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Students' Attitudes in a Virtual Environment (SecondLife)

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Abstract:

The benefits of collaborative work have been widely discussed and supported by educational theories such as constructivism and social learning. This paper investigates the process of collaborative work in a university classroom. It presents the students' experience and attitudes towards using SecondLife in their learning activities. Questionnaire, interviews and observation methods were used to assess the students' experience and attitudes. The study results indicate that students had enjoyed the experience of using SecondLife, although some negative attitudes and experience, concerning the system's usability and familiarity, were reported.

Keywords: Virtual worlds, Second Life, Students' attitudes

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Students' Attitudes in a Virtual Environment (SecondLife)

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Several new technologies are being used to improve the collaboration process. Recently Web 2.0 has come to dominate over existing information systems by providing an interactive way for people to communicate and collaborate. For instance, metaverse platforms enable Web 2.0 to provide an immersive, social and interactive environment for its users to communicate. This paper presents a study done using SecondLife as a metaverse platform.

SecondLife is a 3D graphical environment developed by Linden Labs. It is accessible through the web and allows a large number of concurrent users to interact synchronously. Each user is graphically represented by an avatar that can walk, fly, drive a vehicle, and teleport to simulated environments to engage in all kinds of activities. It is one of the most recent and popular metaverse platforms, allowing not only synchronous and asynchronous communication but also the dynamic changing of the virtual environment through the ability for all users to build within it. The SecondLife world is constantly changing as avatars interact with it and with each other. Although it is free to join, residents can buy land and build stores and homes and sell their creations to other users of the program. SecondLife was launched in 2003 and currently has more than 13 million registered accounts (Institutions, 2008).

The shortcomings of some existing collaborative virtual environments (CVEs), such as a poor sense of presence, and limited non-verbal communication, have been pointed out by several authors such as Irani et al. (2008). However, CVEs are clearly successful for multiplayer games such as World of Warcraft (Ducheneaut et al., 2007), which has led educators to explore the potential of SecondLife as a CVE that might motivate collaborative learning (Hew and Cheung, 2010; Salmon, 2009). Some studies of collaboration in CVEs have suggested that presence and user experience can be augmented, unlike conventional 2D interfaces, since avatars can provide improved awareness of others and of shared tasks. SecondLife can facilitate sharing experience and personal information, although Neustaedter and Fedorovskaya's (2009) qualitative study suggests that SecondLife complements real life experiences rather than being an effective substitute for them. This paper presents a study done using SecondLife as a metaverse platform.

Nowadays, it is possible for students to follow their courses online using various Computer Mediated Communication (CMC) tools. Academic institutes are using different types of CMC, with the aim of improving the teaching and learning process. Several studies have discussed the benefits of using such systems in the learning process (Liaw, Huang, & Chen, 2007; Bouhnik and Marcus, 2006; Raab et al., 2002; Capper, 2001; Shotsberger, 2000) such as anytime, anywhere features, and multiple ways of communication. Recently, there have been concerns about the potential of using metaverse platforms in education. The purpose of this study is to investigate the process of collaboration using SecondLife by gathering data about students' general experience and attitudes.

Previous studies have disagreed about the effectiveness of CMC tools on learning, whether they have a positive or a negative impact. However, a third group of studies has found that there were no significant differences between traditional ways of teaching (face-to-face) and using CMCs (Johnson et al., 2000; Botsch and Botsch, 2001; Sankaran, Sankaran, and Bui, 2000; Hensley, 2005). Lester and King (2009) indicate that online students using CMC tools such as Blackboard and SecondLife systems learned just as much and enjoyed the teaching experience

just as well as their traditional counterparts using face-to-face. Shelley, Swartz and Cole (2006) found no significant differences between the two formats with regard to student satisfaction and student learning.

