

Using virtual environments for synchronous online courses

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Framework

The dominant paradigm for online instruction focuses on asynchronous activity (where users communicate at different times, such as electronic mail or recorded videos), whether traditional online courses, such as described by Russell and Curtis (2013), or massive online open courses (MOOC), such as described by Rodriguez (2012). However, little research focuses on courses centered on synchronous online education technologies (where users communicate during the same time period). Synchronous communication technologies offer potentially superior options in online education settings compared to asynchronous communication technologies. Media richness theory argues that media offering more non-textual cues and the possibility for immediate feedback are more effective for communication, particularly in situations where ambiguity or confusion are more likely (Daft, Lengel, & Trevino, 1987; Rice, 1992; Schmitz & Fulk, 1991; Trevino, Lengel, & Daft, 1987; and Zmud, Lind, & Young, 1990). As educational environments offer hold potential for ambiguity and confusion, it is likely that course formats offering richer communication could improve learning. Richer media also can increase the presence of an online instructor. Student perception of the social presence of an instructor has been found to be highly influential to the success of online courses (Hodges & Cowan, 2012).

This article describes how teachers can use virtual environments to teach synchronous online classes. Virtual online environments offer a potential tool for supplying rich, synchronous online communication that comes close to mimicking the traditional classroom environment. Virtual environments feature detailed, 3-D settings within which users, represented by avatars, can explore and interact. While many online virtual environments exist, this paper focuses on one such environment—Second Life—as at the time of this writing, it is free and relatively simple to use. The use of Second Life as an example of an online virtual environment should not be construed as a product endorsement.

Second Life is the most studied virtual environment for education. However, while Second Life has been studied as an online learning tool, its use has not been studied within mostly synchronous online courses. Studies have focused on its use as a tool within traditional face-to-face courses (deNoyelles & Seo, 2012; Mayrath, Traphagan, Heikes, & Trivedi, 2011; Sierra, Gutierrez, & Garzon-Castro, 2012; Sutcliffe & Alrayes, 2012), for use in part online, part face-to-face hybrid courses (Hornik & Thornburg, 2010), or for use as an additional activity for traditional online courses (Mansour, Bennett, & Rude-Parkins, 2009).

Combining virtual environments with other Web 2.0 tools can create a largely synchronous format for online interaction that mimics much of the rich interaction of face-to-face instruction without many of the limitations imposed by geography, allowing students anywhere to take the course.

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Making It Work

There are a variety of requirements and preparations for teaching in virtual environments, including choosing which one to employ. While there are various options available for virtual environments, Second Life was used by the lead author. Owned by Linden labs and started in 2003, Second Life is free to use. To access it, one only needs to visit its website (secondlife.com), create an account, and download and install the viewer software (available for Windows, Mac and Linux operating systems).

Before starting the course, the teacher needs to become familiar with the software to learn how to create an effective course and prepare students. In addition, when entering the course into the university course enrollment system, the instructor needs to make sure the course is clearly described so students understand the nature of the course before they enroll—the virtual environment can surprise students used to traditional online courses, as can the synchronous format. As a synchronous platform, the course needs scheduled days and times to meet. It should also be specified that students need a computer and broadband access, and any other hardware the instructor requires. If audio will be used, computers will need a microphone and speakers or headphones.

The instructor should also talk with campus IT support staff to learn if they will provide help for students. If many of the students in the class live within driving distance of the campus, an optional face-to-face training session before or during the first class period could be helpful, particularly if students have access to computers during the training session, such as in a computer lab or through their own laptops connected to the campus Wi-Fi network.

The instructor also needs to locate virtual locations for students to meet—a variety of public areas suitable for teaching exist, including many created by universities. Instructors can choose spaces ranging from indoor classrooms (Figure 1) to a park by the Eiffel Tower (Figure 2). Users can also pay to create custom spaces. The instructor should also choose a few alternate locations in case the course needs to move during a meeting. To minimize problems during the first class period, it is a good idea to give students practice using the Second Life interface before the initial class, such as a series of introductory tasks to get them to create accounts and acquainted with the virtual environment.

