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SIMS TO TEEN SECOND LIFE: TRANSITION OF THE SIMSAVVY GIRLS TO TECH SAVVY ISLE[*]

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In its second year, the Tech Savvy Girls Project adopted *Teen Second Life* as a platform for interest-driven learning and designed projects and objects around themes important to them and their futures as technology-using, creative people. By using the building tools in an open-ended virtual world, they were able to pursue interests common to teen-aged girls: art, houses, fashion, social connections, and future careers as entrepreneurs while developing a wide range of IT-related skills. These skills extend far beyond the limits of traditional school's definitions of computer technology as either mastery of particular software packages or computer programming. The participants, through informal "tinkering" activities have developed life-long meta-skills and identities as technology users, which will allow them to continue learning new techniques as computers, computer programs, and information technology continue to change well into the future.

1. Introduction

Despite a decade of research and interventions, there is a widening gap between the numbers of males and females in the science and technology career "pipeline" (Graham, 2004; *Under the Microscope: A Decade of Gender Equity Projects in the Sciences*, 2004). This gap starts early in school and continues to widen through higher levels of schooling and career progress (Fisher, 2007). The significant participation of women in the early history of computer science and information technology (Margolis & Fischer, 2003; Matsui & Chilana, 2004) has given way to a growing gap between the genders in the computer-based technology fields.

Increasing female participation in videogame play has been seen as one way to increase women's involvement with technology. It was also assumed that the increased presence of female gamers would lead to visible shifts in content, game play, and the industry at large. Trends indicate otherwise: over the last ten years participation of women and minorities in IT fields has decreased (Margolis & Fischer, 2003), despite the increasing percentage of videogame players who are female (The Entertainment Software Association [ESA], 2008; Hartmann & Klimmt, 2006).

One hypothesis advanced is that boys and girls seem to participate differently in videogame play. The AAUW report *TechSavvy* (2000) stresses the importance of "tinkering" activities such as modification of games as a gateway to later technical mastery and pursuit of technical careers (diSessa, 2000). Far more boys than girls engage in informal technical exploration. The causes underlying the difference in participation are unclear. Some suggested reasons are that boys may be more avid gamers, that parents are more likely to provide them with better gaming equipment and software, or the games they play offer more affordances for such learning (Hayes, 2008). Hence, boys may benefit generally from richer technically focused learning ecologies, which form an environment conducive for technical mastery and provide a foundation for formal education (Barron, 2004).

Based on socio-cultural theories of learning (e.g. Lave & Wenger, 1991) some after-school and out-of-school programs, such as the Tech Savvy Girls Project, have begun using commercial computer games as attractive and creative platforms for girls (Hayes, 2008; Hayes, King & Johnson, 2008; Kafai, 1998). Participants in these programs modify computer games, create objects for use in the videogames, or change how videogames function. They engage in "interest-driven" learning (Barron, 2006, p. 201). Girls are often allowed

to design projects and objects around themes important to them, engaging in "the material realities of their everyday lives" (Meiners & Fuller, 2004, p. 1) while also participating as legitimate producers of publicly accessible artifacts (Papert, 1991) and members of a learning community.

2. The Tech Savvy Girls Project

The Tech Savvy Girls project is an innovative, out-of-school program that explores the use of commercial-off-the-shelf (COTS) video games and virtual worlds to help girls develop IT fluency. Through informal creation of game objects, game modification, and creation in virtual worlds, participants develop foundational skills associated with masterful use of computers and a comfort with information technology as described in the FITness standards (National Research Council, 1999). This approach frames IT learning as more than either learning keyboarding or computer programming, two extremes on the spectrum of computer skills courses taught in middle and high school, emphasizing informal mastery of technology skills and concepts useful in daily life and a variety of careers. It also allows technology to be a tool rather than an end in itself, an important factor in motivating girls and women to gain technology skills (Farmer, 2008). Through the Tech Savvy Girls Project, participants create digital media important to them and their social connections, mastering new technology as a means to their own self-defined goals.

During the first year of the project, the Tech Savvy Girls focused on media creation for and with the Sims series of games. Using a variety of programs, such as *Photoshop*, the *Sims BodyShop*, and *Milkshape 3D*, participants developed skills and practices foundational to IT learning and practice such as the ability to manage complex systems, the use of specialized programming command, manipulation of spatial representations, and complex modeling in preparation for problem solving (Hayes & King, forthcoming).

