



TEACHER TRAINING MANUAL

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MULTIMEDIA APPLICATIONS  
FOR EDUCATION

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# PART SIX

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## SIMULATIONS

# Chapter 1

## Educational Potentials of Second Life

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### 1. Introduction

Second Life is the most popular example of the latest generation of 3D virtual worlds that enable their users to interact with each other through animated 3-D representations called avatars. Since its opening to the public in 2003 Second Life has gained increasing popularity. More than other virtual worlds Second Life attracted the attention of media and the public what resulted in a dramatic growth of registered users in late 2006 leading to a today`s total of more than 14 million registered users. There are critics saying that Second Life has been overhyped and overestimated. Indeed, statistics suggest a slowing growth rate in terms of new registrations and a lower public interest.

However, especially in the field of education Second Life has gained an increasingly important role in recent years and attracted numerous universities, colleges, schools and other educational institutions. Also, the number of resources for educators using Second Life – such as video tutorials, manuals, newsgroups, forums, Wikis and websites – as well as various features that facilitate student interaction and learning processes within the Second Life – such as the opportunity to make use of video or audio files, voice chat, PowerPoint presentation and even adaptations of learning management systems such as Moodle – make Second Life a particular interesting application for educators.

In this chapter we will examine what Second Life is, which evolutionary steps led to the development of virtual worlds such as Second Life, what it makes unique and what social impact it has. We will outline what makes Second Life interesting for educators, in which ways it can be used for education and where its strengths and limits are. Finally, we will draft the major working steps for creating a learning course in Second Life and will examine what developments the future may bring.

### 2. From MUDs to Metaverses: A short history of virtual worlds

A virtual world is a computer-based simulated environment in which users interact using avatars as their virtual representations. Typically virtual worlds reproduce features of the physical world (Chesney et al., 2007<sup>1</sup>). Virtual Worlds like Second Life for instance include virtual counterparts or real cities or real objects (e.g. cars, dancing clubs or museums). They simulate real world`s physical laws such as gravity or locomotion, they establish social systems and ways of interacting with each other that widely resemble real world`s structures; some such as Second Life even have their own economy and currency.

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<sup>1</sup> <http://www.nottingham.ac.uk/%7Elizecon/RePEc/pdf/21.pdf>

Though there are several different types of virtual worlds, there are six distinctive features all of them share (cp. Virtual World Review<sup>2</sup>):

1. *Shared Space: The world allows many users to participate at once.*
2. *Graphical User Interface: The world depicts space visually, ranging in style from 2D "cartoon" imagery to more immersive 3D environments.*
3. *Immediacy: Interaction takes place in real time.*
4. *Interactivity: The world allows users to alter, develop, build, or submit customized content.*
5. *Persistence: The world's existence continues regardless of whether individual users are logged in.*
6. *Socialization/Community: The world allows and encourages the formation of in-world social groups like teams, guilds, clubs, cliques, housemates, neighborhoods, etc.*

Virtual worlds are not a recent development but go back as early as to the mid seventies (Terdiman , 2006<sup>3</sup>). Second Life is only one example of a rather recent type of virtual worlds. Together with other popular virtual worlds such as Active Worlds<sup>4</sup> , There<sup>5</sup> or Kaneva<sup>6</sup> Second Life results from a long chain of developmental steps that reach from so called multi-user-dungeons (MUD), over massively multiplayer online game (MMOG) to Web 2.0 and metaverses.

The first virtual worlds that were available online were merely text-based with a limited graphical interface, often in form of chat rooms or online communities. One of the first computer games that bore all the characteristics of a virtual world was Maze War<sup>7</sup>, released in 1974. Amongst others Maze War was the first networked 3D multi-user first person shooter game that used avatars and that featured an in-game chat that facilitated social interactions "in world".

The release of the game **Multi-User Dungeon (MUD)** in 1978 had a wide impact on several future developments and was eponymous to a whole genre of games. Traditionally developed for playing adventure games MUDs are merely text-based multi-player online game that combine features of role-playing games and real-time chats. As Rheingold (1993<sup>8</sup>) puts it MUDs are "imaginary worlds in computer databases where people use words and programming languages to improvise melodramas, build worlds and all the objects in them, solve puzzles, invent amusements and tools, compete for prestige and power, gain wisdom, seek revenge, indulge greed and lust and violent impulses."

While MUDs were usually text-driven the next generation of virtual worlds, **massively multiplayer online games (MMOG or MMO)**, is graphic-based. MMOGs connect simultaneously thousands to hundreds of thousands of players via the Internet. MMOGs usually aim at making players cooperate and compete with each other in a persistent online universe. There is a broad range of MMOG types that include for instance real-time strategy games, first-person shooter games, social games, racing games, real-world simulations or MMO role-playing games (MMORPG). Most of today's popular online games such as World of Warcraft<sup>9</sup>, EverQuest<sup>10</sup>, The Sims Online<sup>11</sup> or

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<sup>2</sup> Virtual World Reviews (n.d.). What is a virtual world? Retrieved June 10, 2008 from <http://www.virtualworldsreview.com/info/whatis.shtml>

<sup>3</sup> Terdimann, D. (2006). Newsmaker: A brief history of the virtual world. Interview with Bruce Damer, DigitalSpace CEO. CNET News. Retrieved June 2, 2008 from [http://news.cnet.com/A-brief-history-of-the-virtual-world/2008-1043\\_3-6134110.html](http://news.cnet.com/A-brief-history-of-the-virtual-world/2008-1043_3-6134110.html)

<sup>4</sup> <http://www.activeworlds.com/>

<sup>5</sup> <http://www.there.com/>

<sup>6</sup> <http://www.kaneva.com/>

<sup>7</sup> [http://en.wikipedia.org/wiki/Maze\\_War](http://en.wikipedia.org/wiki/Maze_War)

<sup>8</sup> <http://www.rheingold.com/vc/book/5.html>

<sup>9</sup> <http://www.worldofwarcraft.com>

<sup>10</sup> <http://everquest.station.sony.com>

<sup>11</sup> <http://thesims.ea.com/us/>

Habbo Hotel<sup>12</sup> are good examples of MMOGs, some of them uniting millions of Internet users.

In recent years the emergence of the so called **Web 2.0** also has had a clear impact on the evolution of modern virtual worlds. The term Web 2.0 in some ways is misleading as it suggest a new version of the WWW. However, it's neither the general technical specifications nor the basic activities of Internet users that have changed. It is rather the applications used that facilitate the publication of user-generated content, online collaboration and sharing among users like e.g. weblogs, wikis, social networking sites or podcasts. These applications have changed dramatically over the past years (Madden & Fox, 2006) and made possible a new generation of web sites such as Wikipedia, YouTube, Flickr or Facebook. They pave the way for a Web that is less static but instead dynamic and made by people, a development that has only started recently and that opens a whole wealth of possibilities in future.

