

Virtual Worlds Teaching Manual



Prepared by

**Gregory Perrier
Emeritus Faculty, Biology
Northern Virginia Community College**

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Introduction

Experience has shown that Virtual Worlds (VWs) can provide students with a unique interactive and immersive educational experience that many students find to be a fun and effective way to learn. VWs go beyond offering text to read, a podcast to listen to, or a video to watch. In VWs, students interact in a 3D environment with their instructor, other students and objects. For example, a student can study the diagram of an ear online or in a textbook; but in a VW the student can walk through the ear, which is a whole different experience. Studies have supported Kolb's experiential learning cycle showing that students learn more from doing than from reading a textbook or listening to a lecture¹. VWs have the potential to provide this immersive, experiential learning in a cost-effective manner. Furthermore, teaching students to function in virtual environments provides them with skills that will be beneficial, if not critical, for success in their future civic, family and work lives.

The move to all remote classes during the coronavirus pandemic highlights the value of VWs in higher education. VWs offer ways - synchronous and asynchronous - for institutions to educate without endangering faculty, staff and students. A professor commented that her students expressed a preference for lectures in this virtual environment over zoom because the interaction between students and with the instructor was similar to that in a classroom.

The aim of this manual is to help educators incorporate VWs into their courses in ways that enhance student learning. The manual will:

- help instructors take advantage of the exciting opportunities offered by this new environment,
- guide them through the start-up process,
- suggest specific ways to use VWs to make classes engaging and interesting,
- show them how to design more interesting educational activities, and
- help them avoid the common errors educators make in VWs and allow them to build on the successes of others.

The advice presented here comes from work in the VW called Second Life (SL), but much of this advice applies to other VWs, such as Open Simulator and Kitley.

¹ Rodriguez and Albort-Morant 2018, Chorazy and Klinedinst 2019

Brief History of Education in Second Life (SL)

SL opened in 2003, building on earlier VWs. Soon after this, people in higher education started to explore SL and to consider how VWs would impact education in general. There was considerable hype about VWs being a major component of the future of higher education. By 2010 (when I entered SL) numerous colleges and universities had built virtual campuses in Second Life and several educationally focused groups were meeting in SL regularly. While most of these higher education institutions had some staff and faculty members active in SL, few of them had incorporated SL into the curriculum of a course.

As a result, most of these virtual campuses were little used by faculty and students, and when in 2012 Linden Lab (the company that owns and runs SL) announced the ending of the 50% educational discount, many of the virtual campuses greatly reduced their size or closed down entirely. One of the main reasons for the lack of adoption of SL as a teaching tool was that the people building the virtual campuses were not teachers, and no one asked how the faculty would incorporate objects built in SL into their courses. It was assumed if the institution recreated the campus in a virtual world then students and faculty members would surely use it. That seldom occurred. When their institutions left SL, some educators who did find a use for the installations migrated to less costly VWs such as OpenSimulator (OS) and Kitley. By February 2013 when NOVA received an invoice from Linden Labs, the discount had been reinstated and NOVA never paid the higher tithe.

Those virtual campuses that survived in SL were often more innovative, having designed and built environments suitable for a virtual world, rather than trying to recreate their physical campus. These built environments were often driven by faculty who had seen a potential for incorporating VWs into their courses. Some of these institutions have maintained a presence in SL and their faculty members continue to use the platform to promote student learning.

From these experiences emerged many lessons on how to incorporate VWs into a college curriculum. There were failures as well as successes. We can learn from the failures that led many higher education institutions to abandon SL as well as from the successes of those instructors who pioneered ways to enhance their courses using the potential of this educational platform.

My Background in SL

In 2009 I saw a magazine article predicting that VWs would be an exciting new tool that higher education would adopt widely. The article had an image of a professor in SL lecturing in front of a classroom full of avatar students. I was intrigued and saw this as a way to lecture when my college (the Northern Virginia Community College, called NOVA) closed due to snow or other problems.

I attended a profession development day at NOVA in January 2010 and was pleased to see that a workshop on Second Life was offered. I was surprised to learn that NOVA already had a virtual campus in SL. I made an avatar at the workshop and over the next few months I worked on developing my skills, visiting many different education regions, and networking with other educators in SL. By 2011, I started assigning graded activities in SL for the students in my classes. In December 2011, the person managing NOVA's region in SL retired and I was asked to assume this role. Over the next six years I added various activities to the region and encouraged faculty members to use these activities in their courses. By December 2017 there were 22 activities on NOVA's virtual campus and about 400 students a year were completing graded assignments. This level of use has continued to the present day.

In 2017, as I neared retirement, I started to reflect on what I have learned from this experience and the experiences of other educators active in SL with whom I collaborate. Over about 6 months, I collected these lessons, shared and discussed them with others in presentations in SL and finally organized them into this manual. You can read more about my experience in VWs on my blog:

<https://blogs.nvcc.edu/gperrier/>.

Getting Started

First steps

This manual is for educators who teach a for-credit class, either face-to-face or online; and are interested in exploring the potential of incorporating Second Life into their curriculum. If you already have an avatar and have been in SL, you can skip this section and scroll down to Exploring.

To get started, go to **www.secondlife.com** and open a free account. Once there, you will be prompted to select an avatar as well as create a username and password for this avatar. I suggest you initially select one of the classic avatars (one of the options) because they are easier to work with for beginners. Next, download and install the free Second Life program, using either the standard viewer at **www.secondlife.com** or the firestorm viewer at **www.firestormviewer.org**. Either viewer is fine, but people tend to migrate to the Firestorm viewer after being in SL a few months. So, I suggest you start with the Firestorm viewer. Firestorm operates 24-7 help services — in multiple languages — accessible from within Second Life. The user interface is different for each viewer. Directions provided in this manual will be for Firestorm. Also note that the commands are slightly different for a Mac and a PC computer. When installing Firestorm select the program for Second Life (Open Sim is the other option) and then select for either a PC or Mac. All viewers allow your avatar to function in SL. The other virtual worlds, such as Open Sim (OS), Kitely, and Minecraft, all require an account, with avatar, username, password, and the download and installation of their own viewer. For multiple VWs, consider using the same name for your avatar.

If this seems confusing, there are many YouTube videos that will show you how to get started whether you are using the Second Life viewer or Firestorm. The video I'm recommending walks you through the process of selecting an avatar, installing Firestorm, logging into SL, and getting to different regions in SL. It is available at https://youtu.be/V_pCMfG8yCM. This video takes you to the NOVA region, but the principles are the same for any region in SL. The details of selecting an avatar change with time, but the basic steps are similar.

Once you open the Firestorm or SL viewer, you enter your avatar username and password and log in. After you accept the terms, your avatar will appear (rez) at a greeting center where you can learn a variety of basic skills before moving to an orientation region. There are two orientation regions I recommend you visit to help you get started. The first is Caledon Oxbridge which offers an excellent orientation to SL, geared to people using the Linden Lab viewer (image 4.1). Much of what you can learn

there applies to other VWs as well. Often at Oxbridge you will find tutors and other people who can answer your questions about SL.

Image 4.1 Caledon Oxbridge Orientation Area



Another area to visit is the Orientation Tower for Educators (4.2 image) located in the Aloft Nonprofit Commons region at coordinates of 150, 205, 22. The URL for the location is

<http://maps.secondlife.com/secondlife/Aloft%20Nonprofit%20Commons/150/205/22>.

The Tower offers an orientation to teaching in VWs . A lot of information is available there, so plan on visiting repeatedly over the months as you become proficient in SL. Left clicking on a pink cone in the middle of the exhibit takes you to an additional 4 levels of displays located in the sky. The tower was created by Hajime Nishimura (avatar Yan Lauria) with input from several educators active in SL. Hajime is a Japanese scientist who has been active in VW education for years.