However, participants also began to find limitations to the Sims as a vehicle for their interests and aspirations, even with multiple expansions and a wide range of user-created content available through online fansites. There are limited types of items and ways in which the sims (the game avatars in the Sims series of games) interact with these items. This was especially vexing when exploring types of businesses to create in the expansion *Open for Business*. In addition, the lack of multi-player ability was frustrating. Program participants could not "be" together in the game nor interact with other players synchronously. The Sims, like many videogames available for modification by children has limitations (Yucel, Zupko & El-Nasr, 2006). Hence, we decided to explore a more open-ended platform: the virtual world of *Teen Second Life* (*TSL*), establishing Tech Savvy Isle in the teen grid.

3. Transition from the Sims to Teen Second Life

The girls' first experiences in world were restricted to our island and focused on learning how to build 3-D virtual objects using new tools. We encouraged them to use the island as a large "playground" in which they were free to create their own environments. The girls created a wide range of buildings, furnishings, and other objects. They each created and furnished their own house as well as other buildings; one girl created an entire "spa" complete with landscaping. They also organized events, including a Christmas party complete with a gift exchange and a decorated Christmas tree. They further developed skills with tools that they learned to use with *The Sims*, such as *Photoshop*.

However, there is greater flexibility in *TSL* than in the Sims series, which was both freeing as well as frustrating for the girls. Through this first year in *Teen Second Life*, we observed three broad trajectories of adaptation, skill transfer, and development as the program participants moved from *The Sims* to *Teen Second Life*. These three trajectories or approaches became more pronounced as the teen participants gained accounts that let the off our island and free to explore the entire open teen grid.

4. Participant Approaches to *Teen Second Life*

4.1. *The Sims Redux*

Their creations during the first year often mirrored what they created in *The Sims 2*. All participants initially used pre-existing items, sometimes with modifications, combining objects to create clothing, homes and retail businesses similar to what they had created in the Sims games the previous year. Their primary interests during this period continued to focus on personal homes, consumer retail shops, favorite television shows, and romantic situations as they adjusted to new tools, camera controls, and a completely open-ended environment in which their avatars are entirely under their constant control.

In a sense, recreating the familiar in a new venue mirrors the progress of both individuals and society as new technology is introduced. Just as early movies recreated vaudeville in celluloid, the project's pioneers into *TSL* relied upon comfortable forms as they learned new technologies. Some participants developed large, complex installations while others focused on working with existing objects, but they all avoided experimentation with innovative creations that had no physical analogs. For example, in *The Sims*, some of our teens had found ways around the game's rules and could create houses that floated in the air, tethered only by a staircase; none of the same participants would create floating objects nor even consent to build on land that was not flat, which is easily accomplished in *TSL*. Constraints of the software used previously often lingered in unexpected ways.

4.2. *Expanded Creation – Same Themes*

Gradually, as they began to master the basics of *TSL* and were granted avatars that could move off our island, some of the participants began to create items from primitive shapes ("prims") and textures, including textures from images that they created themselves using *Photoshop*. For the pioneers, this involved a period of during which creations looked far less sophisticated although they required more advanced building techniques.

Figure 1: Two early houses. Linden Lab provides the one on the left in its library, although the building owner has shaded it slightly. The one on the left is created from prims, which is a more advanced building technique, although it does not look as aesthetically pleasing.

One aspect of *TSL* that intrigued the girls was the possibility of opening their own businesses. This interest sustained experimentation and research for some of our teens through periods of world exploration, interaction with other teen builders, reverse engineering, and trial and error development. One participant spent extensive amounts of time outside of club meetings in order to join an existing in-world fashion business and eventually start not one but several of her own. Her experience informed collective discussions of entrepreneurship issues, including intellectual property rights that will be explored in more depth as we continue to work within *TSL*.

Throughout this phase, the items created and the general themes of their creations remained similar to those seen while working in The Sims: houses, fashion, landscaping, romance, TV and movie stars, and retail or service businesses. These turned out to be abiding interests for several of the girls, who have also expressed interest in pursuing aspects of art and design as careers.

This deep interest was also an entrée into the modification scripts and a foothold into understanding how simple programs function. Many of the most spectacular creations incorporate scripts, for instance, to make jewelry sparkle, candles burn, and water swirl. Modification of existing scripts and programs is often an effective way for people in informal learning situations to scaffold themselves and peers to increasing understanding and expertise in computer programming (Steinkuehler & Johnson, 2009).