The lead author uses class periods in the virtual environment to conduct discussion of readings, much as one would in a face-to-face classroom. It is important to establish basic rules of classroom etiquette, particularly since many students are new to the environment. The lead author has a rule that only one member of the course at a time has permission to speak using audio. This is because simultaneous speakers using audio can create distortion effects. His students generally interact using text chat windows, thus preventing audio problems. Most students are adept at communicating in this way—given the prevalence of texting in our society, many students are skilled at communicating via brief text messages. The lead author found that this format worked well for discussions; his impression was that some students were more willing to participate in discussions in a virtual environment than in a face-to-face one. Second Life also allows embedded files to be displayed—for example, the instructor could open PowerPoint files and use them as visuals for online lectures and discussions. The rich media environment improved the social presence of both the instructor and of the students, allowing for richer social interaction than many traditional online instruction methods, thus better facilitating relationship building between students and the instructors and students with each other.



Figure 1. An avatar stands in a space in Second Life modeled on a traditional classroom. There are tables and chairs on tiered levels for the students to sit at and an overhead screen at the front for the instructor's use.



Figure 2. An avatar stands in a space in Second Life modeled after Paris circa 1900. The avatar is in a park, and the Eiffel tower and buildings are visible in the background.

There are a few other elements of Second Life instructors need to consider. While many areas of Second Life conform to popular taste, some areas of Second Life contain adult material that might offend some students. One should warn students of this before they start exploring. In addition, anyone can walk into class and begin interacting with students. In some cases this can be disruptive or inappropriate. While one can report inappropriate behavior, this does not immediately eliminate it. It is a good idea, as noted above, for the instructor to prearrange alternate locations for class meetings. In the case of a disruptive visitor, the instructor can tell everyone to teleport (move instantly) to the alternate location. The disruptive user will not know where everyone went and thus will be left behind.

There are other limitations to synchronous online instruction. As the class is vulnerable to technological disruptions, a good backup plan is a must, such as moving the class to a chat room. In addition, students are in front of a computer and may be more tempted to multitask, perhaps by playing games, surfing the Web, watching videos, chatting with friends, etc. In addition, many students participate from home, and during class they can face real world distractions, including unexpected visitors, children, roommates, and pets. This format also prevents students without broadband and suitable computers and hardware from participating, and compared to asynchronous online courses presents less flexibility in scheduling.

While online virtual environments can simulate much of the traditional classroom environment, they benefit by being supplemented by other online tools, such as traditional course management systems, as well as social media such as Facebook, Twitter, and YouTube. In addition, synchronous video communication, such as via Skype or Google+'s video chat feature, can provide additional means of adding a synchronous, social presence to such an online course. The lead author conducts "Skype" office hours and was frequently logged in to many social media channels to communicate with students, thus improving the students' sense of a real person. Furthermore, an instructor can increase connectedness with students by conducting mandatory video conferences—either one-on-one or in small groups. The instructor could do this once during the first few weeks of the semester and could require one or more mandatory follow up conferences during the semester. As the technology changes and becomes more advanced, these strategies can be easily integrated into the digital community and utilized in a seamless way.

Future Implications

Going forward, instructors do not have to forego rich, synchronous interaction when moving from the face-to-face classroom to online instruction; online instructors can use a virtual environment that simulates many of the benefits of the traditional classroom. In addition, instructors can combine the virtual reality synchronous classroom and online asynchronous instruction techniques. Faculty can also use the virtual environment to take classes on virtual "field trips" to virtual recreations of real life places and other environments, thus facilitating learning. For example, students could discuss Roman history or Shakespeare's Julius Caesar while visiting a recreation of ancient Rome. The same Shakespeare students could explore a virtual recreation of the Globe Theatre where Shakespeare's plays were performed. Lastly, instructors can create their own virtual environments to illustrate lessons and facilitate discussion. As the pedagogical discourse continues to evolve and further evidence and questions arise, the flexibility and diverse nature of digital communities with a virtual environment such as

Second Life as the hub will be a viable option and provide a necessary proving ground for the future of higher education.

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