Using a Classification of Psychological Experience in Social-Networking Sites as a Virtual Learning Environment

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ABSTRACT

With over 800 million users worldwide, the global importance of Facebook as a social-networking platform is beyond doubt. This popularity, particularly among university-students, has encouraged research to explore ways in which social networking can be adapted into virtual learning environments. In particular, this study uses the think-aloud technique to explore university-students’ use of and interaction with Facebook. Twenty-six Teesside University students who were also Facebook users took part in a think-aloud study. Seven major categories of experience emerged during the coding and categorisation process of the think-aloud data. Further analysis revealed that six fundamental psychological needs were each related to particular themes of user-experience. Overall, the results demonstrate that psychological needs are particular qualities of students’ experience that are important in online social networking. Future research should investigate psychological needs in the context of virtual learning environments and ways in which these needs can be best supported for learning.

Keywords: Facebook, Immersive Virtual Environment, Learning, Psychological Needs, Social Networking, University Students, User Experience, Virtual Learning Environment

INTRODUCTION

The term “virtual world” is used to describe a computer application in which multiple users can participate by interacting with the environment and with each other using an online interface (Shore & Zhou, 2009). In a virtual world, users are usually represented as avatars within a graphical environment that can range in complexity from two-dimensional images to fully immersive three-dimensional environments. At present, virtual worlds are currently being used as educational spaces and continue to grow in popularity on university campuses and businesses around the world. Likewise, access to different versions of virtual worlds on the Web has been predicted to become common in education, in the coming years (Edutech, 2007, as cited in Hansen, 2008). Already, there is a clear trend in higher education toward distributed learning, with rapid changes from
physical learning environments to virtual learning environments (Piccoli et al., 2001).

Furthermore, there is increasing similarity between online communities such as virtual learning environments and common collaboration environments, such as Facebook, as places where students and scholars work, collaborate, share, and plan (Mitchell & Watstein, 2007). Whilst in the past virtual worlds have been criticised for lacking invention and information, they now incorporate social-networking technologies such as chat plus a rich hypertext to overcome these limits. By exploring virtual learning environments and social networking, researchers can select the best aspects of each approach and gain an understanding of the types of interaction that are relevant for particular learning objectives. Thus, designers and educators will be able to select the best learning strategy without excluding one technology or another and develop a better understanding of how learning activities and interactions can be better structured and represented in relation to each other (Dillenbourg et al., 2002).

Although many authors are expounding the educational and research potential of virtual worlds, educational research involving the use and effectiveness of these innovative technologies in relation to social networking is still in its infancy (Hansen, 2008). In the following sections, we explore virtual learning environments and social-networking sites, and compare popular sites, Second Life and Facebook, in terms of functionality and potential for collaboration.

VIRTUAL LEARNING ENVIRONMENTS

Virtual learning environments are defined as open systems that allow their users to interact with each other through synchronous or asynchronous electronic communication (Piccoli et al., 2001). Typically, a virtual learning environment is designed to facilitate teachers in the management of educational courses for their students and is characterised by a shared social space, a graphical user interface, real-time interaction, user-generated content, persistence, and active support for in-world social groups (Mitchell & Watstein, 2007; Book, 2004, as cited in Hayes, 2006). According to Dillenbourg et al. (2002), virtual learning environments can be identified by the following features.

- A designed information space.
- A social space where education interactions occur.
- A virtual space which can be represented in forms of text to three-dimensional immersive worlds.
- Students not only being active, but also as actors who co-construct the virtual space.
- The potential integration of heterogeneous technologies and multiple pedagogical approaches.

The use of virtual learning environments has been shown to facilitate reflection and the communication between online learners, which can lead toward better building of communities of practice (Boulos et al., 2007). For example, reflective processes can be supported through the use of synchronous interaction or asynchronous discussion boards, and within visual range of all other contributors, providing users with a sense of closeness and engagement that can provide an experience matching that of a telephone-conference call (Boulos et al., 2007).