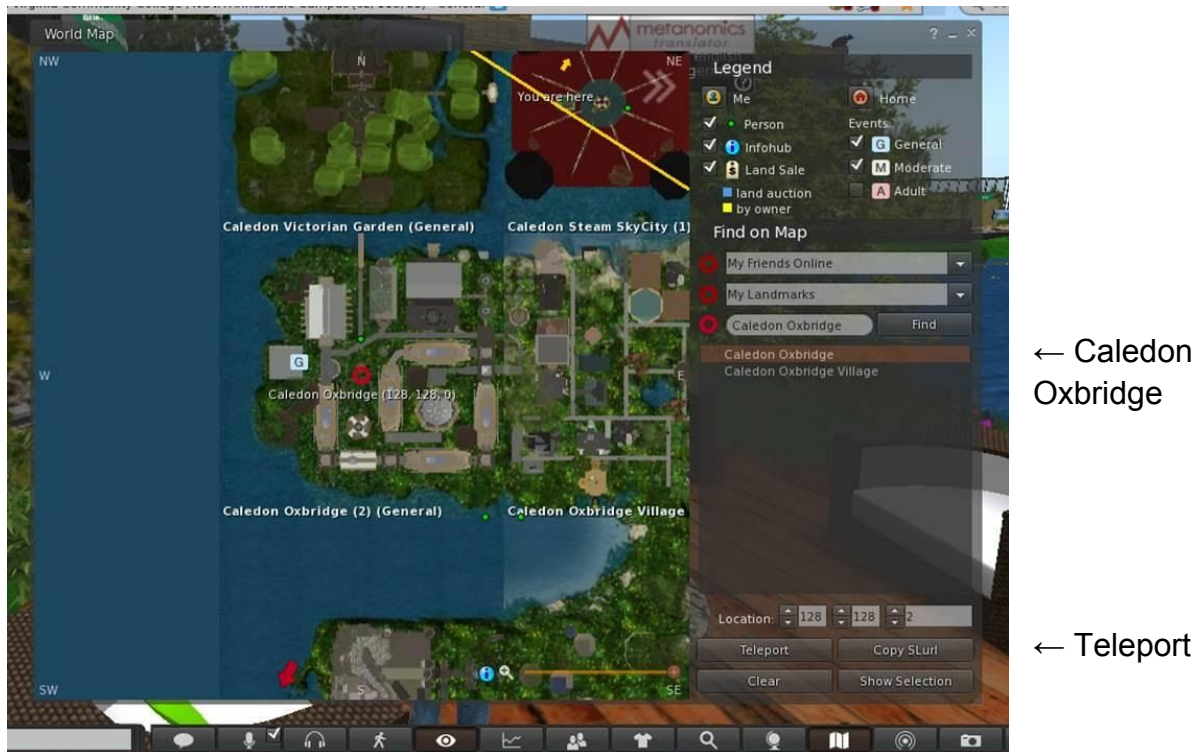
Image 4.2 Orientation Tower for Educators



To move from the greeting center to either Caledon Oxbridge or the Aloft Nonprofit Commons regions you open the map icon on the toolbar (looks like a 2-fold map) and in the box next to *Find*, enter the name of the region you wish to visit (image 4.3). Once you enter the name, left click on Find. Left (or command) click on the region name in the drop-down menu, then left (or command) click on Teleport, and you are there. You can also copy the URL provided for each location and paste this into the long white box near the top of your screen with a dot and the letter i in the middle. Then hit enter and you will be taken to the orientation area.

Your initial experience in SL will vary greatly depending on whether your educational institution has a region in SL or not. If your institution has a region (whole area) or parcel (part of a region) in SL, you should go there and designate that as your SL home.

Image 4.3 Caledon Oxbridge Map



If your institution does not have an area in SL, you can make Caledon Oxbridge your initial Home after joining their Scholars group. Once you leave the entrance hall, you will be in an open plaza. On the right side of the plaza is the lecture hall and to the left side of the entrance to the lecture hall is a calendar showing the class schedule. Just to the left of this calendar is the Scholars group poster (image 4.4). A left (or command) click on it will let you join the Scholars group.

Once in the group, you need to go to the rose garden area (image 4.5), just behind the stone benches in the seating area. Once there you can set the region to home by opening the *World* button on the top toolbar and select “*Set Home to Here.*” Clicking on the house icon near the top left of your screen will always teleport you back to your home. This is useful in case your avatar gets stuck or you encounter uncomfortable situations. Caledon Oxbridge is monitored to provide a safe and enjoyable experience.

Image 4.4 Panel for joining Scholar Group at Oxbridge

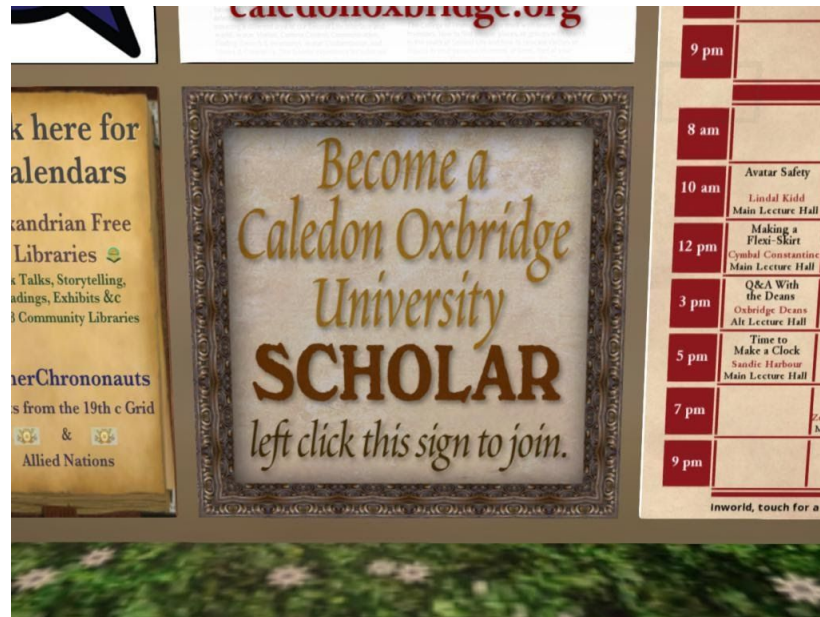


Image 4.5 Rose garden at Oxbridge



One caution to keep in mind is that VWs are dynamic, and things frequently change. The instructions provided here are accurate for 2020 but expect some differences later. Most people new to VWs are surprised at the constant changes. Regions you find interesting or fun to visit sometimes disappear, while new regions are constantly being created. New technologies are being introduced allowing more realistic

avatars and objects, but require you to learn how to use them. Inworld classes and video instructions are often available. The rate of change is slow enough to be minimally stressful and new skills build on existing ones. Still it's good to expect change.

Exploring

After completing a basic orientation to SL at Caledon Oxbridge, it is time to explore. The objective is to get a feel for how people are using SL for education. You will want to visit as many educational regions as possible and see how they developed their region and the available student activities. A region called Cookie owned by Community Virtual Library (CVL) has an area called Gateway to Thinking with numerous landmarks to educational areas (image 4.6). This area was created by Hajime Nishimura (avatar Yan Lauria) To get to Cookie, open the map icon of the bottom toolbar and in the box next to Find, enter "Cookie." The coordinates for the location for the landmarks is (78,71, 21). The URL for this location is <http://maps.secondlife.com/secondlife/Cookie/78/71/21>. At the Community Virtual Library you will find people happy to help educators new to SL. Their webpage is <https://communityvirtuallibrary.org/>.

Image 4.6 Gateway to Thinking



Regions come and go in SL, and so do not be surprised if some of the regions listed at Cookie no longer exist. Often avatars that you encounter at these regions are random visitors and not involved in education or associated with the institution using the region. Feel free, however, to “chat” (chat = text) with the people you encounter. Visit colleges, universities, and other regions with an education focus and think about how you might use the activities that you encounter.

Networking

Though much reduced since early 2012, there is still an active education community in SL as well as several educational groups that meet regularly there. Getting involved with them is a great way to network. Level 4 of the Orientation Tower for Educators provides a poster with landmarks that take you to the location of these organizations where you can find information about what they do, when they meet, and how to make contact. They welcome people new to SL to their meetings. Take advantage of the wealth of experience available to assist you within these groups. The groups are: the International Society for Technology in Education - Virtual Environments Network (ISTE- VEN), the Virginia Society for Technology in Education (VSTE), the Virtual Worlds Education Roundtable (VWER), the Virtual Pioneers (VP), the Science Circle, the Nonprofit Commons, and the Chilbo Education Village. Join the groups associated with these organizations to get announcements of up-coming events. To do that, use the Search button and Groups tab to find the group. Then open the group window and select Join.

During your first few months in SL, focus on visiting educational regions, networking with educators active in SL, and making repeat visits to the Orientation Tower, all aimed at expanding your understanding of education in virtual worlds. At the same time work on your basic SL skills, such as moving, teleporting, interacting with objects, changing clothes, rezzing objects, and building simple objects. Finally, explore the different icons and menus in the Firestorm or SL viewer and become familiar with their uses.

Things to Consider When New to SL

Before you bring students into SL, there are some things to consider that have emerged from the collective experience of educators active in SL. Incorporating these considerations into your planning will greatly reduce the difficulties you might encounter as well as improve the student learning experience. On the next pages, these considerations are divided into five themes: professional development, students, instruction, land, and building.

Professional Development

There are a variety of opportunities in SL and in real life (RL) to enhance your understanding and skills concerning education in VWs. They tend to be in the form of meetings of educational organizations (which were discussed above), workshops, profession presentations, and conferences. Take advantage of these as often as possible. Besides increasing your ability to use VWs in education, these events offer opportunities to build a network of friends and colleagues who can advise and assist you.