SecondLife is differentiated from other CMCs both by the richness of the 3D graphics, which makes it an immersive tool, and by the ability of individuals to customize their appearance and behaviour to interact with this world. Thus, SecondLife may be both more fun and more 'engaging' than other online environments. It is certainly suited to developing a sense of immediacy, shared experience and emotional closeness. By using SecondLife, it is possible to make the learning and teaching experience more real for online students than do the other tools such as Blackboard. Using SecondLife's rich immersive environment enables students to repeat the learning experiment as many times as they wish, with less or maybe no cost. Also, SecondLife can replicate expensive and potentially dangerous activities (Dede, 2004; Foss, 2009), and virtual role-playing may help students to overcome worries of 'getting it wrong' in real life groups (Broadribb and Carter, 2009). The use of avatars in SecondLife may also empower people marginalised by their looks or physical abilities. Kemp and Haycock (2008) reported high levels of student engagement and motivation when using SecondLife. However, they argued that the use of SecondLife alone is not enough for reflection and deep learning but should be blended with the use of content management systems such as Blackboard for sharing documents and asynchronous threaded messages. The use of SecondLife is argued to have a positive impact on students' interaction (Burdea and Coiffet, 2003; Mantovani, 2003), confidence (Pham et al., 2008), immersion (Burdea and Coiffet, 2003; Sherman and Craig, 2003; Tax'en and Naeve, 2002), imagination (Burdea and Coiffet, 2003), motivation (Nicholson et al., 2006; Shim et al., 2003), problem-solving capabilities (Brenton et al., 2007; Holmes, 2007) and collaborative learning (Pan et al., 2006; Sherman and Craig, 2003; Tax'en and Naeve, 2002).

Method

An investigation of second-year undergraduate students undertaking the Business Team Project module was chosen because it involved groupwork and use of a collaborative technology (SecondLife). One of the module's main learning objectives was to practise collaborative work. The module instructor asked the 38 students to form seven self-selecting groups, six of five or six each.

The groupwork task was to create a virtual world environment where students, prospective employers, school teachers and university academics could meet for purposeful activity. The deliverable was to identify stakeholders and requirements, design a virtual environment and organize a virtual world event. As Manchester Business School has a presence in SecondLife, the students had access to a wide range of rooms and facilities available on the Manchester Business School island. Each group had to identify the needs of stakeholders, e.g. students, employers and tutors, and organize an event in SecondLife to address some of their requirements.

The taught part of the Business Team Project involved a one-hour lecture and a two-hour tutorial session each week throughout the academic year (20 weeks of teaching). Discussion boards on Blackboard were set up in the second semester to provide technical support for the design phase.

The lectures covered a range of topics including project management, research methodologies, stakeholder analysis, facilitation techniques, business report writing, organization

of events and presentation skills. Guest lectures with speakers from companies on topics such as groupworking skills were arranged.

The aim of the tutorials was to enable students to acquire technical skills (administration of virtual spaces) and facilitate their groupwork. During the first semester students met with tutors to discuss ideas, define the scope of the project, identify requirements, and set up a plan. In the second semester, students undertook SecondLife tutorials to familiarize themselves with the environment and design suitable areas for their event. Most of the groups invited employers and organized mock events.



Figure 1. Screen dumps of two groups' events organized in SecondLife.

The researcher observed the students in the second term, while they were in the practical sessions working towards their groupwork goals. The students had nine weeks of practical sessions in which to organize their event in SecondLife. After that, the groups were assessed by the module's tutors and the employers.

The questionnaire was administered to measure the students' attitudes and opinions towards their groupwork experience. It was divided into two parts: the first part collected general data about the students' experience and use of collaborative technologies, specifically Blackboard and SecondLife; and the second part captured students' ratings of their experience (6 items), the use of virtual identity (1 item), communication methods (3 items), participation (1 item) and presence and immersion (6 items) on 7-point scales, based on Whitmeyer and Singer's scale for presence and immersion in virtual environments.

Interviews were used to investigate the students' points of view and experience in more detail. An open coding schema was used to analyze the interview data.

Results

This section articulates and discusses the analysis of the data collected through observation, interviews and questionnaire.

Observation.