Furthermore, what is specific to virtual environments compared to any other type of information space is that they are populated (Dieberger, 1999). Users are inside the information space and see a representation of themselves and/or others in the space. As soon as students see who else is interested by particular information, the space becomes inherently social. According to Nurmela (1999, as cited in Dillenbourg, 2002), the notion of social space opens interesting possibilities such as the emergence between social networking and virtual learning environments. This is a promising avenue for research that is yet to be properly explored.
SOCIAL-NETWORKING SITES

A social network is generally considered to be a structure consisting of nodes that are connected by one or more specific types of interdependency, such as values, visions, ideas, contacts (‘friends’), relationship, dislike, conflict, trade, disease or condition. When such systems are mediated by computers, the resulting system is known as a social-networking system (Shore & Zhou, 2009). According to Boyd and Ellison (2007), a social-networking site is a Web-based service that allows individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. The primary aim of social-networking sites is to enable a person to communicate with individuals who are already part of his/her extended social group rather than as a means of meeting or sharing information with strangers. Since the first “real” social-networking site (SixDegrees) was launched in 1997, the popularity of these sites has greatly increased with the emergence of Bebo, MySpace, Ning and particularly Facebook, which has grown to become the most popular social networking Web site in the world (Sclater, 2008).

Social-networking sites offer students unprecedented opportunities to create and share content and to interact with others. Increasingly, tutors and researchers are exploring ways to take advantage of the access that social-networking sites, such as Facebook, offer to both seek information about user needs and preferences, and promote services and resources to students and others in the community (Mitchell & Watson, 2007). Consequently, much of the rhetoric around online social spaces understandably celebrates the potential of new environments such as Second Life and Facebook as spaces where users can creatively expand their personalities, activities, and opportunities for learning and communication.

Indeed, higher education has begun to focus more on the benefits of using immersive virtual spaces in collaboration with social networking. This use provides potential new levels of engagement, increased interactivity and innovative experiences that go well beyond what is currently possible in the classroom (Boon & Sinclair, 2008). Furthermore, it suggests a shift towards multi-user online virtual worlds that offer a much richer learning environment than traditional virtual learning environments. For example, the real-time interaction experienced by students facilitated by a range of communication options that are common in social-networking sites provides a far more immersive collaboration experience than that provided by traditional online learning. When this experience is blended with innovative student-focused methods, the result seems to be a shift from isolated study and tutor-led instruction to student-led highly interactive group learning (Bignell, 2009). The following sections explore the similarities between these networked spaces by comparing a popular immersive virtual learning environment (Second Life) and a popular social-networking site (Facebook).

SECOND LIFE

Alongside conventional social-networking communities such as Facebook, increasing attention is being paid by academics toward the learning potential of popular three-dimensional virtual worlds particularly Linden Lab’s Second Life. Second Life is an Internet-based 3-D virtual society where users interact with each other through self-created characters, known as avatars (Shore & Zhou, 2009). It portrays the general qualities of a Massively Multiplayer Virtual World which include, but are not limited to, streaming audio and video collections, 3-D virtual libraries, virtual tourist attractions and destinations, social interactive venues used by multiple, customised animated characters, a health-information island, global preparedness discussions, lectures, conferences, and support groups (Boulos et al., 2007). In Second Life, users operate in a computer-generated
world where they are free to meet other users, socialise, participate in individual and group activities, create, trade items and services with one another, and generally explore the world.

Many types of environments such as university campuses, performance venues and science labs, have been constructed by Second Life users to support interactions. In addition to creating campus locations for students and faculty to gather and interact, educators have used Second Life for simulations, virtual tours, and other visual and group-based learning activities from science and medical simulations to organising pilgrimage tours to Mecca (Oaks, 2011). Most recently, Second Life has experienced rapid growth in the number of virtual residents - from about half a million at the start of 2007 to over 26 million resident signups by late 2011, with residents from over 100 countries around the world (Second Life Grid Survey, 2011). Furthermore, Second Life boasts a thriving community of educators, mostly from universities in the United States and the United Kingdom, who are involved in exploration of its uses as a learning environment. At time of writing, the Second Life Education Wiki lists over 150 active colleges and universities in Second Life. These include high-profile universities such as Harvard University in the United States, and the Open University in the United Kingdom.