These professional development opportunities are provided by educational organizations active in VWs. The Orientation Tower provides detailed information on these organizations which generally have weekly meetings and offer an excellent venue for networking and meeting other educators active in VWs.

The times listed for events in SL are given in SLT (SL Time) which is the same as PDT (Pacific Daylight Savings Time) in summer or PST (Pacific Standard Time) in winter. This is the time in San Francisco, California on the west coast of the USA where Linden Labs is located. You will need to know the time difference between SLT and your local time to get to professional development events at the correct time. SLT changes with the change between Standard Time and Daylight Savings Time in the USA and, depending on where you live, this might require an adjustment in the difference between your local time in STL.

There is a rapidly growing body of literature on education in VW. These articles are found in peer-reviewed journals as well as in many other publication venues, both in print and online. They are often focused on specific disciplines: for example, I recently saw two peer-reviewed journal articles on medical role-play in SL. Explore the literature about the use of VWs for education in your subject area. You can find many of these articles at:

<https://www.diigo.com/profile/mrs-0connell?query=%22Second+Life%22+research>

and at:

https://docs.google.com/document/d/1xcHR5LhZFfPXgH-_slilJV41hM9WMWZLwPI8LkZDS_U/edit

You can find journals that publish articles about education in virtual worlds at:

<https://www.scimagojr.com/journalrank.php?category=3304>

Students

Not all students will love SL. My student evaluations have shown that about 10% of the students hate SL and about 25% get excited and tell you it is a great learning experience. The remaining 65% find parts of the activities fun or interesting, but get frustrated with other aspects of SL. The more you can reduce student frustration, the more students will enjoy learning in a VW. Very few students report continuing in SL after the class concludes.

Usually most, but not all, of your students will be able to access SL from their own computers. Students whose personal computer lacks a good graphics card or who have a weak internet connection tend to have more problems working in SL. You will need to ensure that some student computers at your institution have an up-to-date SL program installed so that all your students can access SL and complete the required activity. Note that students can often execute a temporary download of the Firestorm program on public or college library computers. Do not expect campus IT to be happy about maintaining SL on student, classroom, and lab computers, but do request this as needed. From time to time, the viewers are updated, and the new version should be installed. Some time after updating, the old versions no longer function.

One frustrating aspect of SL is that only about five different accounts (with avatars) can be created during a day from one college server. In order to have all the students in your class come to a computer lab, create accounts, create avatars, then log into SL and complete an orientation or activity you will need to plan ahead: have the students create their avatars before coming to the computer lab.

Instruction

Many of the ways educators are using VWs to help students and promote learning are discussed in detail later in this manual. As you explore educational regions in SL, look for these different types of activities and become familiar with their strengths and weaknesses. In general, you want to use those educational techniques you are comfortable with, that meet your lesson objectives, and that enhance student learning.

In the past, IT specialists would build a structure on a college or university region in SL and expect professors to send their students to learn by interacting with the build. I visited a university's region in SL just before it was completed and talked to the builder. He had built a lovely greenhouse (image 5.1) but when asked, he had no idea how faculty members or students would use it. Disconnects between the design and building of an activity and the expected users results in very low adoption rates.

Image 5.1 Greenhouse in a region of a university on the SL platform.



A better sequence is just the reverse. Start by determining what you want your students to learn in SL. Then determine the best educational tool in SL to adopt to achieve this educational objective. Next decide what things you need in SL to use this educational tool. These elements are incorporated into the “build.” Do you need an interactive model of something, or an area with posters, or a meeting area with chairs, etc. Finally, obtain and install what you need in order to achieve the learning objective by either purchasing or building the necessary items. In this case, you develop a learning objective appropriate for a VW and then acquire the necessary items to achieve the objective. For a horticulture class, a greenhouse with plants might be

appropriate, but it is then developed as part of a lesson in which you know how you intend that the students will use it.

When interacting with students in SL, rather than voice, use text chat (for avatars within 20 meters) or IM (Instant Messaging for people further away) to the extent possible. This allows students to copy and paste your text into a Word document, so they have a record of what was said. Students can set options in the SL program so that text chat is saved to their computer. Some students will have problems using or hearing SL voice. Using text chat and voice with groups is discussed later in this paper.

One aspect of teaching in a VW is that a region can restart at any time and everyone must leave the region for at least 5 minutes or log out of SL. This can be very disruptive, especially for group activities. You will get a notice 5 minutes before the region closes. So be prepared to inform students what to do: relocate to another region within SL or log off for 5 to 10 minutes. Most regions will restart at a specific day and time each week, and those restarts can be anticipated.

As you diversify in your use of teaching activities, learn to use the slide screens, whiteboards, and web-boards in SL as well as group chat and group voice. When marking on a whiteboard in SL, using a stylus and tablet attached to your computer works well. To load images into VWs, you import them as JPEG files and load them as a texture on a poster board or into the content file of the slide presenter. The Orientation Tower for Educators at the Aloft Nonprofit Commons region covers the use of these items in detail.

When you design an educational activity in SL, consider how you will assess student learning. There are many options for doing this: a few examples are presented here. An activity handout can end with a set of questions for the students to complete. Or, if the students make an object — for example, the glucose molecule activity in the NOVA SL region— have the students take a photo of that object and submit it for a grade. If the students are engaged in role play, see if the students captured the lessons presented to them through an online discussion after the role play.

It is very difficult to ensure that students do the work themselves in a VW unless your avatar is there with them. For any activity where the students are working independently in a VW, be aware of this issue. You can have the students send you a photo of their avatar at the site, so you know they were at least in the right location. You can also use a visitor counter to determine how long the student was in the region. If the student submits completed questions for an activity that takes most people 30 minutes, but the student was only in the region for 2 minutes, you know that student copied the answers from another student and only took a photo to submit.

As often as is reasonable, use both formal and informal means to evaluate the educational value of the activities and then modify the activities to improve the educational experience. I have found about 10% of student feedback is useful and use this information to modify the handouts and builds in the NOVA SL region.

Land

It costs money to have and maintain an area in SL. When you are on a region or parcel be aware that someone is paying Linden Labs either monthly or annually to use that area. So far (2020), Linden Labs provides an educational discount on the annual fee for a region. From 2012 to 2018, with the educational discount, the cost for the NOVA region 256 meters by 256 meters and 20,000 prims was \$1,770/year, which was half the regular annual fee. In 2019 the discount increased, and NOVA paid \$1,250 per year. Currently, the discount is even greater and education institutions pay \$99/month or \$1,188 a year.

Prims is short for the primitive objects that are the building blocks of the built environment. Objects and scripts use a certain number of prims. Right clicking on an object and selecting edit will show you the prim count for that object.

When many college and university campuses closed in SL in early 2012, educators moved to Open Sim (OS) or Kitely, which are significantly cheaper. In 2012, they were not as robust as SL, but they have greatly improved in the last few years.

When your institution has a space in SL, it is easy to bring students there for educational activities. When your institution does not have a space in SL, you must work within your network of friends in SL to see who has a space you can use or rent. Provided the area you need is not large and the number of prims you will be placing there is small, many people are willing to let you use a part of their space free of charge.

Building

When you visit a region in SL, realize that everything you see there (buildings and other structures, educational activities, equipment, plants, animals, etc.) was built by someone and added to the region for a reason. Linden Labs provides only a bare piece of “land”. Many of these items can be purchased at stores in SL or on line at the SL MarketPlace website from the people who built them. To purchase things in SL you use Linden dollars (L\$). You can set up your avatar account to purchase L\$ using a

credit card or a PayPal account. The exchange rate varies over time, but is typically about 260 L\$ to one US dollar.

When shopping, notice that most objects you look at have information about copying, modifying, and transferring. Copying allows you to make exact copies of the object. Say you buy a chair for a meeting area but need 5 more chairs. Copy allows you to make five extra copies of the chair you bought. Modify allows you to change the object you bought. With the example of the chair, you might want to change the color of the chair. Modify allows you to do this. Transfer allows you to give the object to someone else. The best situation is when the object is Copy, Modify, and Transfer, but at a minimum make sure the things you are buying for your program in SL are Copy and Modify.

When you buy things at a store in SL, the object is put into the Recent Items folder in your inventory. To get the object, open inventory, select the Recent Items tab at the top of the inventory window, and look in the object folder. Most objects today are mesh, and you need to use your mouse to drag these from inventory to the floor. If it is not mesh, you can “add” the item to your avatar, then right click on it and select drop to put it on the floor. If the item contains multiple parts, like clothing, it often comes in a box or bag. Once the bag is on the floor, right click on it and select “open” from the menu. You will see a list of the items in the bag and at the bottom of this list, click on “save to inventory”. Then all these items will be in a folder, in the recent subfolder of your inventory. They are also in the inventory sub-folder in your inventory. It is a good idea to save them to a folder in your inventory before you log out. For example, the chair you purchased can be saved to a furniture folder under objects or if you purchased shoes, save it to a shoe folder under clothes in your inventory. Then it is easy to find it again later.

