific structures required. Common vocabulary for greeting and taking leave. Examples: "Hey", "Hi", "What's up?", "How's it going", "What's going on?", "How are ya?", "gotta go", "well, must be on my way", etc. |
| **Assessment** | The learner is able to correctly use a number of different expressions relating to greeting an acquaintance and taking leave. |

Applied Frameworks			
	Learning by exploring	X	Navigating the virtual space
	Learning by collaborating		
	Learning by being	X	Embodiment of avatar
	Learning by building		
	Learning by championing		
	Learning by expressing	X	Speaking through the avatar and participating in basic interactions with others

Task: Deciding what course of action is best		
Details	**Difficulty:** Advanced **Learning Outcomes:** To converse with AI to make decisions about the taking the right action. **VR Environment:** In a science lab **Interactions:** AI will be the lab instructor and will generate questions to help learner to articulate what is the best course of action to take **Structure and Vocabulary:** Examples of conversation: "how much time do I have to complete this task?", "which parts of the experiment needs to be completed first?", "what tools would I use to measure reagent?" and other dialogue relating to safety in the lab	
Assessment	The learner is able to express the right actions to show the best choices in the lab	

Applied Frameworks	Learning by exploring		
	Learning by collaborating		
	Learning by being	X	Create and maneuver an avatar that embodies the character
	Learning by building		
	Learning by championing		
	Learning by expressing	X	Learner would articulate what is the best course of action to take

Task: Exchanging Information		
Details	**Difficulty:** Intermediate to advanced **Learning Outcomes:** Learner will be able to converse with others to exchange information **VR Environment:** worker trying to orient themselves to new task in an office **Interactions:** Learners will be interacting with one or two people (avatars), to exchange information about where to find office relocate office supplies **Structure and Vocabulary:** "Does that go in the bottom drawer?", "Move that item to the top shelf, in the filing cabinet", "Where should I put this object?", "Do you want this is the filing cabinet or cupboard?"	
Assessment	AI would assess if learner is able to use vocabulary to exchange information with others in an office.	
Applied Frameworks	Learning by exploring	X	Learner would be able to navigate office space, find and relocate objects
	Learning by collaborating	X	Learner would be able to work with other avatars to complete task
	Learning by being		
	Learning by building		
	Learning by championing		
	Learning by expressing	X	Learner would be able to ask AI questions to be sure information is correct

Task: Running daily errands		
Details	**Difficulty:** Beginner to Intermediate	
	Learning Outcomes: to learn to communicate and navigate effectively through the daily errands in a foreign language environment.	
	VR Environment: Supermarket	
	Interactions: Interactions will take place in the supermarket with grocery items, cashier and other shoppers. Interactions will include finding a particular item, talking with other customers about an item, checking out at the cashier and getting refund for an item etc.	
	Structure and Vocabulary: Questions such as: "Where is this?", "How do you find this product?", "What is the discounted price?", "Do you carry this product?", "How can I get a refund?"	
Assessment	The assessment will be based on how effective the shopping experience was and how well the learner communicates with different people in the store.	
Applied Frameworks	Learning by exploring	X	A certain level of exploring is required to run an errand in a new environment. The learner is prompted to explore the virtual world and ask for help when needed.
	Learning by collaborating		
	Learning by being		
	Learning by building		
	Learning by championing		
	Learning by expressing	X	It is crucial to be able to explain to others the help needed to complete the errand.

	Task: Team based learning		
Details	**Difficulty:** Advanced **Learning Outcomes:** Learners will participate in conversations that builds knowledge collaboratively. Learners will listen carefully and respectfully to others' viewpoints; articulating their own ideas and questions clearly. **VR Environment:** Basketball court. The learning environment will differ depending on the interest groups. The VR environment can exist in a gaming format. For example if the learner has joined a basketball team then the VR environment will exist in a basketball court. Furthermore, the VR can be turned into a video game where basketball teams (could be a combination of AI and human players) can be formed and game strategies can be discussed amongst team members. **Interactions:** The learner will interact with AI and human characters and hold discussions about game strategies with other team members. The game strategies discussed can then be simulated on the basketball court just like in a video game. **Structure and Vocabulary:** Developing an idea and building knowledge collaboratively such as: What if, how about, considering, I agree, what is our strategy in response to, how can we etc.		
Assessment	Assessment will be more game-like. The collaboration and cohesion of the team will be measured based on the conversations before, during and after the game.		
Applied Frameworks	Learning by exploring		
	Learning by collaborating	X	The group serve as a platform for members to collaborate and work towards a common goal.
	Learning by being		
	Learning by building	X	By creating and constructing something based on the interest, knowledge can be acquired and exchanged.
	Learning by championing	X	The core value of this activity is rooted in this framework where learners are invested into a specific cause
	Learning by expressing	X	Through championing for a cause, learners acquire the skills to express opinions and ideas.

Task: Following Directions to a Location		
Details	**Difficulty:** Intermediate **Learning Outcomes:** The learner should be able to understand a conversation with a native speaker on the subject related to following directions to find a designated meeting location (i.e. restaurant, movie theatre). **VR Environment:** The learning environment will consist of an outdoor, downtown area with landmarks such as streets, traffic signs, commercial buildings and natural landmarks such as mountains or oceans. **Interactions:** The learner will have the opportunity to start an interact with pedestrians and store owners **Structure and Vocabulary:** The conversation structure requires a timely and orderly set of vocabulary. The learner will reiterate directions and ask questions in first person.	
Assessment	The learner is able to find the designated location using the directions given.	
Applied Frameworks	Learning by exploring	X	While the learner is situated to locate a destination, the design space provides exploration of landmarks, thoughts on interacting with informative native speakers
	Learning by collaborating	X	This design space creates a situation that requires the learner to gather information by collaborate with a native speaker (AI agent)
	Learning by being	X	This design space offers a challenge for learners to use their resources and ask for help.
	Learning by building		
	Learning by championing		
	Learning by expressing		

Summary

Language learning has advanced and transformed over the decades. However, with emerging technologies rapidly altering what is possible in reality, the immersive context for language learning has shifted towards virtual realities. With this in mind, we provide a learning design for the virtual context that goes beyond the current limits of traditional immersive learning. This guide is based off of the six frameworks for language learning (Lim, 2009) and through each of the framework principles, propose a number of activities for the design space. Although this design space is situated in the future, the pace and direction of emerging technologies are bringing this vision closer to reality. This guide is complemented with a website (http://510designproject.weebly.com/) that takes a deeper look into the future and vision of language learning and emerging technologies.

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