Furthermore, Second Life has emerged from the 3-D gaming genre to become a potentially significant environment for social networking, thus inviting interest from researchers as a way to advance the practice of learning itself, creating new pedagogies, and extending and modifying old ones (Shore & Zhou, 2009). While many educational institutions see Second Life as an opportunity to carry out learning projects that constraints of geography or cost would make difficult through traditional, real-world means, others see in it a chance to engage a younger generation of learners who are impatient with the traditional forms of education and training. Activities which the Second Life research community is engaged in include researching, experimenting, piloting, producing taxonomies, compiling databases of useful resources and writing up case studies, as well as running ongoing educational and research projects with and without students (Helmer, 2007).

FACEBOOK

Facebook represents one of the many online communities users occupy (Mitchell & Watson, 2007). It connects individuals and facilitates communities by allowing its users, within its own predefined limits, to create a digital self that is at once fluid, changeable, amorphous, and temporary. Almost every piece of information in Facebook is open to manipulation, with users allowed to alter their profiles regularly and at any chosen time. This flexibility makes Facebook a remarkably creative environment, offering a number of innovative opportunities to its users (Boon & Sinclair, 2009).

The potential uses of Facebook are perhaps more limited than Second Life, but the connectivity of Facebook mixed with its ability for integrated multimedia, polling, and asynchronous chat could be put to use in an academic setting. Furthermore, Facebook provides spaces where users can creatively expand their personalities, activities, and opportunities for learning and communication. In addition, because of its ease of use and rapidity of deployment, Facebook provides the opportunity for powerful information sharing and ease of collaboration (Boulos et al., 2006).

COMPARISON OF SECOND LIFE AND FACEBOOK

Much of the rhetoric around online digital spaces understandably celebrates the potential of new environments such as Second Life and Facebook. Although neither Facebook nor Second Life was developed as an educational tool and students’ experiences in using these technologies may vary greatly, both Second Life and other virtual worlds appear to share many qualities of a social network service to the
general aspects of an online ‘metaverse’ world in which people can interact, play, do business, and otherwise communicate (Boon & Sinclair, 2009). While varying a great deal in design, virtual worlds generally incorporate a number of electronic communication tools of two types: synchronous and asynchronous. Unlike asynchronous communication, synchronous communication allows simultaneous transmissions by both the sender and the receiver. Synchronous communication can be used in many different formats. Some of the most popular approaches used in synchronous communication are chat rooms and video conferencing while the three most popular applications of asynchronous communication in distributed learning involve the use of Web pages, emails and newsgroups/discussion forums.

Recently, universities around the globe are buying up property in Second Life and asking how they might harness the popularity and functionality of Facebook in immersive virtual learning environments. By seeing the potential in new levels of engagement, increased interactivity and novel experiences that both environments have to offer, educators are becoming increasingly aware that Facebook and Second Life will have some, potentially quite exciting, educational uses that go well beyond what is currently possible in the classroom (Boon & Sinclair, 2009).

There are already emerging attempts to integrate more virtual-learning-world functionality with social-networking systems such as Facebook. These attempts concentrate either on drawing information out of Facebook into virtual learning environments and vice versa (Sclater, 2008). For example, informal learning is seen to accrue from the new opportunities offered by Second Life for users to engage and collaborate in social networks of peers and online services. Therefore 3-D virtual worlds like Second Life can be considered as 3-D social networks, where people can collaboratively create and edit objects in the virtual world, besides meeting each other and interacting with existing objects (Boulos et al., 2007). By helping learners build communities of practice, collaborate with peers in group work, create and share content, Second Life is argued to offer a range of specific learning opportunities in what is a personalisable and highly flexible immersive social space (Selwyn, 2007).

**CURRENT STUDY**

Previous research on virtual learning environments in relation to social-networking sites is limited (Jarmon & Sanchez, 2008). Brown and Adler (2008) observed that new students tend to bring their online social networks along to university in order to keep in touch with old friends and former classmates. As a result, they suggested that colleges and universities should consider taking advantage of these connections by incorporating e-learning activities such as the discussions, debates, and study groups that naturally occur on campus. In a study on improving personal health records, Eysenbach (2008) suggested creating “mashups” between different applications (such as social networking and e-learning tools) to improve communication and transform the way people collaborate and identify information that is relevant to them.

