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Situated Learning in Virtual Worlds: The Learning Ecology of *Second Life*

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Abstract: This research investigated the “learning ecology” of the virtual world, *Second Life*. Study goals were to: (a) determine how the design and social dynamics of one virtual world support as well as constrain various types of learning, and (b) suggest implications for the use of virtual worlds in adult education.

Background

A burgeoning body of scholarship addresses adult learning in various web-based contexts, from formal online courses to informal contexts such as chatrooms. One type of online “space” attracting a growing number of adults is the social virtual world (Book, 2004; Castronova, 2005; Hayes, 2005). These worlds are characterized by a shared social space, a graphical user interface, real-time interaction, user-generated content, persistence, and active support for in-world social groups (Book, 2004). Social virtual worlds serve as a place for community development, in which people come together for a variety of self and group-determined purposes.

Social virtual worlds are being adopted for explicitly educational purposes. For example, the U.S. Army contracted with corporate owners of a high-profile virtual world to create a military training environment; Texas A&M medical faculty are collaborating with a commercial game company to develop a social virtual world to train health care professionals (Breakaway Games, 2005). Despite growing interest in such spaces for adult education, we know little about their strengths and limitations as environments for learning. There have been isolated studies of attributes of these worlds, but little attempt to develop holistic analyses of how features of particular worlds (they are not all alike by any means) contribute to and combine with emergent social and cultural properties to create distinctive “learning ecologies” (Seely Brown, 2000).

Second Life (SL) is “a 3D online persistent space totally created and evolved by its users. Within this vast and rapidly expanding place, you can do, create or become just about anything you can imagine” (<http://secondlife.com/whatis/>). Individuals create avatars to represent themselves in the *SL* world, and can explore a vast range of virtual places, create objects ranging from clothing to buildings, establish businesses to sell goods or services, form relationships with other players, and buy virtual property. As of March 2006, *SL* had over 150,000 subscribers from more than 50 countries; women account for about 27% of the total registered population, and the average age is around 32, with a range from 18 – 72. *SL* was selected for this study because of its popularity, relative longevity, free access (making it open to a wide audience), and potential for use in adult education.

Theoretical Perspective

This study was informed by theoretical perspectives broadly described as sociocultural or situated theories of learning. A key assumption is that learning is intimately constituted by the social, whether it be the tools and technologies that mediate our abilities to know and do, or the worldviews that shape our perceptions and interpretations. Our social worlds shape not only the opportunities we have to develop certain kinds of knowledge and abilities; they also affect our sense of how to use those skills and knowledge to achieve particular ends (Brown, Collins, & Duguid, 1989; Gee, 1992; Lave & Wenger, 1991; Rogoff, 1990). In particular, this research drew from the literature on acquisition of expertise (Bereiter & Scardamalia, 1993), augmented collective intelligence (Levy, 2001), and social and cultural capital (Malaby, in press). This work also was broadly informed by the growing literature on virtual worlds, including virtual economies (Castronova, 2001), the enactment of online identities (McDonaugh, 1999), and the dynamics of virtual social interactions (Smith & Kollack, 1999).

Research Design

An ethnographic approach was adopted for data collection and analysis. Two broad questions served as initial focal points: (a) How do the ‘material properties’ as well as the emergent social and cultural properties of *SL* support, mediate, and regulate the learning that participants might experience? (b) How do individuals and groups create opportunities and spaces in *SL* for learning and collective knowledge creation?

The researcher assumed a role as participant-observer, spending dozens of hours in the *SL* world. Participation included attending *SL* events, interacting with *SL* participants, learning to use the in-world scripting language, becoming a “landowner,” designing virtual buildings and other objects. The researcher recruited key informants who described their experiences within *SL*, and more specifically, how *SL* served as an anchor for development of new abilities, identities, and knowledge. They also provided insight into *SL* affinity groups and their dynamics.

Data included field notes, interview transcripts, screen shots, and other artifacts (i.e., listserv postings, examples of user-created content). Data were analyzed recursively, as the researcher identified emerging themes and topics of interest, revisited selected notes and artifacts, and assessed the utility of the original theoretical framework for interpreting the data. Member checks were conducted through the study to assess the credibility and verifiability of the researcher’s interpretations.

Findings

A key attribute of the *SL* world is its emphasis on supporting user-creation. Participants own what they create in *SL*, enabling them to make a real- world profit from selling their products in *SL* (*SL* dollars can be exchanged for “real” money, and vice versa). Learning to create valued objects is crucial for accruing material, social and cultural capital in the *SL* community. My discussion focuses on how participants learn to engage in the economy of user-creation and distribution of content, taking part in the evolution of the *SL* world itself. Two key dimensions of this learning include:

1. Learning technical and design skills needed for the creation of clothing, avatar “skins,” buildings, and other forms of “property” within the *SL* world. This includes learning how to appropriate and reappropriate tools within and beyond the *SL* world as well as learning the norms and subcultures of particular user-creation affinity groups.