The practical sessions were observed, while the groupwork was taking place. There were slight variations in the actual number of students attending. Individuals were distributed between

two labs, and the students used computers to communicate, practise and interact with their group members, even when they were located in the same lab. However, using the computers to do the groupwork did not prevent the group members from occasionally interacting face-to-face.

Generally, subgroups were not formed during the observed sessions. The researcher had assumed that the group members had pre-existing relationships as they had worked together in the previous term on the same project. In each session, the group members were free to organize their work as they wished. For this reason, some of the group members preferred not to attend the tutorial sessions and tried to connect to the group remotely or to meet later on face-to-face.

In the first two sessions, most of the students explored the virtual environment. Later, they started to collaborate on decisions about what kind of event to organize, whom to invite, when to run the mock event, when the actual event would take place, and which were the most suitable rooms in MBS Island to book, etc.

The number of students attending the class decreased slightly towards the end of the term. It was assumed that the students had already started their implementation and some had already run their mock event, therefore they did not need further practical sessions.

All groups had frequent discussions with the tutors about technical issues relating to the virtual environment. Their issues related to: virtual rooms' bookings, ability to modify rooms and to what extent, ability of non-ITMB students to have access to the island, ability to provide web space, and how to shape objects. Most of the technical queries were sorted out by the lab demonstrator.

The group members were well motivated to design their event in the virtual world. It was noticed by the lab demonstrator that they also had intrinsic motivation to learn the scripting language of SecondLife to script their event objects: the technical limitations challenged them to learn more about designing and scripting in Secondlife. For example, the lab demonstrator observed some group members puzzled by the problem of shaping and scripting objects, and they continued asking for information, help and advice even after the lab time, through Blackboard. However, they succeeded in reaching solutions within a week and looked forward to future challenges.

Questionnaire.

A questionnaire was used to collect feedback on the use of SecondLife, to establish the attitudes of the students towards the virtual world environment, and rate their overall experience. A scale of 1 (strongly disagree) to 7 (strongly agree) was used to measure the students' opinions. A total of 34 responses were received.

Table 1 shows the students' opinions of using different web-based technologies for learning. Averages show that most of the students learned through using different types of technologies.

The University uses Blackboard as a virtual learning environment. The questionnaire collected data about the use of Blackboard in order to compare it with SecondLife. Table 2 shows the means of the students' opinions about the use of Blackboard for learning activities.

Table 1.

Learning through different technologies

	Mean	SD
Text-based conversations over e-mail, IM, and text messaging	4.29	1.61

Programs I can control, such as video games, simulations, etc.	4.18	1.64
Contributing to websites, blogs, wikis, etc.	4.06	1.32
Virtual Learning Environments (e.g. Blackboard, Moodle)	5.50	1.21
Running Internet searches	5.74	1.60
Creating or listening to podcasts or webcasts	3.26	1.68

Table 2.

General students' opinions about the use of Blackboard in a course

	Mean	SD
I get more actively involved in courses that use it.	4.88	1.57
The use of Blackboard in my courses improves my learning.	5.71	1.36
The use of Blackboard enables me learn when/where ever I was.	5.39	1.68
I get more motivated in courses that use it.	2.56	1.48
I skip classes when materials from course lectures are available on it.	4.35	1.72

It is obvious from the standard deviations that the students' responses varied; however, overall the responses tended to agree, with the students asserting that the use of Blackboard enabled them to learn when/wherever they were.

Secondly, the students slightly agree: 1) that they get more actively involved in courses that use Blackboard; and 2) that the use of Blackboard in the course improves their learning. However, the students disagree that they get more motivated in courses that use Blackboard. The responses indicate that a student's involvement and performance during the course can be affected by the use of technology such as Blackboard. Thirdly, they marginally agree that they skip classes when materials from course lectures are available online for the students to download at any time.

Table 3 shows the means of the students' opinions about the use of SecondLife for learning activities in the classroom. A similar scale was used to measure the students' opinions.