When you buy things on SecondLife Marketplace (referred to as MP), you have to enter your avatar name and password and the object is sent to your inventory. It will appear in a Received Items subfolder at the bottom of the inventory window. You move it out of inventory the same way you would an item purchased in a store.

Building is both a skill and art and it takes time to learn. There are regions such as the Builders Brewery and Happy Hippo that have displays and classes. Oxbridge also offers classes in their orientation area. Expect to learn the basics of building over your first year. You can also hire people to build to your specifications.

You will need permission to build on a region in SL. You can get this by renting the land or belonging to a group that has building permissions on that region.

Sandboxes are small areas on a region where anyone can build an object temporarily. If you do not take this object to your inventory or delete it, the object is returned to you after a few hours and put in the lost and found folder in your inventory. The Caledon Oxbridge region has a nice sandbox.

There is usually no need to duplicate activities others have already built in SL. You can ask the region owner to let your students visit those sites. You should treat those activities the same as the ones on your own area in terms of how students are expected to behave, use them and be assessed.

The Different ways to use VWs with Students

Once you have visited several educational regions in SL, have developed some contacts with other educators active in SL, and have mastered the basic skills needed to function in SL, you are ready to bring in your students in ways that integrate into your curriculum and enhance student learning. Most educators new to VWs have little understanding of the numerous ways VWs can be used to enhance learning. For example, I came into SL thinking I would use this platform to lecture to my students during days the campus closed due to snow. Unfortunately, lecturing in SL proved impractical for me. By visiting various education regions and networking widely, however, I was able to identify more suitable — for me — ways to use SL to help my students learn. Most of the activities described below have been used by professors in the NOVA region on the SL platform. As you examine the different activities discussed below, consider which ones might help you better achieve your teaching objectives.

With several of these activities the professor must talk to students in the virtual world. There are three ways that a professor can communicate with a student: nearby chat, instant message (IM), or voice. Nearby or text chat can be read by anyone within 20 meters of the speaker and works well with a small group, such as in office hours or a review session. The advantage to students of using text chat is that they can copy the text and paste into a Word document to later review the questions, your answers and any group discussion. It is possible to increase the range of text chat using chat extenders. IM (often referred to as private chat) is generally between two avatars and has no distance limits. You can use this to help individual students when they have a problem in SL and you think privacy would be helpful to them. You can also use IM to help a student who is further than 20 meters away, such as someone wandering the region trying to find the office hour or review area. IM text can also be copied and pasted into a Word document. With voice, depending on the set up of a region, an avatar talks to other avatars within a defined range. Voice is usually used for presentations where the presenter uses voice and audience members ask questions or make comments in text chat. Often students have problems hearing voice transmissions because of computer issues or being in a noisy environment. When students use voice, they need to turn it off when finished talking or background noises and typing sounds will be a distraction to others. Obviously, students cannot copy the voice information into a Word document, but you might use a voice to text service to produce a transcript. As a general rule, I use text chat when working with students. If everyone you are talking to is in an SL group, you can also use group chat or group voice to address all of them at once.

1. Office hours

Holding office hours in a virtual world is one of the easiest ways to start interacting with students. Other than sitting in a chair, no movement or manipulation of objects is required of the students or instructor. Office hours are ‘drop-in’ and the number of participating students varies. They come to a set location, designated as “the office” on the virtual campus, during a given period of time. These office hours can be held concurrently with on campus office hours or held separately, often during evening hours. They offer a more personal and interactive way for an online instructor to meet with students than exchanging emails. In my experience, the easiest office set ups for students to access and use are outside in a pleasing landscape with about five chairs (image 6.1 below). Often more students come to a virtual office than to a real office because they can come from off-campus, it is less intimidating, and they have a written record of what is said. During the first two weeks of the semester, I award (grade) points to students for visiting me in SL during office hours, to encourage them to get into SL and to show up and chat (text) about their experiences and concerns.

Image 6.1 Students visiting during office hours



2. One-on-one student consultations

One and only one student comes at an appointed time to meet with their professor. As an example, one-on-one consultations have been used at NOVA for an online writing class where the professor met with each student separately to discuss their writing (image 6.2).

Image 6.2 Professor (left) and student (right) in consultation.



3. Review sessions

With this method, a group of students comes to the virtual campus at a given time to meet with their professor to review content for a pending exam (image 6.3). This review option is particularly useful when a scheduled exam review has to be cancelled due to a college closure. Depending on the number of students attending, the review can be held in the office hour area or in a virtual classroom (as in image). Because the review is being held outside of the scheduled lecture period, some students will not be able to attend. Holding the review around 9 pm local time tends to allow more students to be there.

Consider how best to manage the review session beforehand. The professor can rotate the questions among students but should plan to adjust as some students come late and insert themselves into the rotation. If there are many students, you can save time by having students type their questions in text chat beforehand but not send them until it is their turn to ask a question. This avoids everyone having to wait while each student types their question. Students with multiple questions can have them ready to paste from a text document.

Image 6.3 Review session in a virtual classroom



4. Lectures to a group of geographically scattered people

In general, lecturing in virtual worlds should only be used when the students are geographically scattered and cannot attend the lecture in a real classroom. A lecture in a virtual world lacks the student – professor interactions of a real lecture that come from body language and facial expresses. In addition, bringing a large group of students together in a virtual world at a given time is fraught with problems. When there are many people in one location in a virtual world the computers often experience lag and react slowly. To reduce lag, be sure to have your students sit their avatars on some object. You can also expect that some students will not be able to hear the lecture in voice or that some students will crash out of the Second Life program. One way to avoid voice problems is to use Zoom, ICE, or other platforms for sound while teaching in SL. However, it takes some experience in SL before you can easily use these. New avatars have the default sleep settings and appear to have fallen asleep after 5 minutes of inaction, thus you end up talking to a group of sleeping students (image 6.4).

When students or members of a group cannot be co-located, a virtual classroom offers a tool to present material in a lecture format. The professor can talk in voice, but everyone else should have their voice off to avoid distracting noises. It is best if the voice presentation is augmented with pre-prepared entries in text chat so attendees with sound problems can still participate. Questions or comments from the students will come in text chat. Talking, pasting text into chat, and reading comments in chat at first feels like a juggling act. But with practice, one can get comfortable with it. It's helpful if students begin their question with the word QUESTION in caps.

Lecturing in a virtual world requires a classroom that is easy to access and has chairs that are easy to sit in. Slide presenters, whiteboards, and web screens are all available in Second Life as tools to augment the lecture. Information on how to use these tools in SL is available at the Orientation Tower for Educators. Other tools available at the Orientation Tower include a Vote Master, allowing students to vote on a topic and an Evaluation Tool used to give survey questions to a class.

This format is also used for giving presentations to groups in SL at meetings, workshops, and conferences. Addressing a group of people experienced in SL is easier as they are more proficient.

Image 6.4 Lecturing at a university region in SL



5. Interactive activities for students

With this method, students interact — independently or in small groups — with one or more objects in a virtual environment and gather information by collecting data, studying structures, observing changes occurring in objects, reading text in notecards or viewing images (image 6.5). I find it very helpful to provide each student with a handout containing detailed directions on how to access and interact with the objects. Handouts seem to work better when they have concise instructions in short, spaced paragraphs and when numerous images are inserted. Using the information learned from interacting with the objects, the students should then be able to complete a series of questions found at the end of the handout and send the answered questions via email or a Learning Management System (LMS) (such as Blackboard or Canvas) to their professor for a grade. Each student also takes a photo of their avatar at the site to demonstrate that they have at least visited.

At NOVA we have used interactive activities in several ways. Some professors assign activities as part of their class and students submit the questions for a grade. Many of the activities are similar to our biology labs and can be used as a makeup lab when labs are cancelled. We currently have 19 different interactive activities on the virtual campus.

Image 6.5 Student completing a macromolecule interactive activity



6. Models

Models allow students to explore a structure. The example in image 6.6 is of an ear. The small yellow squares are about half the size of a typical avatar giving you some feel for the size of the model. Students can also explore historical sites (e.g. Paris 1920) or historical structures (e.g. the Globe Theater in London). Assessing learning from models needs to be carefully considered. The human organ models at NOVA have numbers on their different parts and students match the numbers to the part names in a table in the handout. Students could be given a series of questions concerning their observations of a historical structure. Visual learners find exploring a large 3D model an effective way to learn.

7. Displays

Displays can be panels or slide screens where students come and read the panels or slides (image 6.7). These have been used at NOVA to help prepare students for quizzes in the health sciences. One slide can pose a question providing multiple choice answers with the next slide providing the correct answer. The professor could distribute these slides in a PowerPoint file, however, the 14 stations at NOVA each with up to 10 slide boards provides an easy way for students to access and study this large amount of information.

