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Apples and Oranges? Second Life vs. OpenSim for Language Learning

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Abstract: Shared virtual environments are used in technology enhanced language learning for their immersion, interactivity, and as a medium for both local and remote communication and contact with authentic speakers and situations. Previous work has shown them to achieve similar language learning outcomes to classroom situational role playing while using less time and other resources. Here we review the comparative suitability of two similar shared virtual environment platforms, Second Life and OpenSim, for language learning, using our SVECTAT (Shared Virtual Environment Complementing Task Achievement Training) model as a reference, and our extensive experience with the two platforms as a source. Features examined include collaborativity, cost, control, ease of use, scalability, and suitability for diverse learners. We find that while Second Life remains more suitable in certain specialized cases, OpenSim possesses clear advantages with regard to most features and cases.

Keywords: Collaborative learning, OpenSim, Role Playing, Second Life, Shared Virtual Environment, Technology Enhanced Language Learning

1. Introduction

Technology enhanced language learning (TELL) uses computers, networks, and related devices and media either to augment traditional language learning and teaching methods and materials, or to apply new methods and materials to language learning and teaching. Shared virtual environments (SVEs), such as massively multiplayer online games (MMOs), form one type of technological enhancement widely used and discussed in TELL.

One ground-breaking SVE is Second Life (SL), which is operated as a business by the company Linden Labs (LL), open to the public since 2003. OpenSim, a free and open source server program compatible with SL clients, has been available since 2008. Earlier work in SL (Elwell, et al, 2007) demonstrated its potential for use in language learning, leading to development of our Shared Virtual Environment Complementing Task Achievement Training (SVECTAT) method (Elwell, et al, 2009, Cook, et al, 2010, Elwell, et al, 2010).

Here we will review the comparative suitability of Second Life and OpenSim for language learning, using the theory and practice of SVECTAT as a reference, and extensive experience with both platforms as a primary source. We will examine and evaluate features including collaborativity, cost, control, ease of use, scalability, and suitability for diverse learners. We will first describe Second Life and OpenSim, and SVECTAT, next list, explain, and compare chosen features of SL and OpenSim, and discuss considerations for researchers, experimenters, and practitioners with reference to SVECTAT, then offer a conclusion and references.

2. Description of Second Life and OpenSim and of SVECTAT

2.1 Second Life

While the land, water, and sky in the shared virtual environment of Second Life are provided by LL, nearly all the content – sounds, animations, scripted functions, buildings, furniture, scenery, clothing, and avatar body parts – has been created, shared, and sold by and among users. Since 2006, making and operating a basic SL account has been free of charge.

The features that set Second Life apart and began to attract widespread attention and interest in about 2006 include: a *single shared, scalable environment* in which each of tens of thousands of users from all over

the world online at any given time could meet and interact with every other; privileges for paid premium users to *buy, rent, and sell virtual land* and for any user to rent from them; a *currency tradable both from and to US dollars*, enabling real business to be done using SL; *user ownership of content*, including buying and selling; real-time, in-world, *collaborative creation and editing* of content; and a *custom scripting language* for programming the behavior of objects and avatars.

Several of these features have made Second Life attractive for research, experimentation, and practice in language learning as well as many other fields (Elwell & Chang, 2010, Leigh, et al, 2010, Leigh & Elwell, 2010). To access, interact in, and create content for SL, one needs only a desktop or laptop computer with sufficient graphics capabilities for popular entertainment games, a free client program that operates on Linux, Macintosh, or Windows, and a broadband internet connection. A dedicated or even private space in SL can be rented from users or purchases directly from LL, allowing construction of persistent content for research, experimentation, or learning use.

Our own experience with Second Life dates to 2006, and has involved research into development of creative skills by users (Elwell, et al, 2007), development and testing of our own SVECTAT method of utilizing SVEs for English language learning, and more recently, collaboration with partners such as National Taiwan Normal University in constructing their Language Island for Chinese language learning.

2.2 OpenSim

OpenSim is a free and open source alternative server program compatible with SL viewers. The client software source code for Second Life is released openly after each new version, encouraging development of "third party viewer" SL clients by others. The server software source code for SL, however, is closed, preventing others from creating and hosting their own SL-compatible environments and making Second Life a "walled garden".