Modern virtual worlds such as Second Life, Active World or There are often referred to as **Metaverses**. The term Metaverses builds upon Neal Stephenson`s science fiction novel "Snow Crash" that envisioned a virtual 3D world inhabited by avatars.

As pointed out in the Metaverse Roadmap<sup>13</sup> *"in recent years, the term has grown beyond Stephenson's 1992 vision of an immersive 3D virtual world, to include aspects of the physical world objects, actors, interfaces, and networks that construct and interact with virtual environments. (...) The Metaverse is the convergence of 1) virtually enhanced physical reality and 2) physically persistent virtual space."*

Future visions suggest that virtual worlds such as Second Life and other applications sooner or later may merge into one Metaverse (Roush, 2007<sup>14</sup>) and that the boundaries between the real and virtual worlds will blur increasingly. Second Life in its current form may not be the future of the Internet. However, on the way leading to a 3D Metaverse it may be one important milestone.

So, what exactly is Second Life? What does it offer to its users? What makes its unique position in the world of MUDs, MMOGs, Web 2.0 and virtual worlds? Where is its potential, where are its limits? And how can it be used for educational purpose? We will examine these questions in the next section.

## 3. Second Life

### 3.1 What is Second Life and what does it offer to its users?

As mentioned in the previous section Second Life is one of the most prominent examples of 3-D virtual worlds that enable their users to interact with each other through animated 3-D representations called avatars.

Developed by Linden Lab, Second Life was launched in 2003. Having started with around 1000 users and running on 16 servers (Rymaszewski et al., 2007), Second Life has grown dramatically with almost 14 million registered residents in May 2008 (Linden Lab, 2008<sup>15</sup>). In terms of its size the virtual land area covers several times the area of New York City. There is virtual economy with its own tax system and a turnover of

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<sup>12</sup> <http://www.habbo.com/>

<sup>13</sup> <http://www.metaverseroadmap.org/overview/>

<sup>14</sup> <https://www.technologyreview.com/Infotech/18911/>

<sup>15</sup> Linden Lab (2008). Economic Statistics. May 28, 2008. Retrieved May 2008, 2008 from [http://secondlife.com/whatis/economy\\_stats.php](http://secondlife.com/whatis/economy_stats.php)

hundreds of millions of real US Dollars so far. Second Life includes numerous virtual cities and villages - many of them copies of parts of their real-world counterparts - , parks and recreation areas, museums, training and eLearning centres, shopping areas, virtual branches of companies, areas dedicated to online gaming and much more. As Linden Lab puts it "Second Life is whatever you want it to be - a social hangout, a business opportunity, a creative outlet or classroom."

Unlike most other virtual worlds - most of which are some form of games - Second Life does not have a publisher-imposed narrative, nor has it a fixed plotline or setting. Instead registered users - called inhabitants - have very much freedom to live their second lives in the way they want. When they for instance create their own avatars there are almost infinite possibilities to shaping them with tools that are relatively easy to handle. In most cases avatars are human-like (often they are even designed as copies of their users' real-world appearance), however, many users prefer creating fantasy figures, animals or even objects as their virtual representations. There are also sheer endless possibilities to dress avatars. Users have the choice between wearing several given clothes they find in their avatar's inventory, they can purchase clothes in shopping malls, they can pick up so called freebies, clothes created and provided for free by other users or they can create their own ones. Apart from shaping their avatars users can also create and shape their own environment. At their own piece of land they can plant trees, build houses or create other kinds of objects such as furniture, cars or whatever else they like. Again, users have the choice of creating their own objects, purchasing them in one of the numerous shopping malls or picking up freebies created and provided by other users.

Like in MUDs or MMOGs one of the most fascinating activities within Second Life is interacting and socialising with other users. The most common means of communicating with others is a text-based chat. However, since 2007 users can also make use of voice communication. A common way of interacting and socialising with others is the participation in group activities and public events. There are for instance public discussion rounds on a broad range of topics such as philosophy, politics, art, literature, spirituality, art or many other topics. There are sport events like for instance races, soccer games or boxing; there is nightlife and entertainment such as dancing and night clubs. Furthermore users can participate at live music performances, can visit museums or cinemas, attend training courses, participate in charity groups or simply wander around, explore different sites and meet others. In the meantime Second Life even has its own media. There are several "in-world" newspapers and magazines (e.g. the Second Life Herald<sup>16</sup> or Second Style<sup>17</sup>, a magazine focusing on fashion in Second Life), radio channels (e.g. Second Life Live Radio<sup>18</sup>) or TV stations broadcasting in Second Life (e.g. Life4-U, Second Life TV Magazine<sup>19</sup> or Second LifeCN - Second Life Cable Network<sup>20</sup>).

In recent years Second Life has also attracted a considerable number of educators, educational initiatives, universities, colleges and schools. Later in this chapter we will come back on the use of Second Life for educational purposes.

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<sup>16</sup> <http://www.secondlifeherald.com/>

<sup>17</sup> <http://www.secondstyle.com/>

<sup>18</sup> <http://www.slliveradio.com/>

<sup>19</sup> <http://www.lifeforyou.tv>

<sup>20</sup> <http://slcn.tv/>

## 3.2 What makes Second Life different from other virtual worlds?

Neither the concept of Second Life nor most of its features are new. Rather Second Life combines many elements and qualities of previous virtual worlds, online games, social-networking sites, user-generated content, the WWW and different communication technologies.

Kemp and Livingstone (2006<sup>21</sup>) note that at first appearance Second Life very much resembles many other MUDs or MMOGs with which it shares many features. However, as mentioned previously one distinctive feature of Second Life is that it is completely free of a publisher-imposed narrative. Unlike most MUDs or MMOGs like for instance World of Warcraft, Second Life has no plotline or setting. So, actually one doesn't have any given task when "playing" Second Life. Rather one is completely free to use Second Life in the way one wants. As Kemp and Livingstone point out, *"the key feature that makes Second Life distinct is that the game company, Linden Lab, has not assumed the role of fantasy publisher, monster tender nor social engineer. Instead the company provides a set of in-game modelling tools and a scripting language which allows interactive features to be built into objects. Players aren't given a goal or even a way to keep score – other than the "Linden Dollars" script."*

According to Kemp and Livingstone (2006) many users deny that Second Life is a game at all. Rather it is perceived as a 3D internet-based platform (Scoble, 2006) that is filled with content and objects created by the users themselves. While Linden Lab mainly provides the technology and the framework the Second Life Metaverse completely lives from its users' creativity. In many ways it makes use of the full range of possibilities Web 2.0 offers: apart from user-generated content, it facilitates social networking and online cooperation and it allows the incorporation of other formats such as video and audio streams, pictures and texts and thus forms the basis for creative mashups (Müller & Leidl, 2007<sup>22</sup>).

## 3.3 The social impacts of virtual worlds

At first glance it seems as if virtual worlds such as Second Life have the potential of having a wide social impact: They open up new forms of real-time (virtual) face-to-face interaction in a 3D space, they provide a room that enables users to experiment with social rules and alternative identities and give users the opportunity to create an alternative world. So, is there a real, measurable impact virtual worlds and identities have on real life? Or are virtual worlds rather an extension of the real world and follow similar rules?