Image 6.6 A human ear model.

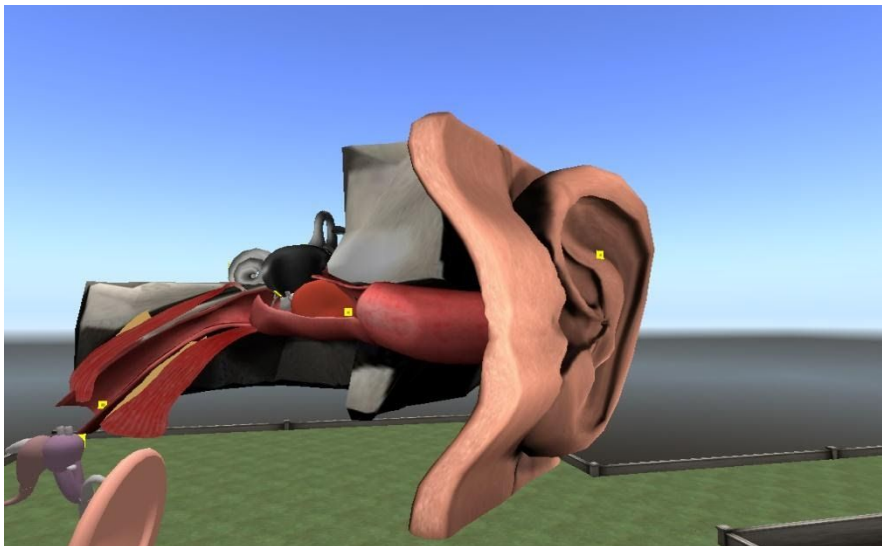
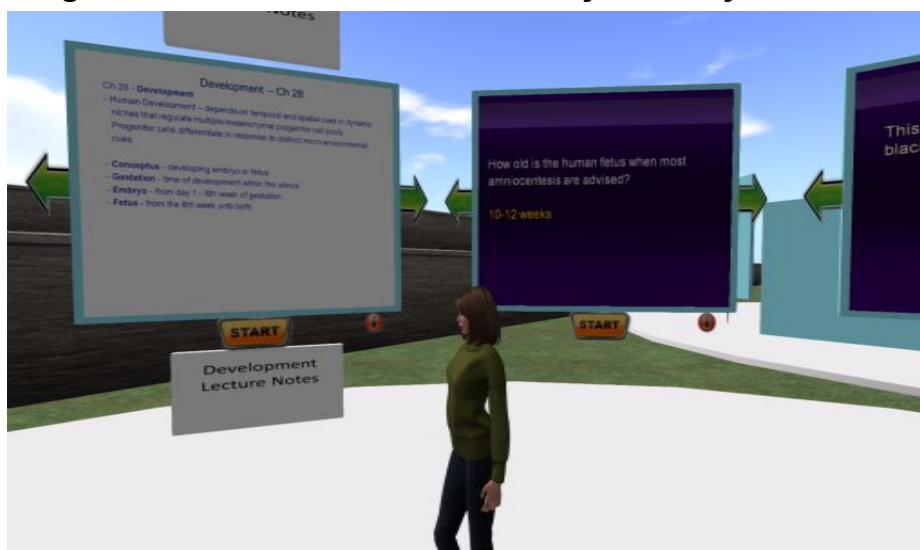


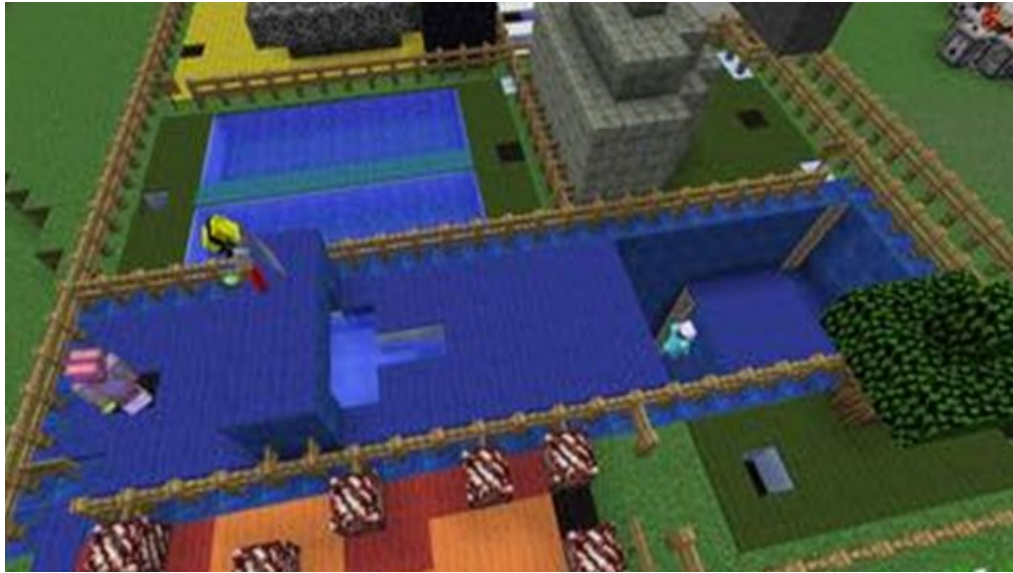
Image 6.7 Slides screens used to study anatomy.



8. Student designs and builds

Students who have basic building skills in the virtual world can design and create an object or scene. If the students also have basic coding skills, they can script these objects to perform different actions. I have seen this used in a stage design class for theater, but this can also be a useful tool in architecture, engineering, and computer science classes. Basic building skills are also used when students move existing objects around to build a larger object. For example, at NOVA they move virtual atoms around to create a glucose molecule. A tutorial covering the required building and scripting skills should be provided to the students. At NOVA the students can access a YouTube video that covers the required building skills. In addition, children in the primary and middle schools find this an exciting activity in virtual worlds such as Minecraft, as shown in the image 6.8, or on secure grids in Open Sim, such as BIO4KIDS.

Image 6.8 A park designed in Minecraft.



9. Role play scenarios

This method is used where skills and understanding are acquired by engaging in a simulated real-life activity. It is primarily used for training in the health sciences and legal fields. The professor presents a different written scenario to each of two or more students who then assume different roles. For example, one student can be a new patient with some personal issues at a medical clinic and the other student is a clinic employee trying to determine the patient's health history, or two teams of law students can be negotiating a difficult divorce case. The professor can be present and provide prompts to keep the discussion going. Alternatively, the students can conduct the role play without the professor and provide a copy of their text chat to their professor for assessment. Role play is enhanced when it is conducted in an appropriate virtual environment, such as a virtual medical clinic (image 6.9) or law office.

Image 6.9 NOVA student at a medical clinic



10. Art Education

There are several ways that an art class can use VWs. Student art can be displayed in an art gallery. In this case, a digital image is made of the student art, saved as a JPEG file and imported into the VW as a texture. In the case of 2 dimensional works, a thin, rectangular prim is created, and the texture applied to one surface of the prim. This works well for an art class where students are creating drawings or paintings. Image 6.10 is of the student art gallery in the NOVA region in SL.

Image 6.10 Art gallery in the NOVA region



There are a variety of art museums in SL. Students in an art history class can visit a museum and view examples of different periods of art, types of art, or the works of specific artists. The instructor can select specific art pieces for the students to focus on and might assign the writing of information pieces to accompany the art. Two examples are provided below: a recreation of the Orsay in Paris (image 6.11) and a Japanese art museum (image 6.12).

Image 6.11 The Orsay Art Museum in the Paris region of SL



Image 6.12 Japanese art museum at Japanese House in SL



11. Language training

VWs offer interesting platforms for language classes. A professor can have native English speakers studying a foreign language meet in a virtual world with students who are both native speakers of the foreign language and who are studying English (image 6.13). At NOVA, students in China studying English met with students in the United States studying Chinese. The students address given questions in text chat for a set amount of time in the foreign language and an equal amount of time in English. Then the students can move to an unstructured conversation using voice and/or text. The text chat is copied and sent to their instructors for assessment. This requires coordination between the professors in both countries as well as a location on the virtual campus where the students can conveniently meet.

Groups of students chatting and talking must be at least 20 meters apart (or share a group) to avoid text and voice interference. Chairs and other objects can be arranged to indicate an area of shared chat range. The students can also collaborate on slide presentations for other students from both classes. One issue we encountered at NOVA is that students in other countries can have difficulties accessing the VW program or accessing the internet during evening hours.

Image 6.13 Chinese language student area at NOVA.



