Abstract

According to the *Handbook of Science and Technology Studies*\(^1\), “Computers are arguably among the half-dozen most important post-WWII technologies, an impressive list which might include television, jet aircraft, satellites, missiles, atomic weapons, and genetic engineering.” Since WWII, men have found tens of thousands of uses for computers, ranging from military to medical, entertainment to education. Many schools and institutions are now using online methods for education, mainly foreign language courses.\(^2\) This also calls for students to study computers so that the technology can expand. Unfortunately, many students tend to give up on learning about computers because of the difficulty of a programming language. I plan to create an object in Second Life that can quickly give help and hints to students when they need them.

Keywords: Second Life, programming, wizard, virtual, education

Second Life\(^3\) is an online virtual world where players can do literally anything. Players create an avatar that they can edit to look any way they want to navigate the virtual world and interact with other players. A number of teachers and learning institutions use Second Life (SL) to teach different subjects in a new and friendly environment. Recently, a university in Portugal\(^4\) used the online virtual world Second Life for Problem Based Learning in Computer Science Programming.

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1 Edwards, Paul N. "From “Impact” to Social Process: Computers in Society and Culture." *Handbook of Science and Technology Studies*


3 Costa, Dan. "Second Life." *PC Magazine*

4 Esteves, Micaela, Benjamin Fonseca, Leonel Morgado, and Paulo Martins. "Using Second Life for Problem Based Learning in Computer Science Programming." *Journal of*
Life to make teaching programming to college students easier and more enjoyable. A problem was that teacher had some difficulty responding to every student’s questions in a timely manner.

A number of students have trouble with learning programming due to lack of motivation, or being able to apply abstract concepts of programming to real life situations. As such, most students see programming as a more theoretical subject, reading about it instead of actually practicing it. Another major problem is that there isn’t a set programming language made specifically for teaching novice programmers. Most languages, like C++ or Ruby, are designed with professional programmers in mind.

The research will involve the use of a wizard that can answer the more common problems that students have when working on a project. It can make it easier for teachers to multiple priorities at once; by letting the wizard handle the smaller problems, teachers are free to handle bigger problems.

Many different programs use wizards to help users with their work. The programs of Microsoft Office are a major example of wizard use. The main idea is the Answer Wizard that has been featured in Microsoft Word for some time. Remember the little paperclip?5 The wizard in SL will work using the same basic principle.

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For programming SL uses its own language called Linden Scripting Language (LSL), named after Linden Labs, founded by Phillip Rosedale. The language uses syntax similar to C, with code mainly designed for physics, automation, and communication. It can be a useful tool in learning to program because it works in a similar way to most major languages.

Each script has its own state machine: Program flow is sequential but structured by triggering events and responding to them (through either environment interactions or programmatic components), in addition to common methods from imperative/procedural programming, such as procedures and flow-control primitives. The programmer defines the states of each state-machine and how/when to switch state. The language’s programming libraries include functions for communication with external servers: sending and receiving email, XML-RPC, and HTTP requests and responses.

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Writing the program was fairly simple, as a number of groups give help with writing programs. A number of note cards were written for use with the program. Note cards are text files in SL that players use to give instructions or notes on certain things. The program will give a dialog box when clicked, the box will have a list of topics to give help with, when the choice is clicked, and the object will give the player the corresponding note card.

In a research project, a group from the Polytechnic Institute of Leiria and the University of Trás-os-Montes e Alto Douro, both in Portugal, decided to use SL to create
an easier way for students to learn programming. In Figure 1, two players are sharing a scripted object in a SL programming class. A drawback to this method was that students kept on tripping over each other in trying to communicate with the teacher.

Figure: Two avatars sharing an object

Most of the time, when a student has to learn programming, he or she usually ends up self-teaching. This can be a double-edged sword.

Teaching oneself involves more than just reading a book and playing around, sometimes it involves taking time to investigate the parts that don’t immediately make sense. (Note that those steps are the shortest, simplest path from confusion to understanding; it might take someone more work than that, but the fact remains that there is a simple and reasonable path to understanding and that it isn’t particularly hard to find.) If one does not know how to learn on one’s own, self-teaching is the wrong choice…

—Gregory, *The Magic in the Box*[^7]

Another main problem is that students tend to have trouble just listening to a teacher instead of actually working on a script. Most classes end up being just theoretical with any practical sessions being done by students in their free time. When learning a language, most people are unsure what language will be needed for their chosen profession.

This research can overcome these problems. The wizard will be right where the user needs it so that they can access it whenever they need to. It will also be able to

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[^6]: Taken from "Using Second Life for Problem Based Learning in Computer Science Programming." *Journal of Virtual Worlds Research*

inform a teacher if the student cannot find what they need from the wizard. The wizard will contain note cards that have the basic information concerning most programming syntax, as well as ways to better understand programming.
When I started designing the wizard, I had in mind a little object that would float above the user’s shoulder, and when it was clicked, it would ask what the user needed help with. Figure 2 shows the basic layout of the script and the object. A script in LSL involves using states. States are similar to classes, with default being the same as the main class. The state will contain functions that execute upon certain events. In Figure 3, the state default has three functions: on_rez, touch_start, and listen. The functions on_rez means that it will execute when the object is rezzed. Rezzing an object in SL means to materialize it. In this case, when the object appears on the character’s shoulder, it will greet him. Touch_start means that the function starts when the object has been touched, or clicked. It will open up a dialog that asks what note card to pull out, and then it does so. An example of the dialog box is shown in Figure 4. The listen function contains the bulk of the code; when a choice is clicked in the dialog, it is the same as saying something on a specific channel. In SL, you can have private chats by using different channels, but they are mostly used for scripts like this. The object listens for the user’s message sent by the dialog, and then it gives out a note card depending on the choice. The code for choosing each card uses a simple if else statement. Creating the actual object was the simplest part. In Figure 5, it shows the basic window used to create an object. Since it didn’t matter what the object looked at that point, I chose a simple sphere. Figure 6 shows the contents of the object. For the object to give out the note cards, it has to have them in itself. Objects can carry other objects, note cards, clothing, body parts, scripts, images, textures, landmarks, animations, gestures, calling cards, and sounds. For this object, I wrote six note cards with information about assignment and comparison.
operators, math and logic operators, for loop, while loop, if else statements, and types of variables, along with examples of each in every note card.

Figure : The basic layout of the script and object.

Figure : Script

Figure : Dialog Box

Figure : The object

Figure : The note cards