Indeed, there are evidences suggesting that the social impact of virtual worlds such as Second Life is wider than one may assume. What people think about themselves affects the confidence with which they approach the world. As researchers from Stanford University found out, surprisingly this applies to the virtual world, too. Qualities you acquire online such as confidence or insecurity can affect one's behaviour in the real world, often without awareness (Dell, 2008<sup>23</sup>). For instance people who were given taller avatars behaved more aggressively in an online environment than people with shorter

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<sup>21</sup> Kemp, J. & Livingstone, D (2006). Putting a Second Life "Metaverse" Skin on Learning Management Systems. Retrieved June 13, 2008 from <http://www.sloodle.com/whitepaper.pdf>

<sup>22</sup> [http://www.e-teaching.org/didaktik/gestaltung/vr/Second Life lehre langtext 071207\\_end.pdf](http://www.e-teaching.org/didaktik/gestaltung/vr/Second%20Life%20lehre%20langtext%20071207_end.pdf)

<sup>23</sup> Dell, K. (2008). How Second Life Affects Real Life. Time Magazine, May. 12, 2008. Retrieved June 16, 2008 from <http://www.time.com/time/health/article/0,8599,1739601,00.html>



avatars. Persons using attractive, good-looking avatars tend to express a higher self-confidence and hit on more attractive partners. And both effects had an impact on real-world interactions (Platoni, 2008<sup>24</sup>). Those given taller avatars gained confidence in a subsequent face-to-face negotiation task in real life. And persons given a more attractive avatar displayed a higher self-confidence in real-life encounters. Yee and Bailenson (2006<sup>25</sup>) who found out that changed self-representations in an online environment indeed change peoples' behaviour in real life, termed this phenomenon „the Proteus Effect“.

Interestingly, a similar effect can also be observed the other way round. Often, in virtual worlds, the peoples' minds follow real-world rules. As Yee found out, people for instance maintain a certain distance when interacting with other avatars. As Yee describes it *“There are some things that are so hard-wired culturally that it's hard to switch them off, even in a virtual environment”* (cp. Miller, 2007<sup>26</sup>). This “striking resemblance to the physical world where what is possible is determined by cultural, legal, temporal, and physical constraints” is also pointed out by other authors (cp. Willis, 2007<sup>27</sup>). It is obvious that the majority of users seem to re-shape the world “where everything is possible” (Linden Lab) after many real life's counterparts such as copies of famous sites and cities or even ways of moving around like for instance with cars, that in a virtual world that enables its users to fly do not really make sense.

## 4. Using Second Life for educational purposes

### 4.1 What makes Second Life interesting for educators?

In recent years Second Life has attracted an increasing number of educational initiatives, universities, colleges, schools and other educational institutions that offer virtual classrooms as a means to extend and enhance their online offerings to students (Kirriemuir, J., 2007<sup>28</sup>). According to Sussman (2007) in August 2007 more than 300 Universities have been using Second Life for a variety of purposes. The SimTeach Wiki<sup>29</sup> provides a comprehensive overview about institutions and organizations in Second Life. Accordingly, Universities that run virtual campuses in Second Life include for instance the Universities of Harvard, Stanford, Princeton, Edinburgh, Hong Kong, Hamburg and many others from around the globe, Educational Organizations like the British Council, Eduseriv or Global Kids as well as libraries such as the Illinois' Alliance Library System.

For teenagers aged 13-17 there is a separate Teen Second Life (TSL)<sup>30</sup>. Teen Second Life is strictly reserved for teens. However, in response to requests from educators, Teen Second Life was opened up to approved adults that have to provide a background check for security and safety reasons. In the meantime approved adults and non-profit organizations have become a major part of Teen Second Life running separate education-focused islands and several projects.

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<sup>24</sup> Platoni, K. (2008). Seeing Is Believing. Stanford Magazine, January/February 2008. Retrieved June 18, 2008 from <http://www.stanfordalumni.org/news/magazine/2008/janfeb/features/virtual.html>

<sup>25</sup> Yee, N. & Bailenson, J. (2007). The Proteus Effect: The Effect of Transformed Self-Representation on Behavior. Human Communication Research 33 (2007) 271–290. Retrieved June 18, 2008 from <http://vhil.stanford.edu/pubs/2007/yee-proteus-effect.pdf>

<sup>26</sup> Miller, G. (2007). The Promise of Parallel Universes. Science, September 7, 2007: 1341-1343. Retrieved June 18, 2008 from <http://vhil.stanford.edu/news/2007/science-promise.pdf>

<sup>27</sup> Willis, H. (2007). The unexamined Second Life isn't worth living: virtual worlds and interactive art. Retrieved June 18, 2008 from [http://findarticles.com/p/articles/mi\\_m2479/is\\_2\\_35/ai\\_n21106231](http://findarticles.com/p/articles/mi_m2479/is_2_35/ai_n21106231)

<sup>28</sup> Kirriemuir, J. (2007). The Second Life of UK Academics. Ariadne Issue 53. Retrieved May 28 from <http://www.ariadne.ac.uk/issue53/kirriemuir/>

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[http://www.simteach.com/wiki/index.php?title=Institutions and Organizations in SL#UNIVERSITIES.2C COLL EGES .26\\_SCHOOLS](http://www.simteach.com/wiki/index.php?title=Institutions_and_Organizations_in_SL#UNIVERSITIES.2C_COLL EGES_.26_SCHOOLS)

<sup>30</sup> <http://www.teen.secondlife.com/>

One reason for the increasing interest of academics in using Second Life for educational purposes lays certainly in its potential to give students a sense of embodiment and – virtual – face-to-face interaction with other students, a feature that clearly goes beyond conventional internet-based learning platforms. Also, for tutors it's relatively easy to create learning environments that resemble their real-life-counterparts including the option to make use of i.e. PowerPoint presentations or even of popular learning management systems such as Moodle that has been adapted to the Second Life-environments in form of the learning platform Sloodle.

A further aspect that may Second Life make more interesting than other 3-D virtual worlds is the availability of numerous, well-structured tutorials – most of them produced by Second Life inhabitants themselves – as well as numerous resources for the international community of educators. Apart from mailing lists for educators such as "Second Life Educators"<sup>31</sup>, "Educators and Teens"<sup>32</sup> or "Healthcare Support and Education"<sup>33</sup>, there are several online communities, weblogs, forums and Wikis supporting educational activities within Second Life such as SimTeam<sup>34</sup> or Second Life Grid<sup>35</sup>.

## 4.2 Educational Uses of Second Life

There are various possibilities 3D virtual worlds like Second Life provide to educators and learners other 2D online learning environments do not have. As Jo Kay and Sean FitzGerald note, *"the unique qualities of a 3D virtual worlds can provide opportunities for rich sensory immersive experiences, authentic contexts and activities for experiential learning, simulation and role-play, modelling of complex scenarios, a platform for data visualisation and opportunities for collaboration and co-creation"* (cp. "Second Life in Education"<sup>36</sup>).