2. Learning how to participate in the broader *SL* economy, including learning to leverage various *SL* markets, negotiating *SL* currency exchanges, and contending with complex ethical concerns related to such issues as ‘virtual’ property rights.

Technical and Design Skills

The basic building blocks in *SL* are “primitives,” or “prims.” Prims come in simple 3D geometric shapes (e.g., cones, cubes, pyramids) and can be modified as well as combined to create objects and structures ranging from basic chairs to skyscrapers. With the addition of simple scripts, users can add motion, sound and other animations. Textures, materials, and other properties of created objects are modifiable. Avatars may also be customized, using built-in options for attributes such as facial features and clothing, or by importing resident-designed “skins,” body shapes, makeup, and fashions.

While prims and scripting tools are intended to be simple enough for anyone to use, they can be difficult to master, at least initially, and creating more elaborate designs requires the use of additional software, such as Adobe Photoshop. Much learning takes place independently or through informal, sometimes chance encounters in *SL* with more experienced residents, who will demonstrate or give points about various techniques. Linden Lab (LL) has created “sandboxes” where residents can experiment with prims and creation tools, and one resident has created a huge self-guided “library” with step-by-step instructions for basic and more complex building tools. Residents also share information about various aspects of creation (and other features of *SL*) through topical listservs as well as through resident-created websites. In-world, LL encourages residents to serve as designated volunteers to assist other residents. On a community volunteer page (<http://secondlife.com/community/volunteer.php>), LL recruits four categories of volunteers, including instructors, mentors, live help staff, and greeters. On a typical recent weekday, 30 educational events were listed in the daily event pages, with topics ranging from making a Japanese garden lamp to creating a “hug” animation. With the exception of three events, all were hosted by a rapidly expanding in-world educational “organization” called TeaZers. All of these events are free, though the classes are held in a set of (literal) sandboxes located adjacent to a shopping mall, clearly intended to attract customers (“comsumerism” is an issue discussed below).

A *SL* feature intertwined with user creation is property ownership. While residents can keep their creations in their inventory (or wear them), to maintain permanent artifacts in the world itself – a house, for example – they need to own virtual real estate within *SL*. Land ownership is a means for allocating computing resources among residents and enables LL to gradually expand the size of *SL* through additional subscription revenue. In addition to a basic monthly fee for owning a standard “first land” plot, residents pay additional “maintenance fees” on larger properties. (Note the terminology: A “taxation” system previously in place led to a *Second Life* Tax Revolt that included resident picketing and Boston Tea parties.) Thus, while there is no fee to create an avatar and otherwise participate in *SL*, land ownership creates a social divide between those who desire to have a more permanent place in the world, and those who might be viewed as more casual “tourists.” This social divide has become apparent in online discussions of the impact of new residents who have migrated from other social virtual worlds. These people who tend to be more interested in socialization than creation have been perceived as frivolous, shallow, and otherwise less desirable residents by more creation-focused participants. Ironically, however, such new residents have created a much larger market for the creations of other users, as well as contributed to the development of new businesses, such as dance halls and game rooms.

Owning land also creates a potential knowledge divide among residents, as land owners have a new set of possibilities for user creation, as well as the opportunity to display their creations on a more permanent basis and to set up stores to sell their wares. A plot of land will support a limited set of prims, so residents need to be selective in what they choose to build. Considerable value is placed on creating objects with the fewest possible prims, and designers may be criticized when their creations are “prim excessive.” Residents need to learn to work within other constraints of a particular piece of property, including predetermined attributes such as geography and bodies of water, and fluctuating conditions such as the constructions of neighbors. Designing as well as situating buildings, landscaping, furniture, animations, and other features involves a wide variety of knowledge and skill. As the *SL* economy grows, an increasing number of objects can be purchased or even acquired at no cost, with potentially significant effects on the distribution of knowledge among residents, since they can buy what they want instead of learning how to create it. In fact, there is the possibility that *SL* will shift toward a largely “consumer-oriented” economy and culture, with production largely the realm of a knowledge elite.

Participating in the Broader SL Economy

As I noted above, not only does *SL* allow and encourage user creation, it also grants residents ownership of what they create. This form of ownership drives not only a vibrant *SL* economy, but also the nature and extent of learning pursued by residents. *SL* might be viewed as an online *knowledge economy*; as Malaby (in press) points out, digital artifacts are intellectual property (IP) rather than (material) property. IP rights, by creating excess value through temporary monopolies, help to prompt innovation (i.e., learning). There are quite different norms and attitudes among residents towards ownership of their creations. In the more restrictive practice, residents design and create objects that they sell to other residents in nonmodifiable, nontransferable form. At the other extreme, some residents freely give away objects they have designed, even allowing other residents to modify and copy these objects. In some cases, these freebies are used as teasers to advertise products and encourage actual purchase of the creator’s merchandise. In other cases, they are given away as a form of sharing wealth (i.e., knowledge) with the broader community and sometimes as a form of resistance to the increasingly commercial culture of *SL*. Design knowledge itself is commodified in the form of a service, as various individuals and groups now provide customized building and creation services for a fee.