Comparing the results of the students' opinions toward the use of Blackboard and SecondLife as shown in tables 2 and 3, SecondLife received worse ratings than Blackboard for learning. This may be due to the nature of the application, where students are more familiar with Blackboard and it was suitable for academic use. In contrast, SecondLife is considered as a game-oriented technology used mostly for entertainment or social communication (supported by the students' views from the interviews). Results from the ANOVA test show that there is no significant difference between the seven groups' opinions across the technologies.

Table 3.

General students' opinions about the use of SecondLife in a course

	Mean	SD
I get more actively involved in courses that use it.	2.12	1.12
The use of SecondLife in my courses improves my learning.	2.12	1.20

The use of SecondLife makes me learn when/where ever I was.	2.29	1.40
The use of SecondLife makes me communicate with my group members anytime/anywhere.	3.32	1.99
I get more motivated in courses that use it.	2.00	1.35
I skip classes when materials from course lectures are available on it.	2.06	1.41

The next section of the questionnaire gathered information about the use of SecondLife. From table 4 we can see that the students' responses varied on the purpose of SecondLife. They used SecondLife for entertainment and communication purposes but rarely to share learning resources or as a brainstorming tool for their groupwork.

Table 4.
Reasons for using SecondLife

	Mean	SD
Learning	26%	0.45
Brainstorming	06%	0.24
Entertainment	47%	0.51
Communication	50%	0.51
Social	38%	0.49

The students' opinions about the use of SecondLife in class are shown in table 5. Students were not especially motivated or interested in using SecondLife, but they appreciated that its use was one of the module requirements (supported by interview data). Students varied in their experience, but the majority rated poorly the effectiveness of using SecondLife for learning. However, the students were better motivated towards groupwork in SecondLife.

Table 5.
Students' opinions about the use of SecondLife in class

	Mean	SD
How would you describe you in class experience of learning in SecondLife?	3.88	1.33
How would you rate the effectiveness of using SecondLife for learning?	3.15	1.41
How would rate your motivation for using SecondLife in groupwork?	4.29	0.87

Table 6 shows the students' preferences about their identity in SecondLife. Most preferred to keep their real identities in the virtual world, although a few preferred not to use their real name or appearance.

Table 6.

Students' preferences about their virtual identity

	Mean	SD
Prefer using your real name	4.27	1.96
Prefer using a different name	3.78	1.56
Prefer using similar appearance to yourself	4.91	1.45
Prefer using a different appearance	3.32	1.49

Table 7 gives details of the students' experience in SecondLife compared to their real (face-to-face) experiences. Students' interactions were not very natural, which may be a consequence of their limited experience with the environment. They preferred moderate immersion in the environment; however, they could contact each other face-to-face and this may have interfered with their immersion. The results show a moderate response to how compelling was the sense of moving around inside the SecondLife environment and to how effective was the sense of perspective.

Table 7.

Students' ratings of Presence

	Mean	SD
How natural did your interactions with the SL environment seem?	3.29	1.24
How aware were you of events occurring in the real world around you?	4.97	1.38
How much did your experiences in the SL seem consistent with your real world experiences?	2.82	1.62
How compelling was your sense of moving around inside the SL environment?	3.71	1.47
How involved were you in the SL experience?	4.38	1.79
How effective was the sense of perspective (depth of field)?	4.00	1.58

The results in table 8 show that the students found the chat tool quite suitable for communication; they also opened the chat history box in between to keep in step with the group members.

Table 9 demonstrates that the use of SecondLife for groupwork can lead either to the same level of participation or to even less. This may have been caused by usability problems in SecondLife, where students had problems of access and communication with their group members. Also, the nature of the groupwork, mixing face-to-face meeting and SecondLife, limited the beneficial effects of the tool; which they frequently left for their regular and richer way of communication (face-to-face).

Table 8.

Students' responses about Communication

	Mean	SD
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Did you find the chat tool suitable for communication?	4.47	1.60
How important to you to open the Chat History Box to catch up with a conversation?	4.41	1.99
Did you chat with other students in SL while the tutorials were running?	4.68	1.72

Table 9.