Another way VWs are used to enhance language training is to have students use the language to engage in common activities in a virtual re-creation of an appropriate community setting using that language. For example, students studying Chinese can move around a virtual Chinese community and try to order food in a restaurant (image 6.14), rent an apartment, buy a train ticket, etc. Considerable building and scripting skills are required to create such an environment. Monash University in Australia, which has a number of SL regions, uses these methods very effectively for Chinese instruction and to prepare students for study abroad trips to China.

Image 6.14 The restaurant at Monash University's Chinese Island.



12. Student presentations – posters / slides

With this method, students develop a poster (image 6.15) or a slide presentation on a topic they have independently studied. The instructor can adopt a conference poster session format and have the students use voice to present their posters to faculty members and students and then answer questions. If there are many student posters, each student can provide a few questions concerning their poster which all the students answer and turn in for a grade. Students are graded on the design of the poster and the material presented.

Image 6.15 Student posters at the NOVA region

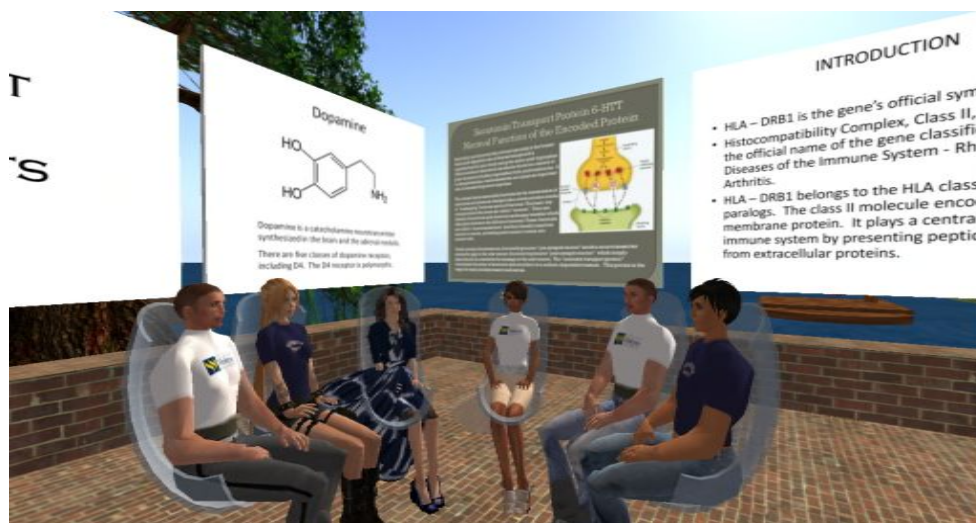


I understand that there are various ways to create images to be imported into SL. When I create a poster in SL, I first have the students prepare their slide in PowerPoint, save it as a JPEG file, and send this file to their instructor. Either the instructor or I upload the JPEG file into SL as a texture. This cost L\$10. This texture is then added to the poster board under textures in the edit mode.

Slide presentations require loading textures into a slide presentation board. The student stands near the slide board and uses voice to give their presentation or text chat if voice is unavailable for any reason. Students and faculty then use text to ask questions. To load slides to a slide board, the slides are saved as JPEG files and imported into SL as textures. Textures are named in a way that reflects their order of viewing, e.g. A., B., C. etc. These textures are added to the content file of the slide presenter in the edit mode. The slide boards allow the student to advance the slides as in a normal slide presentation. This method is used effectively with genetics classes at the Texas Wesleyan University region in SL (image 6.16).

For both posters and slides an area needs to be set aside and a poster board or slide presenter set out for each student. Because it requires region or group building rights to set up the boards and load the images, someone with building rights must set this up.

Image 6.16 Student slide presentations at Genome Island in SL



13. Tours for students and educators

Tours offer students exposure to re-creations of specific environments such as 15th century London, the Grand Canyon, or a virtual medical clinic. Image 6.17 on the page below shows a recreation of the Globe Theater in London where Shakespeare's plays were first performed. This recreation allows an English Literature class to not only read Shakespeare plays, but to explore the theater setting where they were performed.

In addition, tours of campuses or specific educational builds developed by other educators provide engaging and often interesting professional development opportunities for educators active in virtual worlds (image 6.18). Tours can highlight innovative teaching practices developed on your campus. The image on the page below shows an education class from George Mason University touring NOVA's region as part of their education in virtual worlds classes. Teachers in K-12 grades have displayed SL on a large screen and taken their students on a tour of a historical site recreated in SL. The SL Search and Map functions are an easy way to identify possible sites for exploratory field trips. In addition, many of the landmarks at the Cookie region are for interesting historical or natural features and offer excellent tour possibilities.

Image 6.17 The Globe Theater on Renaissance Island



Image 6.18 Education class touring NOVA



14. Educational games and hunts

Interactive games where students must answer questions to proceed further and get small prizes can be a fun way to learn (image 6.19). With hunts, students look for different objects spread around the region and answer questions associated with each object. Objects can be arranged in such a way as to give clues to the location of the next object. Being interactive, games can also be used for assessment of student learning. Building games requires you (or someone you hire) to have good building and scripting skills.

Image 6.19 One item on a hunt on Genome Island



15. Video (machinima) tutorials

Students can make their own short videos (called machinima when recorded in VWs) and share these with the rest of the class. This type of activity could be suitable for an art or photography class. Jing (www.techsmith.com/jing.html) and Obsproject (<https://obsproject.com>) offer free programs for making these videos and offer limited editing capacity. Camtasia is a program that can be purchased and offers many tools for making, modifying and editing videos. A Google search will help you to find videos on how to use these programs. Machinima can be saved as an MP4 and posted on YouTube for students to access.

For more difficult interactive activities it is often useful to make a short video showing students how to complete the activity (image 6.20). As an example, the following URL links to a short machinima explainer.

<http://www.youtube.com/watch?v=VI8ThkvFQMo&feature=related>

Image 6.20 How to make simple molecules.



Further Considerations

There are a few additional considerations to be aware of before bringing your students into SL. These considerations are divided into two themes: students and building.

Students

Your students will have varying degrees of computer skills and invariably some students will have difficulties getting started. Over the years I have improved and expanded the guidance available for students to get them started so that now few NOVA students express difficulties. Getting this correct is important for reducing student frustration with VWs.

At NOVA there now are three levels of guidance and assistance for students getting started in SL. All students receive a handout (posted by their professor in a LMS (such as Blackboard or Canvas) providing detailed instructions on downloading and installing Phoenix Firestorm on their computer, selecting an avatar, logging into SL and getting to the NOVA region. Once at the NOVA region, there is a separate handout for completing each activity. The introductory handout also instructs them to go to the Caledon Oxbridge region for an orientation to SL, covers some of the basic skills they will need to complete activities, and discusses security in SL.

A 25-minute video covering the material in the handout is available on YouTube at https://youtu.be/V_pCMfG8yCM. Between the written materials and the video, most students are able to proceed to the learning activities.

To help students get started, I initially made myself available at the student computer lab for the first week of classes. Over subsequent semesters, I was able to train staff in the student technology lab to carry out this function. Now students move as needed up the levels of assistance from the handout, to the video, to in-person assistance from lab staff. I am only occasionally called upon to help.

I have found that encouraging students to complete an orientation when they first enter SL greatly improves the speed with which they learn to use the platform and so reduces their frustration with working in a VW. There are many good orientations in SL and so no need for you to duplicate this function. As I do for instructors, I suggest students visit Caledon Oxbridge and my handout tells them how to get to that region. But the orientation at Oxbridge is more comprehensive than students need and so I tell them which parts to be sure to complete. Rockcliffe University also has a great orientation in its Gateway region. The orientation at Virtual Ability region is fun for students as well, with lots of good activities as people walk through a water garden and

other areas. Visit these different orientation sites in SL and select one appropriate for your students.

While a few of the possible activities discussed above (such as reviews or poster presentations) are for students to do in a group, most of the activities can be done by students on their own. I think it is important to allow at least a week for students to complete these activities. This lowers the number of students on the virtual campus at any one time, reducing lag, and allows students more time when or if they have technical problems. Many students, however, will work on the activity at the last minute, complaining they cannot do the assignment if they have technical problems. You should expect this and remind students several times to complete the assignment early and not accept excuses from those students who wait to the last minute and complain of technical issues.

Second Life has a reputation of having erotic material and things unsuitable for an educational institution. When you wish to establish a program some of your administrators might worry that students will encounter erotic or inappropriate material that will disturb or distract them. I have heard of cases where administrators wanted to restrict access to the college region in SL and prohibit the students to visit other regions in SL. At the higher education level, students tend to be adults over 18 years old with access to a lot of erotic material online. I tell them that there are regions in SL that might have material that bothers them and so they leave the NOVA region at their own risk. But I monitor activity in the NOVA region to ensure it is a safe place for students to learn. In my 8 years of managing the NOVA region, I have had to ban only one individual for inappropriate behavior with students, and this was a NOVA student. People not affiliated with NOVA who visit the region tend to avoid students. In my experience, security of the students using your region or parcel is easy to maintain and does not require restricting access to your area or limiting the mobility of students.