Other studies such as, Shin (2009) showed interest in motivational and behavioural aspects of Second Life by utilizing the technology acceptance model to study users’ attitude toward Second Life to explain the intrinsic and extrinsic motivational determinants of its use. However, Miller and Prior (2010) suggest that links between the underlying motives for using online social networks and resulting user needs remain under researched. Consequently, much of the research on virtual learning environments is focused on issues relating to its user-interface, users’ perception, and a variety of issues related to collaboration, without incorporating their relationship with social-networking sites such as Facebook in detail (Mannecke et al., 2008).

Since its inception in 2004, Facebook has quickly become a mirror of social interaction, personal identity, and network building among students (Debatin et al., 2009). At present, Facebook boasts of over 800 million active users with more than 50% of active users logging on
to the site in any given day (Facebook, 2011). This figure is in sharp contrast to virtual learning environments such as Second Life which has less than one million active users (i.e., residents logged in during last 30 days) (Second Life Grid Survey, 2011) and has not lived up to the hype that peaked in 2007. This issue is not limited to Second Life alone. The acceptance by users, particularly students, of similar attempts to build other education-friendly virtual worlds such as Open Cobalt and OpenSimulator has been modest (Young, 2010). For example, while many students are known to spend hours keeping their Facebook profile current and are constantly updating their status, the same cannot be said for virtual learning environments.

Therefore, understanding students’ experiences in social-networking sites is important since it is likely to provide significant guidance on how to make virtual learning environments (considering the similarities between both environments) more interesting for users and also retain their interests over time (Miller & Prior, 2010). Thus, the aim of this paper is to find out what experiences attract students to social-networking sites and what needs are being fulfilled by students when they engage with social-networking sites. As a result, the following research questions will be addressed, with implications for virtual learning environments:

- What are the categories of user-experience while using social-networking sites?
- What psychological needs are met while using social-networking sites?

EXPLORING FACEBOOK INTERACTION WITH THINK-ALOUD TECHNIQUE

The current study used the think-aloud technique to explore university-students’ use of and interaction with popular a social-networking site (Facebook). According to Young (2005), the think-aloud technique involves the recording and later analysis of users’ spoken thoughts while engaging in a practical and interactive activity.

The basic principle used by the think-aloud technique involves the constant verbalisation of thoughts, feelings and opinions by participants while interacting with an artifact, solving a particular problem or performing a task as they engage with a product or device (van den Haak et al., 2003; Nielsen & Chavan, 2007). By using the think-aloud technique during task performance, participants can report how they attempt to complete the task and report any difficulties faced during the process without much disruption in their thought process.

METHOD

The think-aloud study was carried out in 26 individual sessions, in the same venue. During each session, video recordings were made of the computer screen by means of on-screen video capture software and each participant’s voice was recorded with a microphone.

Participants

Twenty-six participants were recruited for the study through an advert on the Department of Psychology’s research-participation management system. Eligibility requirements were being enrolled in a full-time or part-time study at the Teesside University and having a Facebook account.

The sample consisted of nineteen female (73%) and seven male (27%) participants, with an average age of 23 years (mean = 22.88, SD = 8.37). There were twenty-four undergraduate and two postgraduate university students, all of whom were studying full-time courses and had access to the Internet. Mean years of experience using the Internet was 8.58 (SD = 2.50, range: 4-15 years). Only one participant did not own a computer.

Participants’ experience of using social-networking sites ranged from 1 to 8 years, with an average of 4.15 years. Most participants used social-networking sites either 5-7 times a week (36%), 10-15 times a week (27%), or more than 15 times a week (18%). More than half of the participants used social-networking sites at
home (n = 13) or at university (n = 2). Fifteen percent (n = 4) visited social-networking sites at home and university, while the remaining 27% (n = 7) used these sites in public places such as an airport.