3D environments and their capability of giving users a sense of embodiment and real-time face-to-face interactions in one common virtual room transcendent the possibilities of groupware that are restricted on text-, voice- or video-based communication and in some ways blurs the boundaries between virtual and real life. More than other electronic tools for distance communication, users have an improved sense of being 'there' in a classroom, rather than of being a disembodied observer (Kemp & Livingstone, 2006). This potential of 3D virtual worlds opens up new possibilities for collaborative learning processes and experimental learning (Dickey, 2005<sup>37</sup>).

At the "Second Life in Education" web site, Kay and FitzGerald provide a comprehensive compilation of educational uses of Second Life, some of them listed in box 1 below. On their web site each of these categories gets illustrated by several examples and screenshots of selected educational projects and initiatives within the Second Life environment.

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<sup>31</sup> Second Life Eduators (Second LifeED), <https://lists.secondlife.com/cgi-bin/mailman/listinfo/educators>

<sup>32</sup> <https://lists.secondlife.com/cgi-bin/mailman/listinfo/educatorsandteens>

<sup>33</sup> <https://lists.secondlife.com/cgi-bin/mailman/listinfo/healthcare>

<sup>34</sup> <http://www.simteach.com/>

<sup>35</sup> <http://secondlifegrid.net/>

<sup>36</sup> <http://sleducation.wikispaces.com/educationaluses>

<sup>37</sup> Dickey, M. D. (2005). "Three-dimensional virtual worlds and distance learning: two case studies of Active Worlds as a medium for distance education." *British Journal of Educational Technology* **36**(3): 439-451.

## **Box 1: Educational uses of Second Life**

*(Excerpt from a compilation published by Jo Kay and Sean FitzGerald<sup>38</sup>)*

### **Distance and Flexible Education**

Second Life provides an excellent platform for flexible delivery and online education. Students and facilitators can come together in-world to share information and resources via slides, audio and video, engaging in discussions, presentations, group projects and explorations.

### **Presentations, Panels and Discussions**

Second Life's ability to create a sense of presence, shared space and shared experience makes it ideal for presentations, panels and discussions. Presenters can show slides and videos and stream their voices into the world.

### **Training and Skills Development**

The Second Life platform allows for the development of a range of strategies and spaces for training and skills development. Users can access a range of training options in Second Life - both useful in the virtual world and in real life!

### **Self-paced Tutorials**

The in-built building and scripting tools in Second Life allow for the creation of sophisticated self-paced tutorials, allowing residents to learn both real world and Second Life skills.

### **Displays and Exhibits**

Second Life residents are creating displays and exhibits on a broad range of subject areas. Using images, text and multimedia they are able to create dynamic, interactive displays and exhibits which avatars can move in and interact with.

### **Immersive Exhibits**

Immersive Exhibits in Second Life make it possible for residents to engage in, experience and respond to information in context, allowing for a deeper understanding of places, situations or circumstances.

### **Roleplays and Simulations**

Second Life allows students to undertake a range of role-plays and simulations, practicing real life skills in a virtual space or exploring situations that they could not undertake safely or easily in the real world.

### **Data Visualisations and Simulations**

Advanced scripting and building tools built into the Second Life platform allow for the development of complex data visualisations and simulations.

### **Libraries, Art Galleries and Museums**

Second Life currently hosts a range of libraries, art galleries and museums where residents can engage in events, discussions, and displays on a wide range of topics.

### **Historical Re-creations and Re-enactments, Living and Immersive Archeology**

The Second Life platform allows for the creation of amazing, immersive environments based on historical places and events. These environments can be used for a range of learning activities including role-plays, action learning and research and historical study.

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<sup>38</sup> <http://seducation.wikispaces.com/educationaluses>

### **Artificial Intelligence Projects**

The built in scripting tools allow users of Second Life to explore a range of artificial intelligence concepts.

### **Art and Music Projects**

In one sense, all of Second Life is one big arts project, as all of the content is user-generated. However, there are plenty of examples of original artworks, both in galleries and in the "open", from scans of paintings and drawings from the real world to 3D dynamic and interactive sculptures and installations that make use of the unique 3D qualities and building tools of the Second Life platform.

### **Theatre and Performance Art**

Second Life offers the ability to create a range of performances and theatrical events. The easy way to customise avatars and the ability to make elaborate sets and props quickly and cheaply makes it an appealing platform to some performance artists.

### **Language Teaching and Practice, and Language Immersion**

As well as being used by language teachers - including ESL/TESOL - to run language classes, Second Life also provides opportunities to interact with native speakers of target languages.

### **Support and Opportunities for People with Disabilities**

Second Life has also been used to help abused children redevelop socialising skills or adults with cerebral palsy to allow them to share personal interactions without prejudice.

### **Business, Commerce, Financial, Economy Practice and Modelling**

Second Life has a real economy and currency exchange making it possible to experiment with running businesses and engaging in economics modelling in a low-risk environment.

### **Architectural Design and Modelling**

Second Life can be used to create fly-throughs of houses for sale, prototype architectural designs, checking out hotels and other accommodation before you book. "Check out the facilities at a university you are thinking of attending (including the dorm rooms if you are thinking of living on campus)."

There are several video clips available at YouTube and others that introduce the educational use of Second Life. Two well-done and advisable clips are "Educational Uses of Second Life"<sup>39</sup> and "Education in Second Life: Explore the Possibilities".

## **4.3 The strengths and limits of Second Life in education**

In the meantime there have been numerous educational projects and activities that made use of the Second Life environment and there are both enthusiastic and critical voices in terms of the potential Second Life has for education.

As a part of an evaluation study related to the use of Second Life as an instructional setting for an English course, Traphagan (2007<sup>40</sup>) amongst others examined whether students found Second Life easy to use and how they felt about using Second Life in a course. All in all, Second Life was perceived as not very user-friendly and not good for self-learning. While students found Second Life's basic functions such as moving their

<sup>39</sup> <http://youtube.com/watch?v=qOFU9oUF2HA>

<sup>40</sup> Traphagan, T. (2007). Evaluation of a Pilot Use of Second Life in an English Course: 2006-2007. Retrieved June 13 from <http://www.utexas.edu/academic/mec/publication/pdf/fulltext/SecondLife.pdf>

avatars, communicating with others by chat or instant messaging or socialising with other students rather easy to handle, more complex activities like creating objects or placing texts in Second Life were perceived as difficult. Several students characterised the Second Life interface as being relatively unintuitive and called for better training, assistance or comprehensive manuals and tutorials. Second Life was regarded as very useful for learning and understanding others' perspectives by means of role playing through an avatar. Also, on the rather positive side of using Second Life was the facilitated sense of class community.

