Virtual Reality in the Language Learning Classroom

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Introduction and Issue

As a Language Teacher in an English for Academic Purposes (EAP) program, one of the most prominent issues in my classroom is distraction from electronic devices, namely mobile smartphones. Typically, this is not just an issue in the EAP classroom, but rather it represents a larger issue within the post-secondary system (Burston, 2014), and the philosophy of how to deal with this distraction varies from instructor to instructor. From the outset of my teaching career five years ago, I have seen numerous failed attempts to keep devices out of student hands, instructors arriving at the frustrated concession of the current status quo: "as long as it doesn't distract anyone else."

In my mind, that is not good enough. We have the opportunity to use technology that students have in their hands to our advantage, and with the right development of pedagogy and resources, there could be an ability to enhance the learning experience of students. By co-opting the distracting technology, students would theoretically be less distracted, while engaging with information through a medium that many of the current students are already familiar with. Despite earlier claims of this new generation of students being labeled as *digital natives* (Prensky, 2001), this term has fallen out of favour, with Prensky (2009) acknowledging that it probably was a misnomer for a generation who has grown up surrounded by technology. The initial hype over integrating technology to satiate the needs of this tech-savvy generation has given way to research that posits that the use of technology by this upcoming generation does not necessarily equate to effective, educational use (Bennet, Matton & Kervin, 2009). However, this does not change facts that the so-called Millennial generation has new educational needs, and some of these needs are technologically based (Prensky, 2009; Franetovic, 2011). To meet these increasing needs, technologically enhanced language learning, specifically as it pertains to Virtual Reality (VR), should be further investigated.

On the surface, VR carries with it some qualities that are often associated with language learning, for example, immersion. In theory, VR has the ability to change the environment quickly and cheaply through available technologies (Google Cardboard, 2015), and thus students could be easily immersed in a target language's culture without leaving their country. From a technophobic position, however, there are fears that VR could be ineffective, as the reality it presents does not actually coincide with actual reality.

Irrespective of irrational fears and blind futurist optimism, using immersive virtual reality technology in a language-learning situation is still in its infancy, and direct research about its usefulness is still at the early stage. However, there are established studies which investigate the issues surrounding VR in language learning, as well as effective Virtual Environment (VE)

education that is already in use in language learning classrooms (Duncan, Miller & Jiang, 2012; Garrido-Iñigo & Rodríguez-Moreno, 2015).

Research

Definition

There have been several incarnations of VR in the build up to its present state. Firstly, it should be noted that, historically, VR does not necessarily mean using goggles and motion capture technology, although in some cases it does. One aspect of VR that is currently being used in language learning and education at large is Virtual Worlds (VW) (Garrido-Iñigo & Rodríguez-Moreno, 2015). A Virtual World can be defined as visual environments that "have been developed further from three-dimensional (3-D) web-based technologies to form multi-user virtual environments (MUVEs) such as Second Life" (Duncan, Miller & Jiang, 2012, p.950). A Virtual Environment (VE) is a representation that "capitalizes upon natural aspects of human perception by extending visual information in three spatial dimensions" (Wann & Mon-Williams, 1996, p. 833). The typical image of a person in goggles, pawing at the air as they experience a VE/VW is a common misconception of what VR is, but this interface of VR is one which is highly immersive for the user. Educational Virtual Worlds are commonly known as a Visual Learning Environments (VLEs).

History of VLEs in Education

VLEs were first developed "as early as the 1960s, but the computer advances of the 1980s and 1990s allowed the creation of learning systems that are recognizable today as Internet-based media" (Duncan, Miller & Jiang, 2012, p.949). Commonly, the types of tasks that were being taught usually had an element of prohibitive danger or cost to them, for example military or medical procedures (Dalgarno & Lee, 2010). Over time, educational software has developed alongside video game technology, and computer games with 3-D VLEs having become commonplace in many differing arenas of education (Johnson, Vilhjalmsson &Marsella, 2005). As a result of VR technology becoming more accessible and affordable, research into what types of knowledge bases benefit from VLEs are developing a better picture of what effective practice entails.