All participants used social-networking sites at least once a week, with most using such sites either 5-7 times a week (36%), 10-15 times a week (27%), or more than 15 times a week (18%). One-third of participants (35%) spent between 1 and 4 hours per week on social-networking sites, 19% spent 13 hours, 8% spent up to 24 hours and 7% spent over 24 hours on social-networking sites.

Materials

The materials used for the study included a desktop computer (Intel Pentium 4, 3.20 GHz, 0.99Gb of RAM, Microsoft XP operating system and 17 inch monitor), and a Web browser (Internet Explorer 6). Other materials include a screen capture program (Camtasia Studio 6) and a microphone.

Procedure

Participants were asked to complete a consent form and questionnaire requesting demographic data on arrival. This was followed by a sample video which demonstrated how to perform a typical think-aloud task and a short practice task which involved browsing a Teesside University virtual learning environment (Blackboard site), shown in Figure 1, for two minutes. Verbal instructions were then given on how to perform the actual think-aloud task.

After the practice task, participants were told to think-aloud while browsing Facebook as they would do in real life, and act as if the researcher was not present. Furthermore, they were asked not to turn to the researcher for assistance and reminded that they might be prompted to continue thinking aloud, should they fall silent for a while. The sessions took approximately 40 minutes each to complete.

RESULTS

According to Jaspers et al. (2004), it is not enough to collect verbal data simply by instructing participants to solve a problem while thinking aloud. Rather the collected verbalisations should be used as raw data to gain insight in the way tasks were performed by participants. Therefore, in order to analyse the think-aloud data that were collected, the video recordings were watched repeatedly and the audio files were transcribed. The resulting transcript was then divided into 500 units of thought (Riffe et al., 2005), in other words all records of the

Figure 1. Teesside University virtual learning environment (Blackboard site)
participants’ verbalisations representing a single sentence or a single idea. Each unit is the smallest set of words that are meaningful outside its context, which allows coders to interpret the meaning of a statement without reading the preceding or following text, and further division of a unit would render it meaningless. Units of thought are referred to as comments later on.

Content Analysis

All the transcribed comments were assigned time codes and the screen-capture recordings were used to identify the pages on which the comments were made. A selection procedure suggested by Lacy and Riffe (1996) for conducting content analysis was used to determine the number of units to be coded, by a panel of two independent coders and the first author for the purpose of reliability analysis. In order to achieve a 90% level of agreement in the total population (i.e., 500 units of thought), 84 comment units were randomly selected.

Seven major comment categories were identified: communication, gravitation, inquisitiveness, evocation, interconnection, apprehension and ambience. Results of the intercoder reliability test showed that the categories produced either substantial or almost perfect agreements among the three coders (Table 1).

Communication

In the context of this study, the communication category was defined as an intentional exchange of dialogue between groups or individuals. Comments in this category include those that involve sending and/or receiving messages for example: “I know my friend is having a presentation today, so I’ll have a look on her Facebook... I’ll type a message telling her good luck for today” (Participant 6). Other actions that fell under the communication category involved passing information to other users through status updates for example: “I’ll probably update my status now. I’ll say something along the lines of MyName ‘is at uni’” (Participant 6).

Gratification

Gratification was defined as an apparent dependency or pleasurable emotional response to fulfilling a desire or goal on the Website. This happened, for example, when a user engaged in a fun or competitive activity individually or with contacts. Examples of quotes illustrating gratification amongst participants included the following: a sense of excitement after winning pretentious money whilst playing a Poker game on Facebook, for example: “Wow, I’ve won $917. Oh, I’ve won, let me play!... Oh, I will, let