Figure 2: Scripts are essential components for many common effects, such as making gems and rhinestones sparkle. They can also be used in worn artifacts, such as bracelets, to control avatar actions, express emotions, and modify basic attributes such as how an avatar moves while walking.

4.3. *New Tools – Expanded Horizons*

By the end of six or seven months in *Teen Second Life*, we began to see some evidence of innovative creations that begin to take advantage of the ability to create objects in *TSL* that push the boundaries of the physical world. These items either do not have analogs in the tangible world, deviate from the norm in terms of scale or other attributes, represent the past or explore future possibilities. While few participants reached this stage, their comfort with exploration was encouraging and harkened back to their willingness to play with limits as they had with *The Sims*.

Participants previously had created semi-floating houses and historical artifacts in *The Sims*. Now, we began to see items such as underwater houses, re-creations of items from the 1960s (thanks to the recent release and discussion of the movie *Hairspray*) such as phonographs, hairstyles, and clothing, and impossible items such as a giant, floating hamburger. Other historical items such as a drive-in movie theater were created and proposed to serve our needs with a twist – the drive-in was proposed as a classroom, complete with cars.
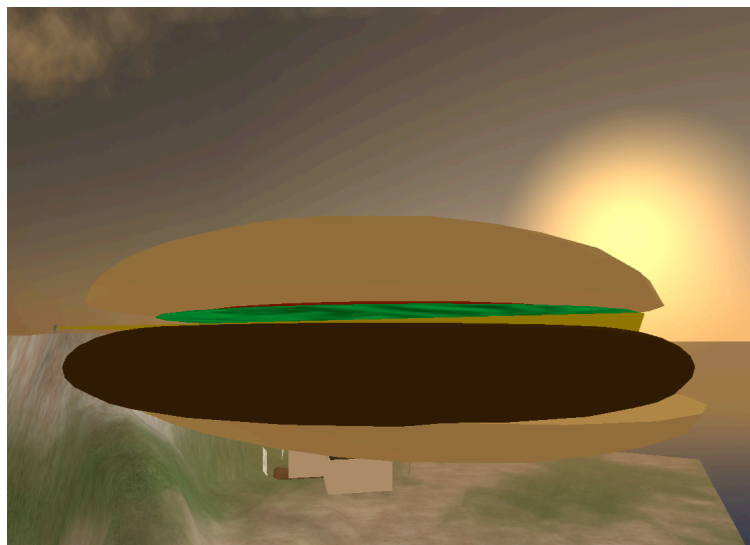
Figure 3: A giant, floating hamburger, in detail, which was a pleasant surprise one morning on Tech Savvy Isle.

Note that these last two stages of development are not mutually exclusive, and participants moved back and forth between them. In some cases, such as fashion, items and motivations can span both the domestic, consumer focus of the *Sims* as well as a push for innovative interactivity combined with themes of civil rights, historical recreations, and rejection of stereotypes.

5. How Did Participants Learn?

Surprisingly, the teens with the least prior social standing in the group were often the ones who were willing to take the risk of engaging with entirely new building methods, leaving behind the Sims style of building to begin making items "from scratch". While all participants learned something from the move to *TSL*, these teens took the most interest in pushing their own limits, taking responsibility for their own learning.

These highly successful transitioners showed a willingness to experiment with the new building tools early in the project. They examined items provided by the Lindens, decomposed them into pieces, and modified those components – essentially engaging in the common computing practice of reverse engineering. They were also simply willing to try things out, creating items from primitives, modifying them to see what happened, often in public building areas known as "sandboxes." This allowed for guided experimentation and feedback not only from group peers but also from other, more experienced teen residents.

Many of the learning patterns and prior skills from their experiences in *The Sims* carried over to during the transition to TSL. This had both positive and negative effects. On the plus side, playing and creating content for The Sims had given the teens confidence in experimenting with software and content creation. They did not require a manual or guides but were willing to jump in, learn some aspect of the new program, and teach it to the rest of the Tech Savvy Girls group. Nor did they generally rely upon the adult mentors to help them unless they came to a complete impasse. They were, however, not initially given to seeking out online resources for ideas, hints, and tutorials, which they routinely used while playing *The Sims*. Perhaps they did not realize the wealth of information available about *Second Life* online did not understand that the teen grid functions the same way as the main, adult grid.

On the negative side, we found a significant negative correlation between expertise in *The Sims* and the ability to learn the new platform. The most expert players of the previous software seemed to struggle to move beyond a basic level of building in TSL. In part, this barrier arose from a differential in Internet access, since the expert Sims player had poor, slow access to the Internet and eventually was far behind in skill development relative to the other girls and became disinclined to try to catch up.