In the initial handout given students to help them get started, I compare SL to a city. There are often about 50,000 people from all over the world active in SL at any given time and while most of them are respectful, some will not be. And there are areas where a student might feel uncomfortable. But I tell them that if they stay in the NOVA region, they should not be bothered. I also put code of conduct information in all my handouts. I then ban people who will not stop being disruptive, rude to others, or are consistently inappropriately dressed for the NOVA region. If you do not have permission to ban avatars, ask the region manager to do this for you.

It is possible to restrict the avatars using a region or parcel to those on a list. Some colleges and universities adopt this security measure to keep troublesome visitors off the area. To do this, however, you need to know the names of all the student avatars who will come to the area to complete an assignment and enter those names on

a list of permitted avatars. If you expect several classes to use the campus, I suggest you keep the campus open because most instructors will not be able to provide you their students' avatar names. Also, an open campus allows other educators to visit and promotes networking. The exception is for K-12 programs, which need very secure regions.

One further consideration with students is accessibility to the program by students with special needs. Obviously, students who have difficulties operating a computer because of physical handicaps may not be able to easily participate in activities in VWs. Currently there are available different means to accommodate for the physical disability, such as voice controls, which allow the student to be active in a VW. Commercial voice-to-text (V2T) programs can be expensive and not all special needs students will have access. But V2T accommodations are available in all modern computer operating systems' accessibility features; these are free and work adequately in VWs. If you have a special needs student in your class who cannot operate the Firestorm program, you will need to develop alternative means for them to learn the material.

I was surprised to learn that blind students can function in a VW by using a viewer called Radegast along with their screen reader software. This viewer interfaces with the screen reader so that it verbally provides the name of objects in the VW the student is moving through. For this to work well, the objects you place in your parcel or region should be labeled with the object's name. To do this right click on the object and select edit. The name is on the drop-down window. The default name is "object." Change this name to what the object is, for example "chair." Avoid having multiple objects with the same name; it is more helpful to a blind student for someone to suggest they sit in "chair 4" than that they sit in "any chair," since they cannot tell if a particular chair is occupied.

Building

Building is fun and creative, but the difficult part is translating the build into an accessible educational activity. Avoid spending so much time on building that the educational part is neglected. For difficult builds and scripting, it is possible to use small grants to pay skilled people to create the build. You will still need to design the build and be involved in its development to make sure it meets the educational objectives.

There is no need to duplicate your institution's real campus in SL. Many colleges and universities spend considerable time and costs to recreate the signature building at

their institution. Some people feel these familiar buildings make SL more welcoming to students, but my experience is that students quickly adapt to an open build format. Also, these buildings were seldom used for educational purposes because it is difficult for people new to VWs to enter and move around inside these buildings. SL allows the built environment to be much more creative and accessible, reducing student frustration.

When building structures, I favor open and roomy structures rather than enclosed and confining ones. This is in part a personal preference; but I have found that people new to SL function much better in open roomy spaces. Outdoor offices such as a deck or beach with a few chairs provides students with easy access and avoids crowding. Make walkways and stairs wide and have doors automatically open as one approaches. Unless necessary, it is better to even avoid doors on buildings. Navigating pathways and opening doors are frequent and frustrating problems for people new to SL.

When students are expected to sit, select seats/chairs/cushions that are very easy to sit in. Avoid seating that can put students sideways or backwards. If it is possible to mess up sitting, students will, which can be frustrating for them. Test and adjust your seating cushions before students come to make sure when they sit, they are facing the correct direction.

If you plan a student activity in a forest environment, make the trees phantom so that people can walk through them. This makes it much easier for people new to SL to navigate in a forest. To do this, for each tree go in the edit mode, then under general, select Phantom.

To avoid text chat and voice interference, keep meeting areas and faculty offices at least 25 meters apart. In the black line on the top of your page you will see three numbers e.g. (266, 45, 22). These represent your location in meters within a grid. The first number is your north-south location, the second number is your east-west location, and the third number is your height. These numbers change as you move and you can use them to determine the distance in meters between objects. If you are the region manager, you can create small parcels in the region and have voice and chat restricted to each parcel.

Once your campus has several activities and different areas, a menu driven teleporter makes it easy for students to move to the desired activity or location. It is amazing how lost students can get. These teleporters are available online in SL Marketplace.

Provide a pleasing landscape to the campus or area you are using, make it visually and acoustically appealing. Consider lighting for night and other light conditions. You can also add a few fun things to your campus: balloon rides, boats, dance balls, animals, nature sounds, etc. to make it more entertaining for students, thereby

increasing the likelihood they will be more engaged. Plants and other landscaping items are available for purchase in SL Marketplace.

If no one is using your region or campus in SL you can expect random people to build on the campus, usually high in the sky. Once you do start to use the campus, you need to find these builds and return the prims. It is a good idea to check your sky up to 4,000 m every few months and return things that should not be there. To avoid this problem, make your land settings so visitors and students can only build in sandboxes and cannot move things out of the sandbox.

Designing Activities for Students

Now you are ready to develop an educational activity in SL and to bring in your students. Before ever rezzing a prim, I suggest you consider the following.

1. The education activities need to be designed appropriately for skills and resources. What are your expectations of the skills and resources of the students?

How knowledgeable on the topic do you expect them to be?

How proficient with computers do you expect them to be?

What quality of computers will they have access to?

Do they have adequate bandwidth?

2. What experience do your students have with Virtual Worlds (which may include multiplayer video games)?

How proficient in VWs are they? For example, are they familiar with video games that include avatars operated by other players?

Do they need support to get started in the VW

How will you know if problems with the educational activities indicate design improvements or training needs.

How will you know if the landscape and building design are appropriate to your educational goals?

How will you measure engagement, interest, and enjoyment?

3. What understandings, knowledge, or skills do you want them to acquire?

Can you list each of these as a concise statement?

4. What builds and scripts are necessary for students to learn this information?

Focus on reducing frustration and making it fun.

Get comments from the people you expect to use it (beta testing). Have them test the notecards, handouts, assessment tools, builds, and interactions with objects

Make builds and landscaping visually and acoustically pleasing

5. How will you assess if the target audience learned the desired information?

Use these assessments to improve the activity.

If assessment is voluntary, then make assessment fun, a game, or challenge to increase the response rate. Track your response rate.

6. How will you collect and aggregate the information collected on use and learning?

Use this information to monitor the program's growth and development, to promote the program within your institution and to solicit grants.

As you develop your educational activities there are a few additional considerations to keep in mind. The most important is to accept that the design of these activities is a work in progress. It is an iterative process where you design, build, monitor, evaluate, and redesign. So, when your educational activities are not giving the desired results, determine why and redesign the activity. For example, if you find that the activity requires students to have a level of skill in VWs that few will have, redesign for a lower level of VW skill or increase required activities to increase specific proficiencies. This requires that you remain flexible with the vision for the activity. Rather than a specific design, it is the educational experience and learning that is important.

When providing handouts for activities, make them available on the virtual campus as a notecard, so visitors can also do the activities. I find some high schools and universities that are active in SL send students to the NOVA region to complete specific activities. Tables in handouts are hard to save in notecards. A better method is for data in tables to be saved online in a wiki or other program and the URL provided in a notecard available on the virtual campus.

When working with a group (students or visitors), create and put everyone in a SL group and use group voice or group IM to talk to everyone. At NOVA we have the

“NOVA Tour” group for this purpose. Normally, voice and text chat only function up to about 20 meters. Putting everyone in a group allows you to talk to everyone even when they are out of voice and chat range. You can always expect at least a few people in any group to get lost or to wander off.

It is best to avoid bringing more than 15 students to one location at the same time for an activity using voice (sound rather than text). There will always be students with technical difficulties that prohibit them from gaining the full educational value of the activity. In general, anytime you have a group of students in SL, expect some students to crash and be gone for some of the time, or students to have other technical issues with SL such as with accessing voice, moving, sitting, clothing, etc. This is usually the case even for small groups of students. Often when many avatars are in one region, and not sitting on some object, the computer speed slows down (“lag”). All of this results in student frustration with the program. Therefore, holding formal lectures and exams in SL is problematic. Even with experienced users of VW platforms, it’s advisable to begin each session with a technical check-in, i.e. ‘tech-check.’ When testing voice, ask - in text - that students who can hear, type “1” into chat. Then you can identify and assist people who can’t hear. With encouragement, you may find that some students will help others.

To know which students have visited the SL activity, have a visitor counter on the campus. I keep track of who visits over the semester. I download the counter list to an Excel file several times a week. These numbers are important when documenting use of the campus. People who visit once for less than 5 minutes are probably not students. You will find that several avatars often visit repeatedly for a few seconds. These are bots that check on the status of regions and provide this information to Linden Labs or a group of people who rent parcels in SL.