OpenSim, being used with the same client programs as the SL server software, shares most of its distinctive features, including a *single shared, scalable environment, user ownership of content, collaborative creation and editing*, and the same *custom scripting language.* Since SL has a single sole operator, LL, and OpenSim can be operated by anyone at all, the rules, policies and practices of OpenSim environments vary widely. Like SL-compatible client programs, the OpenSim server program can be run, even in the background, on common computer hardware and broadband connections.

In addition to the features it shares with Second Life, OpenSim embodies a major element at first pursued by Linden Labs and then abandoned: *interoperability*, i.e., the ability for a user to log into one SVE and then transfer his avatar to another, with another computer host and operator, in a manner directly analogous to following a link in a web page to another site. This feature of OpenSim is called *hypergrid*, and is explicitly intended to foster a "3D web".

Our own experience with OpenSim dates to 2008, and has involved development of self-hosted environments for use with SVECTAT, extensive use of OpenSim environments for prototyping of content, and collaboration with partners such as the University of Arizona on their Virtual Harlem project.

2.3 SVECTAT

Shared Virtual Environment Complementing Task Achievement Training (SVECTAT) is a model and method we have developed, tested, and presented in previous work using the shared virtual environment of Second Life to facilitate language learning. Authentic language tasks, such as getting contact information or directions, making a successful complaint, and holding an audience in the target language, face daunting challenges of authenticity and resource requirements – such as time and model speaker availability – when role-played in a traditional physical classroom.

SVECTAT has learners carry out the same tasks with authentic speakers in an immersive environment in Second Life, achieving similar language learning results in about half the time of task achievement exercises carried out in the physical classroom alone. SVECTAT also fosters collaboration, with each learner required to complete tasks individually, but with the support of peers and other people present in the shared virtual environment. The game-like structure has also been found to result in learners continuing beyond the specific tasks assigned in exercises to engage in independent target-language communications in the virtual environment.

3. Selected Features of SVEs for TELL

The features on which we will focus in this review are collaborativity, control, cost, ease of use, scalability, and suitability for diverse learners.

3.1 Collaborativity

Collaboration provides motivation, direction, and support for learning, and bridges the gap between sink-or-swim situations and confident independent knowledge, skills, and attitudes. The greater the facilities and opportunities for collaboration, the better for researchers, experimenters, and learners.

3.2 Control

Researchers, experimenters, and learners require control over their access to and use of a shared virtual environment if they are to rely on it for language learning. This includes being able to find or conduct fixes of technical problems in a timely manner.

3.3. Cost

Cost forms a substantial barrier to language learning in much of the world, where authentic communication with target language speakers is challenging or simply impractical to arrange. One of the greatest benefits of SVEs for language learning is bringing this affordance within reach to many more learners in many more cases.

3.4 Ease of Use

Client programs for shared virtual environments are designed to be similar in use to web browsers. Creators and operators of SVE locations, however, must consider their first time use by researchers, experimenters, or learners. Another consideration is the ease with which teams and groups can use an SVE location and its content.

3.5 Scalability

Among needs that can change in research, experimentation, and practice in language learning is the need for more or less space or content, matched to use by more or fewer persons. The speed, ease, and resource efficiency with this this can be done is a significant consideration in use of SVEs. Likewise, educational theory and practice currently face strong demands for scalability, especially for use in government school systems.

3.6 Suitability for Diverse Learners

Language learners can be of different ages, sexes, backgrounds, sensitivities, interests, and goals. This means that the content of a specific learning environment, including the appearance, behavior, and speech of people who may be encountered, must be suitable for specific cases.

4. Comparison of Second Life and OpenSim Features

4.1 Collaborativity

Second Life provides a venue and medium for collaboration using text chat, voice chat, and building, audiovisual enhancement, and scripting of objects. Since 2010, however, Linden Labs has announced new restrictions on ownership and use of objects in Second Life; both the new restrictions and their sudden implementation have led to significant numbers of object creators leaving the SVE, and to a widespread sense among users that LL is both arbitrary and unreliable.

There is now no practical way within the current SL Terms of Service for creators and owners of content to make backups of content created collaboratively in SL, or of venues constructed, for security or

other use. Likewise, users cannot back up or export their avatar inventories, often containing tens of thousands of items collaboratively created, received, or purchased over a period of years, without violating LL's Terms of Service.