The following box provides selected key recommendations that Traphagan derived from his students' questionings.

### **Box 2: Using Second Life in education: Key recommendations**

*(Excerpts from Traphagan, T. (2007). "Evaluation of a Pilot Use of Second Life in an English Course"<sup>41</sup>)*

#### **Take students' gaming background into account**

Do not assume that all students are gamers simply because they are in the Net Generation. Assess students' gaming experiences, if possible, and design Second Life learning activities and Second Life training with consideration of students' Second Life technical skills, based on their previous gaming experience unless the development of Second Life technical skill is a learning objective.

#### **Provide adequate training, a manual, and/or tutorials**

The interface of Second Life is not intuitive for users in general. Even when learning activities require only easier tasks, such as moving avatars and communicating, it is essential to provide enough support resources—such as training, manuals, and/or tutorials—to ensure that students are familiar enough with Second Life that they can concentrate on the learning activities comfortably, without being hindered by their knowledge of Second Life. If possible, provide both training sessions and self-training resources, such as manuals and online tutorials.

#### **Take advantage of Second Life's affordance—visual, three dimensional, and avatar-rich**

Second Life is effective for helping students to learn how to integrate visuals and writing, learn about architecture, understand others' perspectives by means of role playing through an avatar. It appears that using Second Life to improve learning is effective when instructional design takes advantage of Second Life's strong features, such as providing three-dimensional visual input, and an avatar-based social experience. More information should be sought to determine what types of learning may be facilitated by Second Life. Firmly anchor Second Life instructional activities in learning objectives and contexts, and explicitly communicate how activities are expected to facilitate attaining the objectives.

#### **Avoid competition among students on the basis of Second Life skills**

For many students, using Second Life is struggle, so they experience considerable frustration when faced with competing tasks for which Second Life skills are critical. Additionally, providing time guidelines or limit for time to be spent for assignments may help students avoid spending unnecessarily large amount of time and frustrate themselves.

<sup>41</sup> Traphagan, T. (2007). Evaluation of a Pilot Use of Second Life in an English Course:2006-2007. The University of Texas at Austin. Retrieved May 28, 2008 from <http://www.utexas.edu/academic/mec/publication/pdf/fulltext/SecondLife.pdf>

### **Capitalize on social interactions in Second Life**

Capitalizing on social interactions is likely to help create positive learning experiences. One should consider adopting Second Life, if the activity requires or maximizes the benefits of the social interaction opportunities afforded by Second Life.

### **Provide moderators for discussions**

Moderators are essential to discussions in Second Life, which would benefit from clearer structure. It is recommended that moderators should be trained to perform several critical tasks: Regulate the flow of discussion so that a new topic is not introduced before participants have finished writing about the present topic. Regulate speaking turns so that all participants have opportunities to express themselves fully. Save notes or a summary of the history of the discussion for later reference. Take snapshots of Second Life discussions, if necessary.

Based on experiences with Teen Second Life – a version of Second Life reserved for teenagers from the age 13-17 with restricted access for adults - Global Kids, Inc. (2006) provide an overview about best practices in using Second Life for education. Again, the authors emphasize that the strengths of virtual worlds such as Second Life is its ability to make users collaborate and interact. Furthermore they see strengths in the potential of Second Life to foster social networking processes, its benefits when being used as a distance learning tool, the playful acquisition of ICT skills and the huge pool of resources, tools, manuals and listservers that are available for Second Life and that can help facilitating educators' work.

Kemp and Livingstone (2006<sup>42</sup>) compare virtual worlds such as Second Life with traditional learning management systems and note that Second Life has some distinct advantages in terms of enhancing the experience of learning. Apart from giving the users a sense of embodiment (in contrast to the sense of being a rather disembodied observer in traditional learning management systems) they highlight the power of rich 3D demonstration models and multi-media material over purely written means (cp. Laurillard, 1997<sup>43</sup>). However, the authors also note some clear disadvantages. For instance they see Second Life as very poor document repositories. Text note cards used within Second Life are simple text documents that only support very limited formatting. Also, though educators can incorporate PowerPoint presentations in Second Life this is rather complex and requires a certain technical knowledge. They also point at the considerable hardware demands of Second Life that often go beyond the capabilities of typical labs in most schools and colleges.

Examining the "hype and reality around virtual worlds" the analyst company Gartner, Inc. (2007<sup>44</sup>) concludes "that the hype surrounding Second Life is considerably bigger than the virtual world's real-life relevance." According to Gartner many Second Life-based projects fail to meet their high expectations, however "the failure is so high because companies are focusing on the technology rather than on understanding end-user requirements". Many companies build their projects on the "cool" factor of Second Life projects and focus too much on technology, while at the same time their projects lack of clear objectives and a limited understanding of their target groups' requirements.

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<sup>42</sup> Kemp, J. & Livingstone, D (2006). Putting a Second Life "Metaverse" Skin on Learning Management Systems. Retrieved June 13, 2008 from <http://www.sloodle.com/whitepaper.pdf>

<sup>43</sup> Laurillard, D. (1997) Learning formal representations through multimedia. In: Marton, F., Hounsell, D., Entwistle, N. (eds) The experience of learning: implications for teaching and studying in higher education. 2nd edition, Scottish Academic Press, Edinburgh.

<sup>44</sup> <http://www.gartner.com/it/page.jsp?id=503861>

## 5. Development of learning courses in Second Life

There are numerous manuals and tutorials that focus on various aspects of Second Life such as how to edit one's avatar appearance, create objects, organise events and numerous other topics. YouTube alone provides several hundred video tutorials, not to mention further tutorials provided by Linden Lab or other Second Life related sites.

This section will not add another tutorial. Rather it will describe the major steps and what to consider as an educator for preparing a course in Second Life from the first implementation to its realisation. The descriptions will include various references to online tutorials that help educators reach their aims. Due to the dynamic nature of the internet one or the other site may disappear or change its URL.

### 5.1 Step 1: Installation of Second Life software

Before you start you have to install the Second Life software on your computer. The latest version of the Second Life software is available in the download section of the Second Life web portal<sup>45</sup>. The software gets updated periodically, however if an update is required the users gets informed when logging in. Second Life does not run on all computers but only on those that meet the minimum requirements specified in the "System Requirement" section<sup>46</sup> of the Second Life portal. Both a sufficient graphic card and bandwidth are necessary to run Second Life successfully. When planning projects with schools in many countries these demands often go beyond their hardware's capabilities. In some cases access to Second Life is also blocked by local firewalls or security restrictions. So, especially when working with schools it is useful to involve the school's technician who can help fixing problems such as reconfiguring a network system's firewall.

### 5.2 Step 2: Registering

The basic account for Second Life is free and includes unlimited access to Second Life, all its tools, events and groups. For exploring Second Life, interacting with others or to participate at events a basic account is sufficient. A premium account is only required if you want to purchase land. Only when you own a piece of land you can build a house that you can for instance use to hold courses. When registering for the first time you have to choose a name for your avatar. The avatar can't be renamed after first registration. Having completed the registration process and having implemented the Second Life software you can login.