Game-Based Pedagogy

Although contentious, using video games to teach has proven successful in a variety of ways, including language acquisition (Connolly, Stainsfeild & Hainey, 2011; Reinder & Wattana, 2014). Not surprisingly, students report increased enjoyment in learning when video games are used as a teaching tool (Dalgarno & Lee, 2010). This in turn has been reported to increase student motivation (Yang, Chen, Jeng, 2010; Connolly, Stainsfeild & Hainey, 2011), something that was previously mentioned as a key problem with distracted students in EAP classes. Not only motivation, but engagement in gamified virtual environments also has also been decided as a key benefit of educational computer games (Dalgarno & Lee, 2010).

VR and Language Educational Theories

When considering practice, it is always important to first look to theory. Of the numerous

applications for virtual worlds, the following are some educational aspects that have been found as effective from a compendium study on virtual worlds in the classroom:

- problem-based learning;
- enquiry-based learning;
- game-based learning;
- role playing;
- virtual quests;
- collaborative simulations (learn by simulation);
- collaborative construction (building activities);
- design courses (game, fashion, architectural);
- language teaching and learning;
- virtual laboratories;
- virtual fieldworks;
- attending lectures or classes.

(Duncan, Miller & Jiang, 2012, p.953)

Although this list includes *language teaching and learning*, it is the only subject unto itself, whereas the other items are mostly types of educational methods. However, many of these activities and learning philosophies are mainstays of language education (Lightbown & Spada, 2003).

Digital Age

The integration of technology into education has brought many affordances into the K – 12 classroom, and one would find it virtually impossible to find a school without a personal computer that students could access, but even still perhaps just as difficult to find a school without a policy surrounding mobile device technology. Learning Management Systems (LMSs) have become ubiquitous in North American post-secondary education, and mobile reading devices such as tablets are beginning to be integrated based on successful studies (Charbonneau-Gowdy, 2015; Kissinger, 2013). However, using mobile devices in the day-to-day classroom, and more particularly outside of the classroom in what is known as Mobile Assisted Language Learning (MALL) still suffers some rather formidable obstacles. Using mobile devices in language learning is problematic "in terms of the number of students and courses involved, the duration of implementations, the language skills targeted, the kinds of learning activities undertaken and the methodological approach used" (Burston, 2014).

VR is poised to essentially combine multiple existing technologies into a system that could improve the language-learning environment, particularly the post-secondary EAP classroom. Studies of both qualitative and quantitative research suggest that by combining mobile, immersive and 3-D VLE technologies, theoretically, a new, possibly improved, language learning could evolve.

Potential Advantages of VR in Language Learning

Practice & Confidence

One of the qualities of scaffolded language learning is the relative amount of practice that is required to produce this outcome (Lightbown & Spada, 2008). In regards to the potential application of virtual worlds, practice by a student could be easily applied both in and out of the classroom. One study actually found increased confidence and willingness to speak when Thai high school students participated in a virtual world type game that had them practice English using both text and speech (Reinder & Wattana, 2014). This gives rise to the notion that all skills (writing, listening, speaking reading, etc.) have the potential to be exercised through virtual world type games (Stanley & Mawer, 2008). Practice in productive skills such as speaking and writing will therefore lead to more confidence in students' day-to-day interaction with their target language. With increase in both practice and subsequently confidence, VR could "lead to improved transfer of knowledge and skills to real situations through contextualization of learning" (Dalgarno & Lee, 2010, p. 10).

Immersion

One of the reasons students travel abroad to places like Canada for English language learning is the widely regarded notion that immersion is key to language fluency. With this in mind, because of access of cost and affordance of time, Taiwan has taken a novel approach by creating so-called *English Villages* (Lan, 2015). These are areas in Taiwan that have English signage and English-speaking service people. Essentially, these have been created as a place for students to practice English. Even though these have a varying degree of success, there are still logistical access issues, i.e. not every village can be an English village. One of the ways that this is being addressed is through VLEs to reproduce even more authentic English language environment. This has in turn shown to benefit learners in their syntactic and conversation abilities, and also generally enhance their performance (Lan, 2015). On the other hand, whether a virtual English world or Taiwanese English as a Foreign Lnguage (EFL) classroom is more authentic to an actual language classroom in a country that speaks English is certainly up for debate.