Level of participation in SL as compared to face to face teaching-learning sessions

	Mean	SD
Yourself	3.06	1.48
Other members of your group	3.32	1.34
Your instructor	3.29	1.36

This was followed by two questions to gain a deeper understanding of how the students perceived the use of SecondLife for their learning.

Table 10.

Students' opinion regarding the following SecondLife aspects

	Mean	SD
Realistic	2.97	1.55
Interactive	4.65	1.50
Fun	4.44	1.71
Arouse interest	3.94	1.50
Effective in gaining knowledge	3.29	1.43
Updates course related information	2.65	1.52
Improves collaboration	4.26	1.38
Improves communication	3.62	1.71

Table 10 demonstrates that students think SecondLife is not sufficiently realistic to assist their learning and that it is poor in updating course-related information. They rate SecondLife as slightly negative in its effectiveness in gaining knowledge, and they also think that it does not help in improving communication. However, they were positive that SecondLife can improve collaboration as they rated it as good for interactivity, motivating to arouse interest, and giving members fun even if they are involved in groupwork.

Table 11.

Students' opinions about using SL as a learning environment (Yes/No answers)

	Percentage saying Yes
Casual discussion and interactions	82%
Formal university lessons	18%
Tutorials	41%
Presenting work for others to see	53%

Although the students were positively motivated toward their groupwork, and most of the groups performed very well at the end of the term, they still did not recommend the use of SecondLife in any learning activity (see table 11).

Interviews.

Four interviews were conducted at the end of the term to investigate more deeply the process of the groupwork, by identifying more details and the problems faced. Some of the students' concerns regarding the use of SecondLife in the classroom are highlighted in the following statements: "I think we still prefer more face-to-face meeting than doing it in SL. Because in SL, people who are SL active users might tend to be distracted from participating and less interested people are not keen to do anything in SL." "People do not take meetings seriously in SL; it is treated like a game." and "People are unsure of its uses, so don't know how creative they can be."

All the interviewees agreed that they had been given a good opportunity through this groupwork to know, explore and use SecondLife effectively. They shared similar opinions about the use of SecondLife: basically, all of them commented that it was fun to use. However, it was game oriented and chaotic for use in the classroom.

All preferred the use of face-to-face groupwork and commented that face-to-face communication is more effective than the use of computer mediated communication. However, they were motivated to use SecondLife to meet their groupwork requirements, and for the following reasons: it challenged and motivated them to learn how to create objects and script them; it motivated them to use SecondLife formally, for example, Student 3 was determined to win the groupwork prize. The students did not understand the actual potential of SecondLife from the beginning, and they all thought it felt like a virtual game. "I wanted to become interested in Second Life to get a good understanding of it and to create a good idea, and to carry out a good event, and therefore we would get the money."

One respondent considered SecondLife was innovative as a communication channel. This student appreciated meeting up with employers easily and frequently.

'I think it's quite innovative in the way that it allows people in different locations to talk to each other. I know that with our project, when it involved employers on the actual course itself, the only real time we got to meet employers was at specific events or presentation evenings. I think on some occasions we met with the same employer about four times in the space of a week, whereas you probably wouldn't even see them four times in the space of a year, so I think it's, it's quite clever the way it allows people all over the country to come together. I think it's quite clever how you can exchange different information like presentations, and construct objects. I think it's quite innovative and exciting to use.'

The students considered that the advantages of SecondLife are: cost effective, enhances creativity, virtual interaction but still not as good as the real interaction, virtual presentation, seeing people virtually and talking to them, creating and sharing the creation of an object, and synchronicity if all the members are present. The disadvantages are: people misuse the environment, it is an uncontrolled environment, there is no no direct supervision over students, coordination is harder than in real life, it is not serious not to be trusted as you cannot make sure of the other party's situation or level of familiarity.

SecondLife motivated students who were interested in technical topics to learn its scripting language and to create different shapes for their events. Additionally, business-oriented students benefited from this experience by learning skills to organize events, coordinate groupwork and deliver presentations.