<sup>45</sup> <http://secondlife.com/support/downloads.php>

<sup>46</sup> <http://secondlife.com/support/sysreqs.php>

## 5.3 Step 3: Modifying your avatar's appearance

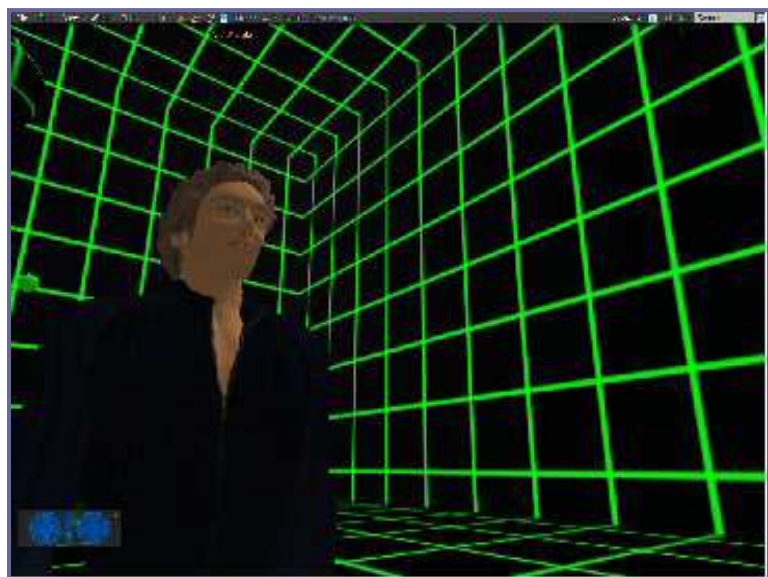
When you login for the first time you will arrive at Orientation Island where you find several useful resources that help you familiarize with the Second Life environment and interface. It's relatively easy to modify your avatar's appearance. Apart from shaping one's body parts it's also possible to modify one's clothes. Moreover each avatar's inventory includes a wide choice of different avatars, clothes, body parts, gestures and much more one can choose from. The two Second Life Comics "Visiting Orientation Island .. or what happens when I log in?"<sup>47</sup> and "How to Dress Up Your Avatar"<sup>48</sup> provide

a good and entertaining introduction in making the first steps in Second Life. Users are not restricted on using the clothes or body parts included in their inventory. They can also create them on their own (what requires some practice and technical skills) or purchase new items in one of numerous shopping areas in Second Life. Second Life is also full of so called freebie areas where clothes and all other kinds of items are available for free.



## 5.4 Step 4: Exploring Second Life

Before you start with the planning of your course you may want to explore Second Life a bit in order to get some practice and to see what others are doing. For getting to another area you can use the "search" option where you can search for instance for places or events. Simply search for any keyword or make use of one of the various search options that helps you to find different categories of places (focusing for instance on education, business, arts and culture, gaming or hangout) or events (such as discussion, education, games, live music or sports). For getting to another location you can also use the map and tick the location you would like to go to. The video tutorial "Searching"<sup>49</sup>



<sup>47</sup> [https://sleducation.wikispaces.com/space/showimage/SL\\_Orientation.pdf](https://sleducation.wikispaces.com/space/showimage/SL_Orientation.pdf)

<sup>48</sup> [https://sleducation.wikispaces.com/space/showimage/SL\\_Avatar\\_ed.pdf](https://sleducation.wikispaces.com/space/showimage/SL_Avatar_ed.pdf)

<sup>49</sup> [http://wiki.secondlife.com/wiki/Video\\_Tutorials/Basics#Searching](http://wiki.secondlife.com/wiki/Video_Tutorials/Basics#Searching)



and "Teleporting & landmarks" <sup>50</sup> at the Second Life Wiki introduces to some basic skills necessary to get from place to place and travel long distances in Second Life. For getting an overview about interesting locations in Second Life it is worthwhile exploring some of the various web portals focusing on Second Life. There are several portals that include sections focusing on educational locations in Second Life such as SimTeach that presents the "Top 20 Educational Locations in Second Life"<sup>51</sup>.

## 5.5 Step 5: Practicing ...

If you want to create objects, even bigger ones like houses you theoretically can try this everywhere within Second Life, except from protected areas. However, as other landowners may not like it particularly when you start creating houses or other objects on their piece of land there, you should use so called "sandboxes" where you have some place to create whatever you want. Sandboxes are automatically wiped several times periodically so that everything you created will disappear. Several building video tutorials are available at the CTER (Curriculum, Technology, & Education Reform) web site<sup>52</sup>. One section of the Second Life Wiki<sup>53</sup> is explicitly focusing on video tutorials that introduces many basic skills including tips on how to create and modify objects. Countless video tutorials that cover almost all aspects of Second Life are also available at YouTube.



## 5.6 Step 6: Renting or purchasing a location

When searching for an appropriate location for holding your course you can either purchase your own piece of land where you put up your learning environment or rent a location owned by others and possibly already equipped with the facilities you need for your purpose. Owning your own piece of land leaves you the freedom to create your learning environment in the way you like. For some target groups such as children having the freedom of being creative and possibly also involve the target group in the creation process may be the better choice. If neither have much time nor technical skills and you prefer to invest more time in preparing the course itself instead of the creation of the learning environment you may want to prefer renting a location that is already well equipped with the facilities you need.

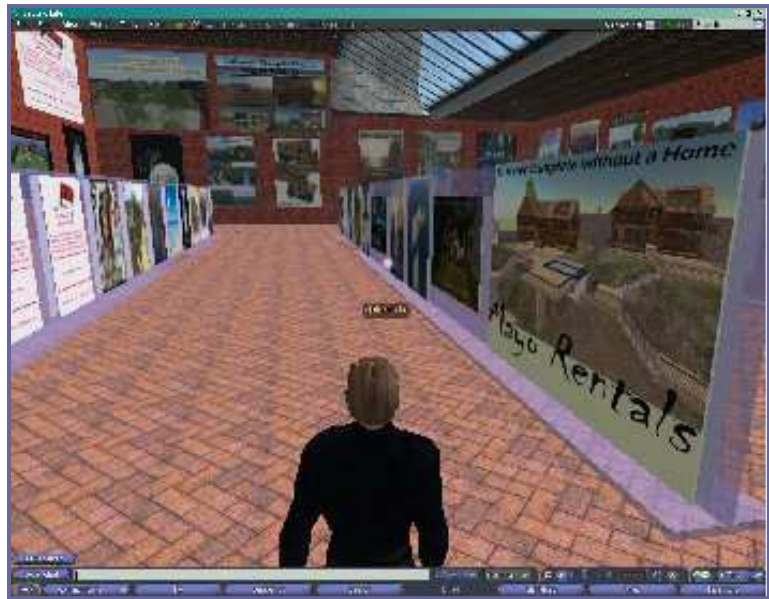
<sup>50</sup> [http://wiki.secondlife.com/wiki/Video\\_Tutorials/Basics#Teleporting .26 landmarks](http://wiki.secondlife.com/wiki/Video_Tutorials/Basics#Teleporting_.26_landmarks)