Teaching to Your Audience

Due to the context in which many students have grown up, integrating technologies that they are accustomed to, like mobile devices and video games, seems like a natural fit for teachers. However, generalizing Millennials into a universally shared experience is certainly a fallacy. Regardless, many students in the language-learning context have experience with VLEs. Many potentially educational VLEs are akin to the video games that students have grown up with, and students are increasingly engaging with mobile devices to play and learn (Duncan, Miller & Jiang, 2012). For example, the Multi-User Virtual Environment (MUVE) game *Second Life* has been studied in regards to the experience of Millennials (Franetovic, 2011), and also that of language-learning students (Stanley & Mawer, 2008). Combining mobile technology, VLEs, and language-learning theories of immersion, practice and confidence building is indeed an amicable goal, although an integrated curriculum is lofty at this moment.

Disadvantages

Diversity in the EAP Classroom

Even if we accept that Millennials are indeed making themselves apparent in post-secondary education, and that their experience is highly technological, the EAP classroom is extremely diverse. As an adult education program catering to internationally diverse students, there are still those who have little experience with videogames and VLEs. This could be burdensome, as they would have to learn the new code of digital technologies compounded with the codes of their linguistic education. So although VR has the potential for students to prepare for English education before leaving their home country, it is unlikely that all EAP students would benefit from the same benefits of practice and confidence that studies have shown some Millennial students have. In fact, most of the studies cited in this paper that espouse the benefits of VLEs and mobile learning focused on largely had highly technologically savvy sample populations (Yang, Chen, Jeng, 2010; Connolly, Stainsfeild & Hainey, 2011; Kissinger, 2013; Lan, 2015; Charbonneau-Gowdy, 2015). These studies also share the commonality of mono-cultural English language learning situations, whereas EAP students in English speaking contexts usually have some degree of multiculturalism in their classroom. It would be foolish to expect that the results of these studies would translate seamlessly into the target classroom.

Limits of VLEs in Regards to Reality

One of the earliest criticisms of VR in regards to education is that it is not authentically reflective of reality (Homan, 1994). Language learning is very focussed on authentic skills. Theory, including philological, psychological and anthropological theories, play only a tertiary role in the pedagogy of language learning (Lightbown & Spada, 2008). The everyday language classroom is focussed on authentic situations and functions of language forms. So this too poses a problem of what virtual experiences afford in authentic situations. The reported increase of confidence notwithstanding, there is very little research into the transfer of skills from VLEs in language learning into authentic activities:

> Though the creation of an authentic context and the design of authentic activities with real-world scenarios is a complex undertaking, it is not enough for an authentic learning environment. Educational authenticity also requires a practical approach toward how people currently learn (Franetovic, 2011, p.187).

Considering the largely untested digital applications that would be appropriate for an EAP context, switching the classroom to a more digitally immersive environment would be a tenuous pedagogical decision.

A Lack of Serious Pedagogy

The use of mobile devices and VLEs to boost confidence and increase practice in a language learner does not necessarily equate to a best practice. One of the biggest components of language acquisition is the input of language codes like grammar and vocabulary. None of the studies of either mobile technology or VLEs explored the ability of these technologies to teach

these forms to students, and a few of them actually mentioned this in their limitations section, "One limitation of our study is that it did not investigate L2 acquisition, thus not allowing us to make claims about the benefits of game play on learning" (Reinder & Wattana, 2014, p. 117). On top of this fact, teachers exist for a reason, and whether in a distance or traditional context, game-based education does not exactly seem conducive to the role of the teacher. In fact, being efficacious with technology does not mean that a student has less diverse learning needs than previous generations who grew up without digital technology and access to information (Rudi, 2011). The pedagogy is admittedly lacking in regards to both mobile leaning devices (Burston, 2014), and in regards to VLEs (Fowler, 2015). Regardless to whether language aims are ultimately procedural rather than declarative, i.e. using a form rather than being able to explain why you are using it, there is still evidence that VLE technology actually harms declarative learning.