Synchronous technologies were preferred because the students wanted to share information instantly and to exchange ideas at the same time as producing documents for their groupwork. SecondLife has some synchronous benefits if all the members' avatars are available in the virtual world.

Most of the groups used the chat tool to interact because not all the members had headsets to use the audio feature. The students found the chat history useful to track the conversations and to keep a record of the group meetings.

Student 1 reported that taking the leadership role was easier in SecondLife than in reality because people acted freely using their avatars. "I think it is easier to stand up and make a proposal on SecondLife and sort of try to direct the group into a different direction because people don't relate it directly to you."

Student 3 commented that leadership differs in the virtual world; in the virtual environment it was more equal and there was no need for someone to lead as the technology can report and update members with what is going on and what each member needs to do after each virtual meeting, while in real face-to-face meetings there is an important role for a leader to update the other group members with the work.

Discussion and Conclusion

Despite the students' technical difficulties, they commented positively on their learning through the project, such as: "SecondLife increased our innovation". Additionally, they were challenged and motivated to do some extra work to learn more about the virtual environment; one commented, "I think, even though it might be a bit more expensive, students should have more freedom, i.e., be able to build their own room/building". Groupwork does not only help students to learn new things by practice, but also, as one of the students commented, "it encouraged social loafing".

Another challenging problem for the tutors was to control the students' behaviour in the virtual world. Despite the tutors' efforts to remind them of the code of conduct of SecondLife, some still did not follow the rules. Further development might be the ability for academic institutions to register their students with their actual names; this would remove the anonymity which enabled students to misbehave in using the system. Furthermore, some students suffered from others who were not sufficiently educated in the use of virtual environments. One commented: "people don't take meetings seriously in SecondLife, it is treated like a game"; another noted: "constrained environment, lack of knowledge of how to use it efficiently".

Although the literature asserts that students can benefit from the use of CMC in class to enhance their level of group participation, motivation and engagement. the students did not have a sense of formality in using the virtual environment for their groupwork, and most of them perceived SecondLife as an entertainment environment but not appropriate for formal groupwork.

The students' suggestions for improvements:

- Take it more seriously by restricting the behaviours: “A formal sort of way where avatars are dressed appropriately because that sets the atmosphere and then restricts the behaviours, but obviously allowing group work and collaboration.”
- Enhance the graphics to make it look more real and by adding facial expressions.
- Merge other collaborative technology benefits with SecondLife, such as Google documents.
- Enhance the audio quality and expand the browser abilities.
- Stop the flying feature for academic use, as it does not look formal at all.
- Add a voice recognition feature.
- Include more categories of gestures for different usage: “Maybe if they had a category of business gestures or presentation gestures then it could be a lot easier for the user to control F5 to raise your hand or whatever.”

All the students suggested having the ability to point to enhance the interaction with the objects in SecondLife, especially for presentation purposes.

This study assesses the students' attitudes towards SecondLife. Results show positive motivation using SecondLife, but the students did not prefer it over traditional ways of group working. This might be because of poor usability, and that SecondLife was not familiar to them; they were more familiar with other web-based technologies such as Blackboard. In sum, from the students' comments we can conclude that Blackboard is better for longer-term collaboration while SecondLife may be better for specific tasks but needs to use the affordances of 3D and interaction. Academics can make the best of virtual collaborative technologies such as Blackboard and SecondLife by merging them. Blackboard can be useful for feedback on the progress of learning, and SecondLife for immediate task-based learning and for constructive learning.

The current study has given a good insight into the learning process using 3D graphical virtual worlds technology, where the student's perceptions of the usefulness and effectiveness were measured in various ways. Future study will look more deeply into the learning process through recording and analysing the group discussions that took place during the virtual collaboration. The analysis of the groups' discussions might help to understand how the students' attitudes were affected by the virtual discussion. This can be done by comparing groups working with the same groupwork requirements but different environments, such as comparing the use of SecondLife and a face-to-face groupwork environment.

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