Program Development

Once you have a semester or two of experience with bringing your students into SL, you might consider encouraging other instructors at your institution to use SL as an educational tool. This is an important aspect of program development. You are growing use from one instructor and a few students (under 50 per semester) using SL to multiple instructors and many students (over 50 per semester). The advantage of doing this is that once SL proves to be a viable educational tool at your institution, your administrators will support it financially. At NOVA, the administration pays the annual tithe to Linden Labs (\$1,188 per year) and provides small grants (under \$3,000) that can be used to improve existing activities and develop new ones. With program development, you are developing an institutional footprint, rather than just an individual footprint.

The move to remote classes during the COVID19 pandemic is highlighting the usefulness of having an established virtual campus. Following NOVA's move to remote class in March 2020, 239 students came into the SL region during the remainder of spring semester to complete course-related activities.

To successfully develop a program in a virtual environment, a higher education institution needs a program manager with dedicated time and the skills and experience required to help faculty develop activities within the VW. This person promotes the program within the institution, interacts with the institution administration, coordinates program updates with the IT staff for classroom and student computers, and networks widely within the educational community actively involved in virtual environments. It is best if this person has an instructional background and has taught classes in a VW.

Anecdotally, it takes about two years of working in SL for a faculty member to feel comfortable and proficient enough to assume the virtual campus management and help other educators become active. In those two years, the person has developed a substantial network within the SL education community, honed their VW skills, learned the basics of building, developed some educational activities, brought their students into SL to complete lessons, and evaluated and improved the student activities. At which point, they are ready to expand and develop the program they initiated so that more faculty and students can benefit from teaching and learning in a virtual environment.

In my experience, fewer than 20 percent of faculty members at an educational institution expressed an interest in exploring the educational potential of virtual worlds, and fewer than 1 percent made the effort to become functional in any of the VW programs. Why do we see these low rates of interest and adoption?

VWs (including VR) are just one of many internet educational tools. There are numerous websites aimed at assisting learning in higher education. Many textbooks now come with web-based support material. So, there are many online tools to choose from. And faculty members have limited time to devote to learning how to navigate and function within these various websites and platforms.

Because it is an immersive program involving the manipulation of an avatar, the learning curve to become comfortable and functional in VWs is steeper than for most web-based educational tools. A person needs at least 20 hours in the VW to feel comfortable and many months of frequent use may be required to become proficient. Faculty with prior experience in VWs or with massive multi-player gaming sites can more quickly become functional in a VW educational environment..

You need to accept that most faculty members at your institution will not obtain an avatar and come into SL and fewer will share your excitement and commitment to teaching in a VW. Therefore, to develop a program you need to design educational activities so that the faculty need only send their students into SL. The students complete the activity and send something to be graded back to their professor. I encourage faculty members to come into SL and review the activity they expect their students to complete, but few do this.

To make it easy for instructors to use SL, for each activity provide a handout for students sufficiently detailed to walk the student through the activity step by step. Instructors need to simply provide this handout to their students and the students can enter SL to complete the activity. Make the student handouts easy to modify by instructors, so they can tailor them to their curriculum needs. My handouts are all open Word documents that are posted to the Department folder in the LMS (Blackboard or Canvas).

As program manager, one well-received and important function I've maintained is to upload images for faculty and their students. There is a cost to do this, but it is low. For example, 100 images cost about four dollars(\$10 per image). The instructor sends you the images as a JPEG file, you adjust the size and load them into SL. There can be more than 20 images for a slide presentation and so it can take some time. Once you have the images, you go into edit mode and load them onto a poster board as a texture or into a slide presenter in the content file.

Another big issue is when to let other instructors build in the region you use.. It is fun to build, and you want to encourage faculty new to the VW to build. But if someone is not careful when building, they can accidentally delete major structures. This has happened at NOVA and it was a major task to get everything restored. To avoid this, have them build in a sandbox first. Once their building skills are developed, you can give them building rights. But when others are building, you need to carefully monitor

the situation in case there are accidents. Usually you will find that you either do most of the building for the other faculty members or use grants to pay a builder.

There have been a few times that the manager of an educational program in Second Life has unexpectedly died and no one could modify or update their builds. To ensure this does not happen, it is a good idea to form a small closed management group with trusted associates and make all the objects in your region or parcel shared by this group. Then these objects can be maintained or modified as needed by any member of the group. All builders in your area need to be in this group and should set their builds to be shared with the group.

A good way to start expanding the program is to look to where there is a need for online instruction at your institution and then see how the SL environment might provide for this. For example, make-up labs for snow-day closures, or ways to make hybrid and online classes more interactive. I found that snow-day closures and the need to offer make-up labs online resulted in many faculty members at my institution using SQL.

As you expand the educational program in SL, try to provide a range of options for instructors, from being active in SL to the opposite extreme of never even having a personal avatar or coming into SL themselves. If you make it easy for them to send students to SL to complete educational activities with assessable outcomes then instructors will use it.

Before building a new activity first think of why and how instructors and students will use it. Try to get the people who you hope will use the educational build to comment on the design. In the early days of SL, many campuses assumed that if they build something nice, instructors will start to use it. This approach resulted in three-dimensional brochures rather than teaching environments.

It is important to foster support from multiple levels within the college or university: president, provost, deans, department chairs, IT. Make sure they are aware of how you are using SL to enhance education and address instructional needs. Promote the program widely in your institution using internal newsletters, workshops, etc.

When providing workshops and professional development opportunities to introduce the SL program to faculty and staff at your institution, rather than getting everyone an avatar and having them visit the virtual campus, focus on how VWs can be useful in education. I only got workshop participants to follow-up after I stressed the use of VWs in education. When they have an avatar and are visiting the campus, they can quickly become overwhelmed with the obvious steep learning curve required to feel comfortable in SL. The sooner they get their own avatar in SL, however, the sooner

they begin to feel a presence in the VW. So make sure before the workshop ends that participants have an avatar and are functioning in the VW.

Have extra avatars you can let people use. I understand you can make only 5 avatars per server address per day. To get around this problem, I have 20 ready to use avatars that I can let people use at SL workshops. Administrators also use them to visit the campus. I can park the avatar where I want the administrators to appear. I have even let students use these avatars when they were experiencing serious problems with their own avatar. Students can also make additional avatars if there are problems with their initial one or they forget the password.

Once you have students using the campus and a track record of some achievement, look for easily obtained small grants to pay builders to develop new activities or improve existing activities. However, be careful not to rely on grants to pay the annual tithe to Linden Labs. I have seen university programs end when the grant ended because they could not cover the region fee.

Handing off: Planning for Continuity

After years of building and promoting a program of education within a VW, how do you hand this over to others to manage once you retire or leave the institution? Many of the instructors active in VWs are retired now and have faced this problem. Unfortunately, there are few (if any) successful examples to provide guidance. I am currently in the process of handing the management of the NOVA's region over to a team in the distance education program and from this experience I can provide a few guidelines.

You need to start the process early. I started six months before I retired, but in retrospect this seems too short of a time. I would, therefore, suggest you start at least a year before retirement. Make the process as inclusive as possible by getting all the instructors actively using SL in their classes to participate in the planning process. Also involve administrators, especially those who support the region financially. These people need to be aware that a change in management is going to occur and often have helpful suggestions..

In the best scenario, you can identify a full-time instructor at your institution with the interest and required time to develop the VW skills necessary to manage a region. You would then work closely with this person over the year to help them prepare for their new role. If no instructor is available, consider the distance education staff who have experience in developing lessons for online instruction. A person needs considerable experience in VWs to be able to manage a region. Have them shadow you, helping them to develop the understanding and skills they need. Start with the simple things and move up to the more complex. The transfer of management responsibilities is a gradual process with you slowly giving up certain responsibilities and the new manager assuming more responsibilities.

Conclusion

We know that VWs provide a dynamic and interactive educational platform with a collection of tools that, for many students, provide exciting ways to learn. And, we now have a much better idea of how to use VWs to present course material in accessible ways that promote learning. We know how to design educational activities in VWs that reduce instructor and student frustration with the platform. With a little bit of effort to learn the basics of a VW, an instructor can quickly start to incorporate VWs into their curriculum. As their skills and understanding develop, they can start to design interactive builds and activities tailored to the material they teach. As other faculty members at their institution see the value of using VWs as a teaching tool, adoption of VWs expands within the institution and the program grows, receiving institutional funding and support.

This manual is designed to help you get started using VWs with your students and to guide you through these phases of program development. Get ready to start an amazing journey of meeting other educators from around the world, exploring awesome landscapes and creations, and gradually incorporating different aspects of VWs into your teaching toolkit as you prepare your students for the world of tomorrow.

References

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