The open-ended nature of TSL was also freeing as well as frustrating. As Franklin noted (2007), girls often struggle more than boys when confronted with an open-ended technical project. Our program participants tended to fall back on the comfort of the familiar for many months, building items in TSL similar to those found in the game they knew well or asking the adult mentors what they "should" build next. Ultimately, we

succeeded partially in helping the teens define projects to tackle for each semester, although enticing them to find or create objects to complete those projects remained a challenge throughout the year.

6. What Did Participants Learn?

As they began to develop their new expertise, the most successful Tech Savvy Girls grew more confident and became sought-after as peer mentors in the Tech Savvy Girls Project, technical experts in their families, and members of groups in TSL. They gradually became successful at difficult technology tasks such as trouble-shooting problems in hardware drivers and operating system upgrades. They also began to become effective negotiators for their own technology needs by acquiring new computers and hardware upgrades, updating software, and improved Internet access.

Although not all of the participants achieved this high level of development, they all did expand their IT fluency through the move into TSL. A selective list of the IT skills and concepts addressed with the girls through these *Teen Second Life* activities included:

- Commonly used computer and IT terminology

- Use of blogging and social networking tools such as *Flickr* to document in-world practices

- Creation of how-to guides for IT tools

- Creating and managing different types of virtual world accounts for different purposes, such as for creating restricted groups vs. open accounts

- Understanding security and safety guidelines when using the Internet, social networking tools, MMOGs and virtual worlds

- Awareness of issues of intellectual property ownership, copyright restrictions, and ethical considerations surrounding use and modification of digital media

- Conducting business in a virtual world, including renting space, contracts and negotiation, management practices, and ethics

- Incorporating streaming audio and video in *TSL*

- A meta-level understanding of types of software and common functionality of related software, such as word processors or graphic image editors

- Creation of objects and scripts/programs in *Second Life*, which will involve:

    o Creation of 2-D images suitable for use as the exterior for 3-D objects

    o Learning more advanced skills with *Photoshop*

    o Learning the Linden Scripting Language through modification of existing scripts and reverse engineering.

7. Findings

7.1. *What We Learned*

Through the transition of the Tech Savvy Girls to *Teen Second Life*, we learned a number of lessons. As any educator can attest, the student's access to technology outside of school, or a club, has significant impact upon their ability to master related skills. Those participants who could routinely and reliably use high quality computers and who had access to high speed Internet outside of school and the project meeting times made significantly more progress in mastering *Teen Second Life* than those who did not. It is striking to note that the participants who could not access *TSL* outside of our club meeting times lived in homes rich in computer

technology and cable Internet, but the girl was not allowed to use the available technology because it belonged to another sibling (usually male) or the parents had concerns about online safety. Physical proximity does not equate to access for many girls, and this can have a huge impact on effective learning.

On a positive note, we also learned that exposure to multiple tools of a type can enable meta-learning about the affordances and limitations of that type of tool, without lectures from a teacher. Participants learned as they switched between *The Sims* and *TSL*, between *Windows XP* and *Vista*, and between different word processors that there were similarities and differences, and they managed to find and use the common functionality between instances of different types of software.

In many cases, we also observed that problems the teens encountered could often become learning opportunities, but only if the participant could be scaffolded to success. When barriers were removed, often by finding a resource that explained how to accomplish the task or trouble-shoot the problem, the learner often made astonishing rapid progress and was able to solve related problems on her own. Program bugs, however, were merely frustrating even when they illustrated something essential about computers and computer programs. Unlike in *The Sims*, we were never able to find a bug that resulted in an interesting and useful "cheat" to be exploited in *TSL*.

Finally, we learned that allowing participants too much latitude in defining a project in project-based learning was frustrating for participants, at least for girls. This is, we think, a potentially useful growth area for the Tech Savvy Girls, especially since many senior or capstone projects in school and in their work lives will be similarly loosely-defined, open-ended projects (Franklin, 2007). However, we will need to provide them more guidance and scaffold their success in this area as much as in learning to trouble-shoot computer problems.

7.2. *Teen Second Life as an IT Learning Platform*

At the end of a year on Tech Savvy Isle, we have identified a number of affordances this virtual world has to offer for IT learning. Its open-ended nature allows for a wide range of projects, offering many niches for learners, whether they are focused on graphic arts, social networking, or computer programming. As such, *TSL* allows students to pursue their passions and interests. It also allows students with different types of learning intelligences (Gardner, 1983/2004) to learn essential information technology praxis, such as decomposition and recombination of elements, without requiring exclusive reliance on text as a medium of communication.

