

Virtual Reality for Art Students: Using Second Life as an Interactive Learning Environment

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Abstract

In general, art students are unwilling to learn programming and engineering aspects in 3D or game design courses. They deem these skills as “difficult” compared to drawing and sketching in art courses. Therefore, the teachers at CIT are developing a virtual reality course using Second Life for art students, in which we emphasize collaborative learning and engagement. The goal is to involve art students in the VR environment with little programming and guide them through the basics of programming with tools provided in Second Life. Since the interfaces of Second Life are visually immediate and direct to art students, they will appreciate the programming skills embedded in the courses. And hopefully this approach will encourage art students to learn more about computer languages.

1. Background

In our department, 90% of the students are from vocational high schools or vocational tracks in high schools, and half of them majored in graphic design. They are not trained in computer programming

before college. Therefore, it is hard for them to get involved at the beginning. To ease their learning programming, the teachers at CIT are developing a virtual reality course using Second Life for art students, in which we emphasize collaborative learning and engagement. The goal is to involve art students in the VR environment with little programming and guide them through the basics of programming with tools provided in Second Life. Since the interfaces of Second Life are visually immediate and direct to art students, they will appreciate the programming skills embedded in the courses.

In the past, the feedbacks of students about the junior class,

“Multimedia Programming, ” showed that the contents are tedious and irrelevant. This makes both the students and teachers frustrated. Also, all programming languages are English, which creates another barrier for our students. The worst case is that one third of the students failed the class.

According to the studies of neuroscience and cognitive psychology, the left and right halves of the brain process information in different ways. People tend to use their dominant side for information processing and subjectively filter out some information. This is why the learning process of our students is biased and they could not handle the subjects related to comprehensive use of the left hemisphere, for example, computer programming. However, learning is enhanced when all of our senses are used. This includes using our less dominate hemisphere. Listed below is the information processing styles that are characteristically used by our right or left brain.

At George Institute of Technology, half of the students failed an introductory computing course from 1999 to 2002. Their approach to solve the problem is to connect the premise of students from different disciplines with programming, so called “context” computing. According to connectivism, this will make linkage among the “nodes” in the brain and enhance learning. Georgia Tech CS1321 teaches the same concepts of computing in four groups with computing in their respective contexts, that is, Colleges of Computing, Engineering,

Liberal Arts, and Management (Guzdial, 2009). Another approach used at Carnegie Mellon University is to teach programming with ALICE, a virtual environment tool developed by Dr. Randy Pausch (Cooper, Dann, and Pausch, 2003). Both approaches improve the class success rate up to 80%.

2. Why Second Life?

In our class, collaboration is one of the key features. Second Life provides instant message and voice communication functions for students and teachers to work together after class. And it is very convenient for part-time students at night, because they do not have to rush to school after work all the time, and can just login at home or office to join the class.

For this selective course in the junior year, we try to involve art students in this virtual reality environment with little programming and guide them through the basics of programming, like loop and logical process. In such set-ups, we could encourage students to learn computer programming and success in the multimedia programming course, for example, javascript or Action Script. If they are still not capable of creating codes, at least they can understand and modify other's codes.

2. Examples of Collaboration

Students were involved in several projects during the semester. Some are listed below to propose how Second Life can be utilized as a platform for teaching and learning.

3.1 PLAY Center

In Second Life, the land was purchased for education purpose and mainly for the classes of our department. To comply with this goal, the major facilities built were Second Life orientation boards, Sandbox,

show room and PLAY center. They were mimicking our facility in reality and also including department office, meeting rooms, and auditorium. Videos or slides can be played in the auditorium. Teachers can also make roll calls there to record student's presence as part of the grade.



Figure 1. PLAY Center

3.2 Community Empowerment Project

To improve the image and look of the community around Chihlee Institute of Technology, Taipei County Government in March asked the Institute to propose a community empowerment project in 10 days. Traditional method is mainly hand-drawn pictures. The point of view is subjective according to the architect or builder, and the presentation is 2D and lacks details.

Even though the digital methods are utilized in recent years for a better communication, such as 3D modeling and animation using Google Sketchup® or Autodesk Revit®, the iterative process is the same. The advantage of using 3D tools is to speed up the response to the changes of planning. However, the rendered results are lacking in interaction and the camera viewpoint is controlled by the designer, not the viewer.

With Second Life, professionals from various disciplines can enter the virtual world from different locations and discuss online at the same time, or even build the virtual world together. This synchronous collaboration will cut the time of the iterative process of community empowerment among different groups, which reduces the lags of delivering ideas or opinions among the stakeholders. In this trial, one demo reel was made for government review.

3.3 Electronic Books

Students were asked to make this picture book for those who are new to Second Life and want to learn the basic operation quickly. Students have shown their creativity and brilliant ideas for the comic-like guide book. They could implement what they have learned from creative thinking, story board techniques, and graphic design.

3.4 Commercial Film

Machinima is a new filmmaking technique within a real-time, 3D virtual environment, and Second Life is good for this kind of production. Unfortunately, it is difficult to guide the other members online to just move their avatars in the virtual world at the camera angle according to the story board written by the director. The team was called to come over to computer lab and finish the short film in real life.



Figure 2. Electronic guide book

4. Programming

An in-class practice incorporated with Model-view-controller design pattern and a context that students are familiar with. At first, they had to design an object in the Sandbox area. Once the object was touched, its color changes. To make the practice more complicated, students were asked to put two actions on a single object using IM chat channel as command input. One command was entered to change the color. The other was entered to reset the color. Two "IF" statements are applied. In this practice, students could learn that the parenthesis of statement IF must be in pairs, also the basic debug technique in Linden Script.

The result of this practice was promising-84% of the students could achieve the goal with or without the teacher's help. The remaining students could not finish in time and had difficulties.



Figure 3. Students were practicing in the Sandbox

5. Conclusions and Suggestions

There are several things learned through this class. First, programming is more difficult for our students, because computer languages are all in English. As a second language, they have to learn English first and understand what the error message means. This is the main barrier before them. About collaboration, even though there were some students dominant in some groups, team work performed well for a small group of 3-4 people. The students with superior capability could be offered more duty to help others. This might ease the tension among members in a group. The other minor effects were that some students felt dizzy while using Second Life, probably due to visual effects, and rendering speed was reduced when there were too many students online in Second Life. At the bright side, we found that once students were engaged, they could improve dramatically. For example,

one student's English is getting better and able to communicate with foreigners using IM, because he wanted to learn some new techniques in Second Life and he was willing to learn how to communicate with his friends from all over the world. Another student now can modify other people's codes and demonstrate complicated action/animation to others. In conclusion, the benefits of using Second Life as a teaching platform for our class surpassed the deficiencies.

References

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