Table 1. Inter-rater reliability coefficients for the coding categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Communication</th>
<th>Gratification</th>
<th>Inquisitiveness</th>
<th>Evocation</th>
<th>Prehension</th>
<th>Ambience</th>
<th>Interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average pairwise percentage agreement</td>
<td>93%</td>
<td>98%</td>
<td>94%</td>
<td>99%</td>
<td>93%</td>
<td>99%</td>
<td>99%</td>
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<tr>
<td>Pairwise agreement 1-3</td>
<td>93%</td>
<td>99%</td>
<td>92%</td>
<td>100%</td>
<td>92%</td>
<td>99%</td>
<td>100%</td>
</tr>
<tr>
<td>Pairwise agreement 1-2</td>
<td>95%</td>
<td>98%</td>
<td>95%</td>
<td>99%</td>
<td>95%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>Pairwise agreement 2-3</td>
<td>91%</td>
<td>99%</td>
<td>94%</td>
<td>99%</td>
<td>92%</td>
<td>99%</td>
<td>99%</td>
</tr>
<tr>
<td>Fleiss’ kappa</td>
<td>0.84</td>
<td>0.50</td>
<td>0.84</td>
<td>0.95</td>
<td>0.77</td>
<td>0.95</td>
<td>0.95</td>
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<tr>
<td>Observed agreement</td>
<td>0.93</td>
<td>0.98</td>
<td>0.94</td>
<td>0.99</td>
<td>0.93</td>
<td>0.99</td>
<td>0.99</td>
</tr>
<tr>
<td>Expected agreement</td>
<td>0.57</td>
<td>0.84</td>
<td>0.60</td>
<td>0.85</td>
<td>0.70</td>
<td>0.84</td>
<td>0.83</td>
</tr>
<tr>
<td>Average pairwise Cohen’s kappa</td>
<td>0.84</td>
<td>0.89</td>
<td>0.84</td>
<td>0.94</td>
<td>0.76</td>
<td>0.95</td>
<td>0.95</td>
</tr>
<tr>
<td>Pairwise CK 1-3</td>
<td>0.83</td>
<td>0.93</td>
<td>0.79</td>
<td>1.00</td>
<td>0.71</td>
<td>0.92</td>
<td>1.00</td>
</tr>
<tr>
<td>Pairwise CK 1-2</td>
<td>0.89</td>
<td>0.84</td>
<td>0.88</td>
<td>0.92</td>
<td>0.85</td>
<td>1.00</td>
<td>0.92</td>
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<tr>
<td>Pairwise CK 2-3</td>
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<td>0.74</td>
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<td>0.84</td>
<td>0.95</td>
<td>0.77</td>
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Note. Number of raters = 3. Number of cases/comments = 84. Number of coding decisions = 252.
me play” (Participant 11). Sometimes, gratification would be followed by signs of dependency for example: “Erm, playing FarmTown is one of those things I really don’t like doing and I don’t admit to it but it’s kind of addictive. It’s ridiculous considering its faking building stuff and planting stuff. Oh, I’ve got loads of fruits on my trees” (Participant 24).

Inquisitiveness

For the purpose of this study, inquisitiveness was defined as curiosity that is evident by the desire or interest to find out what contacts are doing and know what is going on with contacts, family, and university colleagues. Examples of comments made in the inquisitiveness category included the following: checking on what a university colleague is doing for example: “I’m just clicking on FriendX’s photos and see what she’s been up to at Uni” (Participant 15). Another example involved exploring the News Feed for activities of others for example: “Now I’m gonna have a good nosey on the main page and see what people actually are up to erm ok” (Participant 8).

Evocation

The evocation category was defined as the act of recollecting past events, activities or memorable experiences for example, by looking at old photographs for example: “I do go back and look at photos of me and my friend...haha...it’s a picture which I am tagged in. I think it’s the presentation we were giving in our school in Sweden...It’s a beautiful picture” (Participant 17). Furthermore, comments that fell into the evocation category also included reading old messages for example: “See what I have in my inbox. I’ll maybe read this old message. Ah, fun times, fun times” (Participant 7).

Interconnection

The interconnection category was defined as participants’ endeavour to build, develop and maintain a relationship, for example by joining groups, supporting causes, linking pages, arranging meetings, adding contacts or searching for particular individuals. Examples of comments made in this category included the following: searching for contacts to add to a Facebook list, for example: “I’ve managed to get some of my friends added that are not on Facebook so pretty much all my friends are on it now” (Participant 26). Another example involved finding and joining a Facebook Group, for example: “I’m Clicking on Groups now. Just scrolling down looking at what some of my friends have been joining...I’ll browse some groups, see if there is anything I can join” (Participant 25).