<sup>51</sup> [http://www.simteach.com/wiki/index.php?title=Top\\_20 Educational Locations in Second Life](http://www.simteach.com/wiki/index.php?title=Top_20_Educational_Locations_in_Second_Life)

<sup>52</sup> [http://cterport.ed.uiuc.edu/technologies\\_folder/SL/](http://cterport.ed.uiuc.edu/technologies_folder/SL/)

<sup>53</sup> [http://wiki.secondlife.com/wiki/Video\\_Tutorials](http://wiki.secondlife.com/wiki/Video_Tutorials)

When purchasing a piece of land you can profit from discounts Linden Lab offers for real world educators<sup>54</sup>. Also, Linden Lab has a special offer for educators interested in trying out Second Life Grid for the first time. For this purpose in the so called "Campus: Second Life"<sup>55</sup> temporary land for educators is granted for the duration of one semester. However, another option worthwhile considering is renting a location. In the meantime there are several archipelagos consisting of several islands of education-focused land. Having been



purchased by large consortia such as the New Media Consortium (NMC)<sup>56</sup> - an international not-for-profit consortium of more than 250 colleges, universities, museums, corporations, and other learning-focused organizations - the land has been subdivided into smaller parcels and rented to colleges, universities, and educational projects (Wikipedia<sup>57</sup>). Virtual locations in Second Life on the NMC Campus may be used upon request with prices ranging from \$100 per year to about \$800 (cp. Wright, 2006<sup>58</sup>). The NMC web portal provides details on the pricing for renting plots or full sims as well as on other services the NMY provides.

## 5.7 Step 7: Creating the learning environment

Depending on the target group and seize of your course or project you may want to consider how professional your learning environment should look like. For running a basic course that targets a rather unpretentious audience a small piece of land with a few chairs or a small classroom with some basic furniture will do. If you offer a course for a more demanding professional audience you may prefer a rather prestigious learning environment such as a building with an appealing architecture and a classroom that allows you using various technical



<sup>54</sup> <http://secondlife.com/community/land-islands.php>

<sup>55</sup> [http://www.simteach.com/wiki/index.php?title=Campus:Second\\_Life](http://www.simteach.com/wiki/index.php?title=Campus:Second_Life)

<sup>56</sup> <http://www.nmc.org/>

<sup>57</sup> Wikipedia: Second Life. Retrieved June 13, 2008 from [http://en.wikipedia.org/wiki/Second\\_Life#Education](http://en.wikipedia.org/wiki/Second_Life#Education)

<sup>58</sup> Wright, T. (2006). Second Life as a Virtual Learning Environment. Presented by Theodore Wright, Programmer/Analyst (a.k.a. California Condor in Second Life) Dec. 10, 2006 Revised May 21, 2008. Retrieved June 13, 2008 from <http://www.dokimos.org/secondlife/education/>

features such as PowerPoint presentations.

As mentioned above it is possible to rent a location on an educational-focused campus such as the one of the NMC. This has several advantages as creating an appropriate setting learning environment that meets the requirements of a learning course is a time consuming and pricy activity. As the NMC Wiki puts it, the NMC campus provides "*researchers and students dozens of prebuilt settings for experiments in social interaction in 3-D space. These settings are expressly designed to encourage explorations along dimensions such as formal and informal; traditional and nontraditional; real and surreal; serious and playlike; and other continua as may be defined. The campus has dozens of settings for these interactions, from the serious to the fanciful, each designed to support an optimal group size, from 2 to more than 75. The campus supports a wide variety of traditional support media, including: Posters, PowerPoint slides, photographs, charts/graphs, videos and weblinks.*"

Of course creating one's own classroom and the classroom facilities is also an option. This requires some practice and technical skills – and much time. Like other objects, facilities for classrooms and even whole school building can be purchased, most of them at a relatively low price. Some are even available as freebies at no costs.

## Step 8: Preparing the course

When preparing the actual course it is advisable to consider the recommendations outlined earlier in this chapter (cp. box 2). Try to make use of the advantages and affordances 3D virtual worlds provide and also consider their limits. Do not explicitly focus on technology and the "cool factor" of using a hip virtual world such as Second Life. This will certainly attract users but the fascination of using a new learning environment alone will not do. Students will only continue attending your course when you provide a learning environment that meets their needs and expectations and that promotes effective learning. So, focus on your students' requirements, try to anticipate problems and challenges that may come up and reserve some time for adequate training and support.

For your course itself Second Life provides various interesting features that help supporting the teaching and learning process. In your course you can for instance include *PowerPoint* presentations. In a visually-oriented learning environment such as Second Life this is an interesting option that also helps making your course more vivid. The video tutorial "How to make a PowerPoint in Second Life – tutorial"<sup>59</sup> outlines the basic working steps.

Another interesting option is the use of *audio or video streaming* that you can upload and incorporate in your course. The article "How to show a video in Second Life"<sup>60</sup> provided at the Second Life Wiki introduces in the basics. Video tutorials that introduce in how to play movies and web pages on your land in Second Life are provided in the "parcel media" section<sup>61</sup>. An introduction in how to include audio files in Second Life is given in the Second Life Wiki article "Overview of Music and Audio in Second Life"<sup>62</sup>

One relatively new option in Second Life is the use of *voice chat*. Made available to Second Life users as an optional part of main Second Life Viewer in the in August 2007 voice chat may help facilitating interaction and discussions within the classroom. The

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<sup>59</sup> Video tutorial: "How to make a powerpoint in Second Life – tutorial". Retrieved June 13, 2008 from <http://www.youtube.com/watch?v=9qA8kp-vbGo>

<sup>60</sup> [http://wiki.secondlife.com/wiki/How\\_To\\_Show\\_Video\\_in\\_SL](http://wiki.secondlife.com/wiki/How_To_Show_Video_in_SL)

<sup>61</sup> [http://wiki.secondlife.com/wiki/Video\\_Tutorials#PARCEL\\_MEDIA](http://wiki.secondlife.com/wiki/Video_Tutorials#PARCEL_MEDIA)

<sup>62</sup> [http://www.simteach.com/wiki/index.php?title=Overview\\_of\\_Music\\_and\\_Audio\\_in\\_Second\\_Life](http://www.simteach.com/wiki/index.php?title=Overview_of_Music_and_Audio_in_Second_Life)

Second Life Wiki dedicates the section "Voice Mentors: Getting Started with Voice"<sup>63</sup> as well as several video tutorials<sup>64</sup> to the use of voice chat.

Recently attempts have been made to adapt complex learning management systems to Second Life. One very promising product is Sloodle<sup>65</sup> that integrates the Second Life environment and the Moodle learning-management system.