> Jestice and Kahai (2010) stated that simply using a VW is not sufficient to improve cognitive outcomes. Whereas students reported higher perceived learning and satisfaction with learning, their overall performance for declarative knowledge was actually much lower than non-VW learners.
> (Duncan, Miller & Jiang, 2012, p.961)

This lends more credence to technology's inability to help language acquisition since the first process of language learning is an input process, which is later re-enforced through experiential contact and practice (Lightbown & Spada, 2008). Effective learning is not dependant on technology, and considering the amount of hastily made applications available and the hype and 'niftiness' factor that comes with educational technology, relating to or impressing a student with technology's use rarely has anything but temporary results (Dalgarno & Lee, 2010). To expect a marked result from students in regards to language learning based on VLEs combined with mobile devices does not seem probable.

An Even Bigger Lack of Serious, Tested Software

A cursory app search for 'learn English' will bring a multitude of pay-for and free options from predictable publishers and mainstays of the language learning industry. However, although most of these are practical for some aspects of language learning, none of them are comprehensive systems that effectively engage all skills, or focus on the aims of the EAP classroom. Like so many aspects of the language-learning field, one would need to cobble together various programs one has tested and found effective for the various different skills. Unfortunately, a contemporary study of mobile learning language apps found that many of them were antiquated as far as their pedagogy.

> … learner-centered methodologies which have dominated foreign language teaching for the past 20 years. Despite the ever-improving technology, the majority of even the most recent MALL (Mobile Assisted Language Learning) applications have remained restricted to structuralist vocabulary and grammar tutorial drill activities.
>
> (Burston, 2014, p. 115)

Burston (2014) still sees the potential of MALL to help practice and create immersion, but his study definitely is evidence of a contemporary dearth of consensus on what is effective software, and in what contexts they are effective. Of the hopeful VLE studies mentioned earlier, only a few are based on software developed specifically for language learning (Lan, 2015). Others used existing games and VW programs like 'Second Life' to facilitate practice, which although authentic in the fact that they are English apps, they are not created with any sort of pedagogy in mind.

Final Position and Future Practice

After investigating the potential of VR in the language-learning classroom, I am somehow more hopeful and at the same time less so. Integrating untested applications into classroom environment as formative language building is not something I'm going to start doing at the outset of the next semester. I may start experimenting with supplemental VLE applications like 'Second Life' (Duncan, Miller & Jiang, 2012). Encouraging students in my class who are clearly using their mobile devices for largely unproductive purposes like translation and gaming to practice outside of class is a motivational issue that many language teachers struggle with. However, many of these students are shy and do not have easy access to speaking English outside of class and homework assignments. And yes, the obviousness of distracted students preferring to engage with their phones rather than traditional textbooks and paper based exercises does not escape me. Students feel more motivated and confident when they effectively practice outside of class, and VLEs can facilitate the motivation and engagement that they may lack in the EAP classroom (Dalgarno & Lee, 2010).

Furthermore, it will be important to keep my 'ear to the ground' as far as new mobile language learning apps that are effective. Hopefully, studies are being done right now to find effective software that can combine the experience of digital natives with that of informed pedagogy. In fact, I would be more than happy to participate in a study that looks at the aims of finding a digital experience that can help students find more effective success in language learning. Unfortunately, bringing a VR experience into the EAP classroom is at least a few years off, and that would be for early adopters at best. Yet the notion itself is not so far gone as to be thought of as absurd. I stand by my original position that "with the right development of pedagogy and resources, there could be an ability to enhance the learning experience of students"; however, now I see how far off that pedagogy and development are from being effective.

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