Apprehension

The apprehension category was defined as worry or concern about issues such as privacy, data security, slow Internet connections or distractions from advertisements, in relation to the social-networking site. An example of comments made in the apprehension category included the following concerns about privacy: “What I don’t like about Facebook is the fact that, you can, two people on your friends list could have a conversation erm it can appear on your news feed. Sometimes I think this can be private conversation. I know they shouldn’t be having anything private but erm I just don’t think there is any need for everyone to see every conversation that ever goes on Facebook” (Participant 8).

Ambience

The ambience category consisted of comments that revealed a participant’s general impression of the Website, produced by a predominant quality or characteristic of Facebook. Comments made in the ambience category could be positive or negative as shown by the following comments on Facebook events and sound attributes respectively: “Ah, that’s amazing; I’m really really excited about that (event). This is what Facebook’s good at in that it keeps me totally up to date with the Empire Night Club, which is all that counts really” (Participant 24).
and, “I’d like to turn sound off cos its very annoying on Facebook (Participant 25).

ANALYSIS OF DEVELOPED CODES IN RELATION TO PSYCHOLOGICAL NEEDS SATISFACTION

Based on a review of psychological theories including those of Maslow (1954) and, Ryan and Deci (2000), Sheldon and colleagues (2001) compiled a concise list of the ten candidate universal psychological human needs which were described as “qualities of experience that are most closely associated with participant-designated events” (p. 327). They were self-esteem, self-actualization, physical thriving, and security, based on Maslow’s hierarchy of needs theory; autonomy, competence, and relatedness, based on Self-Determination Theory; pleasure/stimulation, based on behaviourist general principles of reward and punishment and Epstein’s cognitive-experiential self-theory (1990) which specifies pleasure as one of the four needs that all individuals must satisfy; and money and popularity, based on the evolutionary or adaptationist perspective that assumes an evolutionary advantage to individuals who achieve material dominance (Buss, 1997). The results from Sheldon et al. (2001)’s research provided a number of insights into needs and their relation to affect. Firstly, the fulfillment of universal psychological needs, were the major source of positive experience with interactive technologies. Secondly, a principle component analysis showed the needs to be relatively independent from each other. Hence, satisfying experiences are marked by particular needs and, thus, can be classified accordingly. Thirdly, needs differed in their salience: autonomy, competence, and relatedness were especially noticeable in the reported positive life events.

The seven categories of experience identified in the think-aloud study were analysed in relation to the universal human needs proposed by Sheldon et al. (2001) and six psychological needs (relatedness-belongingness, pleasure-stimulation, influence-popularity, security-control, competence-effectance and self-actualising-meaning) were found to be particularly related to participants’ experiences. Although different terminologies were used to describe the needs, they are conceptually similar to the categories of experience that were observed during the think-aloud study. Table 2 represents a mapping of those seven categories to six needs identified by Sheldon et al. (2001).

The need for relatedness was found to be linked to inquisitiveness and interconnection categories. In the inquisitiveness category, participants endeavoured to engage with others for example, through Facebook Groups or communities such as Facebook Pages, and longed to know what those who are important to them were doing. A similar relationship was found in the interconnection category where participants wanted to have regular contact with people who cared for them and those they cared for by building, developing and maintaining relationships with activities such as adding Contacts, sending or receiving regular email messages and chatting.

Similarities were found between the gratification category and the need for pleasure-stimulation. Participants who commented in this category showed enjoyment and pleasure while engaging in various activities on the Web site such as playing games, participating in quizzes and competitions and receiving online gifts.

Participants who engaged in dialogue with others, in the communication category, were most likely to do so in order to pass on advice to others or share their own opinion with others. This experience was found to be related to the need for influence-popularity whereby a participant wanted to feel liked or respected or feel that he or she had influence over others. A typical example of this behavior is shown in the following statement by Participant 24: “Just commenting on one of my friends erm status cos he says he wants to see paranormal activity but I’ve actually heard its really really bad as in rubbish not scary so I’ll just tell him not to bother going.”
According to Hassenzahl et al. (2010), the need for security can be understood as a “deficiency need,” i.e., a need that creates negative affect if blocked but not necessarily strong positive feelings if fulfilled. The need for security was similar to the apprehension category which is connected with the psychological fear, worry or concern about issues such as the loss of privacy, data security and Internet connection while performing a task. For example, participants may not show any positive affect with a fast Internet connection but once the connection becomes problematic, they become concerned.