If you want to hold an event you have to consider that the numbers of users accessing on location in Second Life at the same time is restricted. For a whole island the maximum number of users is around 50, for a single classroom the number is considerably lower. However, with an appropriate capture/broadcasting software you can broadcast your course live from Second Life to an external web site and thus to an almost unlimited audience. Vice versa, it's also possible to stream video into Second Life. An article in the Second Life knowledge base<sup>66</sup> introduces in both streaming into and broadcasting from Second Life.

## 6. Summary and outlook

### 6.1 Summary: Second Life and its use in education

Second Life is one outstanding example of a new generation of 3D virtual worlds. Neither the concept of Second Life nor most of its features are new. It rather is the latest – but certainly not the final – step in a long evolutionary process that led from first text-based MUDs over MMOGs to today's Metaverses, 3D Web and Web 2.0 applications. Second Life combines many elements and qualities of previous virtual worlds, online games, social-networking sites, user-generated content, the WWW and different communication technologies. What makes it different from many other rather game-oriented is that it is completely free of a publisher-imposed narrative. It neither has a given plotline or setting, so that users have the freedom to use Second Life in the way they want.

It seems as if many, if not the majority of users, does not necessarily make use of this freedom they have. Rather there is a striking resemblance to the physical world with users who do not only re-create virtual counterparts of real-world sights, cities and other facilities but do also impose their self-created virtual settings the physical, cultural and temporal limitations of the real world. Several studies suggest that the social impact of virtual worlds such as Second Life is wider than one may assume. For instance qualities users acquire online such as confidence or security can affect one's behaviour in the real world, often without awareness. There is also evidence that people's self-representations in an online environment may have an impact on their behaviour in real life, the so called „Proteus Effect“.

As we outlined in this chapter in recent years Second Life has attracted an increasing number of educational initiatives, universities, colleges, schools and other educational institutions. There are various educational uses of Second Life some of which we mentioned in this chapter such as distance education, training and skills development, role plays and simulations or language teaching. In the meantime there are numerous resources for educators using Second Life such as video tutorials, manuals, listservers and online communities. As we demonstrated there are several features that make Second Life interesting for educators. Apart from enabling students to interact with their avatars in a 3D environment, Second Life allows educators to incorporate several

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<sup>63</sup> [http://wiki.secondlife.com/wiki/Voice Mentors: Getting Started with Voice](http://wiki.secondlife.com/wiki/Voice_Mentors:_Getting_Started_with_Voice)

<sup>64</sup> [http://wiki.secondlife.com/wiki/Video Tutorials#VOICE CHAT](http://wiki.secondlife.com/wiki/Video_Tutorials#VOICE_CHAT)

<sup>65</sup> <http://www.sloodle.org/>

<sup>66</sup> <https://support.secondlife.com/ics/support/default.asp?deptID=4417>

applications that are useful for holding courses such as PowerPoint presentations, video and audio files, Second Life adaptations of learning management systems such as Sloodle and even voice communication.

In spite of the undeniable potential Second Life has, there have been recent critical voices saying that Second Life has been overhyped and overestimated. Indeed, statistics published by Linden Lab<sup>67</sup> suggest a slowing growth rate in terms of new registrations after a peak around the end of 2006. Following the findings their study, the Yankee Group (2007<sup>68</sup>) concludes *"that the hype surrounding Second Life is considerably bigger than the virtual world's real-life relevance."* *"Despite near-continuous coverage in the popular and business press, Metaverses like Second Life are experiencing slowing growth and limited impact because of the tethered nature of their virtual world experience"*.

However, there are studies that suggest that the failure of many projects in Second Life may be due to the fact that many companies build on the "cool" factor of Second Life projects and focus too much on technology, while at the same time their projects lack of clear objectives and a limited understanding of their target groups' requirements (Gartner, 2007<sup>69</sup>). Indeed, evaluation studies of courses held in the Second Life environment revealed that for educational purposes Second Life can be promising, provided educators consider the requirements of their user groups as well as the potentials and limits Second Life has. So, sometimes "the condemned live longer" and probably in spite of recent critical voices it is too early to bury the idea of 3-D based virtual world, especially in the field of education.

## 6.2 Outlook: What may the future bring

So, what will the future bring? 3D virtual worlds and Metaverses such as Second Life are still in a very early stage of their evolution and it is hard to foresee how future users' virtual worlds may look like. However, there is reason to assume that they have the potential of playing an increasingly important role in future.

There are comprehensive and outstanding initiatives such as the Metaverse Roadmap Project (MVR)<sup>70</sup> - a collaborative effort relying on input from key web pioneers, experts and companies like Google, Sony, Multiverse or Linden Lab - that aim at generating future scenarios. The Metaverse Roadmap Project amongst others deals with questions such as *"What happens when video games meet Web 2.0? When virtual worlds meet geospatial maps of the planet? When simulations get real and life and business go virtual? When you use a virtual Earth to navigate the physical Earth, and your avatar becomes your online agent?"*

Referring to the Metaverse Roadmap Project and other sources the CNN article "Virtual worlds: The next Facebook?"(Rawlinson, 2007)<sup>71</sup> outlines some future visions of virtual worlds such as life-like photo-realistic avatars with eye movement, breathing, and realistic expressions as well as holographic projections of 3-D objects. According to Rawlinson the authors of the "Metaverse Roadmap" predict that by 2016, *"half of us will have interactive avatars, with those aged between 13 and 30 spending around 10 hours a week socializing in 3-D visual environments"*.

In future the boundaries between real and virtual world may blur. People in future *"will likely see little distinction between their real-world social lives and their interactions*

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<sup>67</sup> [http://secondlife.com/whatis/economy\\_stats.php](http://secondlife.com/whatis/economy_stats.php)

<sup>68</sup> [http://www.next-gen.biz/index.php?option=com\\_content&task=view&id=7343&Itemid=2](http://www.next-gen.biz/index.php?option=com_content&task=view&id=7343&Itemid=2)

<sup>69</sup> <http://www.gartner.com/it/page.jsp?id=503861>

<sup>70</sup> <http://metaverseroadmap.org>

<sup>71</sup> Rawlinson, L. (2007). Virtual worlds: The next Facebook? Retrieved June 18, 2008 from <http://edition.cnn.com/2007/TECH/08/07/virtual.living/>

*in digital, 3D virtual worlds. And they'll increasingly turn to services like an enhanced Google Earth that are able to present data on what's happening anywhere, at any time, as it unfolds."* (cp. Terdiman , 2007<sup>72</sup>).

Only the future will tell to what extent these predictions will remain pure science fiction fantasies or probably become real. Nevertheless, there is no doubt that what nowadays virtual worlds and Metaverses are only a starting point for development that will have a wide impact, not only on education but also on our everyday's life.

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<sup>72</sup> Terdiman , D. (2007). Meet the metaverse, your new digital home. Retrieved June 18, 2008 from <http://www.spiegel.de/sport/fussball/0,1518,560143,00.html>