The OpenSim software has all the same features relating to collaboration as Second Life. Additionally, backup features for regions and inventories are built into the software. Policies regarding ownership and use of content are in the hands of the operator of each OpenSim SVE.

In the case of SVECTAT, location operation and content creation or management was not involved, so the only difference between Second Life and OpenSim in this regard would be the presence of a greater number of user avatars in public spaces in Second Life, as opposed to even the most popular OpenSim based SVEs.

4.2 Control

Second Life had regular interruptions of service in its early years, but since 2008 is rarely inaccessible for more than a few hours at a time, and even that no more often than once or twice a month. On the other hand, problems requiring support, such as region settings or inventory access, are more common. LL's support is notoriously unreliable and slow. Requests for assistance can commonly languish for months before receiving any response, and many elements of operating a region cannot be adjusted except by LL.

Operating an OpenSim environment puts complete control of all elements of its operation in one's own hands. Regions can have settings changed, or be restarted, at any time. They and avatar inventories can likewise be backed up or restored at any time. When hosting is provided by others, that control rests with the operators, but same-day responses are typical, and several commercial OpenSim hosting providers include a web-based control panel for region owners that allows them to tend to their regions in the same way as if they hosted them themselves, but in a more user-friendly graphical way.

SVECTAT does not require control of a dedicated location, and may be conducted in either Second Life or OpenSim based environments if they are accessible.

4.3. Cost

A basic account for Second Life is free of charge, and allows users to visit public areas in the virtual environment and engage in visual, behaviorial, text chat, and voice communication with others. Renting of virtual space to build customized venues varies in cost, but purchase of a 256m x 256m region from LL involves a US$1,000 initial fee, followed by a maintenance fee of US$300 per month; any failure to pay the maintenance fee can result in sudden and irreversible loss of the region and all content in it. Until 2012, LL offered a 50% discount to accredited educators for monthly land use fees, but suddenly withdrew it in the middle of an academic – and fiscal – year, causing serious difficulty and distress to most educators operating in SL. Most have left, and despite LL restoring the educational discount in 2013, few have returned.

OpenSim is free and open source software. Anyone, therefore, who can operate a Second Life compatible client can run OpenSim and host a shared virtual environment for no cost. For those lacking the technical or other resources to self-host, a variety of individuals, businesses, and institutions offer hosting services for OpenSim regions. Typically, these involve no starting fees, and monthly maintenance fees of between US$0 and US$90 for a 256m x 256m region.

SVECTAT can be conducted with free avatar accounts in either Second Life or an OpenSim SVE. Where adequate computer and network resources are present, its only cost is the time of instructors and facilitators.

4.4 Ease of Use

Second Life compatible client programs are designed to be similar to web browser in basic functions, and the main challenge in their use is in the number of features available and the different ways they are arranged in different clients and versions. There is no difference in this regard between Second Life and OpenSim, except that LL's official Second Life viewer connects only to Second Life, and is regarded as the worst of the most popular viewers for reliability and ease of use.

When operating a location in Second Life, other considerations arise. To control or filter access to and privileges for the general public, or for members of a specific group, involves a number of powers, some belonging only to one account designated as parcel or region owner by LL. Since SL's Terms of Service forbid

sharing accounts and account information, it becomes difficult or impractical for a group or institution to operate an SL location in response to quick-changing needs and situations.

Operators of OpenSim environments set their own policies, and can thus choose to allow sharing of accounts among groups of managers, making them much easier to operate and use for language learning.

SVECTAT requires an initial use of learning time to acclimate users to the SVE clients and environment; there is no significant difference in this regard between Second Life and OpenSim based environments.

4.5 Scalability

To increase or decrease the space used in Second Life involves dealing with user landlords or with LL. LL land use fees are paid in advance and are not refundable, so a sudden need to reduce one's land use may result in some or most of a month's fees being lost. Buying new regions from LL involves the costs discussed above; the US$1,000 starting fee forms a high barrier to those uncertain if they need a region on a long-term basis.