The broad range of possibilities, however, can be a challenge to teens, especially in an educational environment. New students, especially those with prior exposure to video games may need a period of adjustment and guidance as they adapt to the overwhelming range of possibilities and the lack of a game-like structure. Even residents who have mostly played *The Sims*, a videogame with no scoring mechanics, will need to adapt to the fact that their avatars do nothing without player direction and have few limits beyond those in the resident's imagination.

Beyond the ability to create or buy nearly anything, *TSL* has the potential to teach important social aspects of information technology in our daily lives. As our participants became content creators who shared their work with each other and exposed it to the public, issues about ownership and redistribution rights arose, providing fruitful grounds for discussion about intellectual property rights in their lives. They had to wrestle with issues of not only simple copying, but of modification and redistribution without attribution or a percentage of the proceeds.

They also became aware of the practices and norms of different communities. In the larger Sims communities and fansites, free distribution is the accepted practice, and a community member downloads most items for her own private use. However, in *TSL* – where Linden $ are exchanged for goods and are required to purchase many things in a public world – payment and licensing for works received is more normal. The differences between the two communities of practice was a surprise to participants, but a fruitful one as they head into a life phase where they will need to make decisions about the appropriateness of downloading digital content.

7.3. *The Pros and Cons of an Open Island*

The opportunity to confront issues such as intellectual property rights in a meaningful, generative context was just one of the productive aspects of running an open island in the teen grid. For some of the participants, it was a wonderful opportunity to gain self-confidence and expanded social capital in ways unavailable to them in their face-to face lives. One girl in particular became a responsible member of a virtual business, able to try out the role of an employee in a fashion design business. She attended meetings, helped make decisions about the business, and eventually struck off on her own with her own designs. While she had some challenges (such as difficulties in negotiating and enforcing a lease for space), she was able to solve problems that will confront her in her adult life but in a relatively low-stakes environment.

The ability to be co-present in the virtual world was also a fun and meaningful experience for the participants. One of their frustrations with The Sims had been the inability of their avatars to be together in one place, since *The Sims* currently lacks a multiplayer option. In *TSL*, the participants could be together, collaborate with each other, and interact synchronously with teens from around the world. This allowed them to not only work with their peers but to learn from other, more experienced residents, which accelerated the learning of several participants. This ability to be co-present in *TSL* was also a great asset to the adult mentors in this program, who are currently located in three different states; only one mentor shares physical location with the participants, and only once per week for the club meeting in a library.

Finally, the open aspect of the island allows teens from around *TSL* to visit us and learn something about the role of women in technology fields. Within the first week of opening, we had over 300 teen visitors, several of whom were seeking out educational content. This encourages us to improve the quantity and quality of presentation about women in computing and IT fields and may prove to be an interesting research project for future Tech Savvy Girls participants.

With any site that is open to the public, however, there are some drawbacks. While none of these are severe, they serve as a reminder of factors educators should consider before opening their project space to the general teen populace or allow program participants to roam the teen grid. One of the first concerns parents and educators raise is the potential exposure of teens to inappropriate content and activity. While this is occasionally a problem, no objectionable material or behavior has been seen on our island, and it has been quite rare during forays of our students onto the teen-owned lands. The few occurrences have been useful discussion points for the teens, allowing them to address online safety needs and practices in a constructivist environment. As Kutner and Olson (2008) found in their research, teens often are quite aware of their parents' values regarding inappropriate media content, although they may need adult assistance in forming effective coping strategies. Through supervised discussions in a safe environment, our participants have become aware that Internet safety is a legitimate IT skill that they need to possess and exercise online every day.

8. Conclusion

In its second year, the Tech Savvy Girls Project adopted *Teen Second Life* as a platform for interest-driven learning and designed projects and objects around themes important to them and their futures as technology-using, creative people. By using the building tools in an open-ended virtual world, they were able to pursue interests common to teen-aged girls: art, houses, fashion, social connections, and future careers as entrepreneurs while developing a wide range of IT-related skills. These skills extend far beyond the limits of traditional school's definitions of computer technology as either mastery of particular software packages or computer programming. The participants, through informal "tinkering" activities have developed life-long meta skills and identities as technology users which will allow them to continue learning new techniques as computers, computer programs, and information technology continue to change well into the future.

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