The proliferation of increasingly sophisticated designs may have both positive and negative effects on user creation in general. Seeing the creations of others can serve as inspiration and incentive for learning to make your own items, and competition among residents to create more unique or elaborate designs can spur creativity. On the other hand, social norms, values, and identities within *SL* are changing in relationship to this evolution of user creation. As mentioned above, social identities are forming around residents’ commitment to creation or other forms of social activity. In addition, various forms of cultural capital are becoming associated with certain forms of creation and design. Social groups within *SL* are often differentiated by customized appearances, ranging from Goths and vampires to those who adopt animal-like avatars (hamsters are particularly popular) as well as by residence, with some groups purchasing plots of land as a group, or choosing to live in Nonmature (where no “adult” content is permitted) rather than Mature regions. This can also lead to types of exclusion or marginality. For example, I initially participated in *SL* somewhat sporadically for a month or so, not investing in customizing my avatar or buying land. Finally, another resident (who could see the “age” of

my avatar under my personal profile) commented that I wasn't really new, even though I "looked new" – signaling to me the importance of my avatar's appearance in displaying my history and "credentials" as a *SL* resident. As another example, numerous social events are centered around adopting certain appearances, such as country western dances, "best dressed" and even "sexiest avatar" competitions. While it is possible to attend such events without the appropriate clothing, one certainly feels a sense of being an outsider, or at least a peripheral participant.

In addition to the value of knowledge associated with user creation, knowledge associated with business development and management is increasingly important as the *SL* economy grows. A bewildering array of shops display the glut of merchandise available for sale. Potential sellers need to capture the attention of potential buyers through strategies such as choosing a highly trafficked store location, designing an attractive storefront, displaying merchandise effectively, setting competitive prices, and establishing a distinctive "brand" or reputation. The increase in vendors has contributed, in the opinion of some residents, to a heightened sense of competition and reluctance to assist newcomers. One clothing designer commented on a distinction between "those profiteering and those out simply to enjoy themselves," with the profiteers fearful of their ideas being stolen by others. It is not hard to imagine the development of a virtual legal profession within *SL* devoted to resolving property right disputes – a new opportunity for knowledge creation indeed, but perhaps not the most appealing aspect of the real world to recreate within a virtual environment.

Implications for Adult Education Theory and Practice

The findings reveal how a social virtual world can support an impressive breadth and depth of learning. *SL*'s emphasis on user creation and ownership is integral to that learning. However, leveraging user-creation for learning requires far more than simply providing users with the correct tools. Participation in user-creation depends on a complex set of social, economic and legal conditions that the world's designers can only partially control. In its public discussions of *SL*, LL has stressed the benefits of user creation and ownership, particularly in terms of innovation and engagement, in contrast to more typical virtual worlds that allow only limited forms of user customization within a set of preexisting choices. However, there is a dark side to the dynamics of learning within this world. Participants must agree to an elaborate code of behavior to prevent seemingly inevitable tendencies for abusive or inappropriate behavior. A fair amount of user creation is devoted to sexually explicit content. Indeed, *SL* is (at least officially) restricted to adults over 18, to avoid issues of giving minors access to pornographic content, a restriction that most other designers of virtual worlds are reluctant to adopt. There is an ongoing tension between private ownership and public access; participants can restrict access to their properties, in some cases leading to "gated neighborhoods" reflecting material as well as social divisions among participants. The sheer proliferation of content makes it difficult for newcomers to navigate the world; to allow maximum freedom of creation, residents use a fun but often awkward flying or teleportation system to travel around the world. In addition, to permit a large amount of user-created content, *SL*'s graphics are less sophisticated than that of other virtual worlds, and while LL is continuously upgrading the server, there is frequent lag and generally slow processing speed. While popular places are identified on the *SL* world map, much of the world seems eerily empty of actual occupants at any given time.

In Spring 2006, seventeen college and university faculty members around the United States were officially participating in Campus Second Life, a program intended to encourage educational uses of *SL*, and no doubt other faculty were using *SL* informally as a resource or site

for student research. As we launch such educational experiments, we need to bear in mind issues such as the balance of control and freedom granted to learners in such worlds. As the frontiers of adult learning, they offer unanticipated riches as well as unforeseen challenges.

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