If one self-hosts an OpenSim environment, scalability involves simply starting or terminating a session of the OpenSim program. If one obtains hosting from another operator, procedures and response will vary. Commercial hosting providers commonly provide a 24 hour turnaround. One, Kitely, provides hosting with a unique cloud-based system, serving only regions currently used by an avatar, and charging a per avatar hour rate; in theory, it should be able to smoothly scale up to concurrent use by very large numbers of learners.

The SVECTAT method is easily adapted for scalability, subject to the availability of adequate target language speakers in SVEs. On this point, Second Life currently has more concurrent users than all the publically available and hypergrid-linked OpenSim SVEs combined. On the other hand, Second Life users and activity have been stagnant or decreasing since 2008, and those of OpenSim SVEs growing steadily. The inherent advantage of OpenSim in terms of scalability is that nearly any computer can host an OpenSim SVE *and* link via hypergrid to *all* the others whose operators permit it. This is essentially unlimited scalability.

4.6 Suitability for Diverse Learners

Linden Labs has restricted access to Second Life based on age, preventing its use by younger learners. For teenagers and adults, even when resources are devoted to finding or maintaining suitable learning venues, the risk of accidental or intentional encounters with inappropriate content or behavior remains a significant concern.

OpenSim environments are operated with whatever policies chosen by those who run the server program. Access can be opened to the public, limited to specific individuals, or filtered in a variety of ways. For example, an OpenSim environment might be operated inside an institution's network, and be totally inaccessible over the internet. Likewise, content brought into an OpenSim environment can be limited or filtered by the operator.

In the case of our SVECTAT tests, we found that persons encountered in open social venues in Second Life tended to be friendly, helpful, and open to participating in exercises with our learners. On the other hand, we also found that even with adult (graduate student) learners, content and behavior of some SL users, especially when voice communication was included, could offend, shock, or even frighten some learners, leading to failure of the exercise.

Evaluating this comparison, we find that in cases where every learner is 16 years old or older, and is comfortable with the possibility of encountering any type of content or behavior, Second Life has the advantage of a wide and deep variety of locations and content, and above all, a large population of tens of thousands of potential interlocutors at any time. In all other cases, however, the risk of a learner encountering inappropriate content or behavior is sufficiently serious to strongly indicate hosting or selecting an OpenSim environment.

5. Discussion

Goals and considerations for individual cases of research, experimentation, and practice in language learning will necessarily vary widely. It is therefore not practical or useful to attempt to derive a single rubric indicating for all cases the use of Second Life or of OpenSim. Instead, our findings are hoped to provide useful indications for the comparative suitability of one or the other SVE platform in particular cases.

In Table 1, our findings are presented with reference to general technology enhanced language learning cases and to SVECTAT. For general TELL cases, Second Life and OpenSim are assessed in their suitability. For SVECTAT, an indication of greater suitability for one or the other SVE platform is listed for each feature (collaborativity, control, cost, ease of use, scalability, and suitablity for diverse learners).

Table 1: Comparative Suitability of Second Life and OpenSim for TELL and SVECTAT

General TELL cases	Second Life	OpenSim	SVECTAT
Collaborativity	Strong, weakening	Strong, strengthening	Second Life slightly
Control	Weak, weakening	Very strong	No difference
Cost	Moderate to high	Low to none	No difference
Ease of Use	Moderate to weak	Moderate to strong	No difference
Scalability	Weak	Very strong	Second Life slightly
Diverse Learner Suitability	Difficult to ensure	Easy to ensure	OpenSim strongly

6. Conclusion

We have reviewed the comparative suitability of Second Life and OpenSim for language learning, using the theory and practice of SVECTAT as a reference and extensive experience with the two platforms as a primary source. We examined and evaluated features including collaborativity, cost, control, ease of use, scalability, and suitability for diverse learners. We found that for a minority of cases, Second Life continues to be more suitable, but that for a majority, and especially with regard to control, cost, and especially scalability and suitability for diverse learners, OpenSim based shared virtual environments are strongly indicated.

These findings are significant for researchers, experimenters, and learners seeking to gain the benefits of shared virtual environments for language learning, such as immersion, collaboration, and opportunity for authentic communication with target language speakers.

Comparative testing of SVECTAT in Second Life and OpenSim environments, and of other language learning methods and exercises, to glean quantitative results, is indicated for future work.

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