Deci and Ryan’s self-determination theory of motivation (1985, as cited in Sheldon et al., 2001) specifies the need for people to feel effective in their own activities as competence. Of all seven categories derived from the think-aloud study, the ambience category was most closely associated with competence whereby participants felt assured and confident in their own ability when describing their overall impressions of the Web site. This feeling of being very capable and effective in their actions (regarding their positive or negative judgement on a predominant quality or characteristic of Facebook) means that the ambience category was considered as a broader manifestation of the need for competence.

Finally, the evocation category was the most closely associated with self-actualisation-meaning. This feeling was expressed by participants’ desire to make their experience meaningful through the recollection of past events and memorable activities.

DISCUSSION

Despite the interest in Web 2.0 applications such as Second Life and Facebook, there appears to be very limited understanding of interaction experience, particularly among university students, and in relation to their psychological human needs. Nevertheless, there is an underlying push in higher education to adopt collaborative tools and shift paradigm from a traditional method of education to one possessing a more active and interactive nature. This trend has increased interest in virtual worlds as not only part of our present existence but also a future tool that will offer online users of all ages more opportunities to explore, create, imagine, collaborate, role play, interact, socialise, learn, and experience moments in a safe and vivid manner. According to Hansen (2008), the use of virtual learning environments has the potential to be enjoyable for learners, encourages creative expression, broadens socialization skills, promotes independent problem solving, and provides more opportunities for educators to network with alliances that are already developing, imple-

Table 2. Conceptual similarity between developed codes and human needs (Sheldon et al., 2001)

<table>
<thead>
<tr>
<th>Human need (Sheldon et al., 2001)</th>
<th>CM</th>
<th>GR</th>
<th>IQ</th>
<th>EV</th>
<th>INT</th>
<th>AP</th>
<th>AMB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatedness-belongingness</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasure-stimulation</td>
<td>√</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Influence-popularity</td>
<td></td>
<td>√</td>
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<tr>
<td>Security-control</td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td></td>
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<tr>
<td>Competence-effectance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-actualising-meaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
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</tr>
</tbody>
</table>

Note. CM = communication. GR = gratification. IQ = inquisitiveness. EV = evocation. INT = interconnection. AP = apprehension. AMB = ambience.
menting and researching 3-D virtual worlds as learning spaces.

In spite of the apparent recent popularity of virtual learning environments, acceptance (particularly among students) seems to be modest when compared to that of social-networking sites. This study therefore explored Second Life, one of the most popular 3-D virtual learning worlds, and examined similarities between Second Life and Facebook, the most popular social-networking site in the world. Connections were found in ways in which students interact socially, work, plan and share on both platforms.

Although Second Life boasts of over 26 million registered users, of that number less than one million people could be classed as active users. This is in sharp contrast to Facebook which boasts of over 800 million active users. As a result, this paper examined two research questions: what are the categories of user-experience while using social-networking sites and what psychological needs are met while using social-networking sites?

Therefore, in a think-aloud study, participants’ interaction with Facebook was analysed and seven major categories of experience were observed. The seven categories of interaction experience were: communication, gratification, inquisitiveness, evocation, interconnection, apprehension and ambience. Furthermore, in order to find out what psychological needs were met by participants while using social-networking sites, the seven categories of experience were mapped into six psychological human needs. The results show conceptual similarities between the seven categories of experience and the needs for relatedness-belongingness, pleasure-stimulation, influence-popularity, security-control, competence-effectance and self-actualising-meaning, as described by Sheldon et al. (2001).

In conclusion, understanding the user-experiences and psychological needs could help improve and facilitate learning from design structure of communication tools that are already in place. This could improve our understanding of how social networking can better support and complement the university’s missions of education, socialisation, and acculturation. Furthermore, virtual learning environments could be developed that will have many attributes of the experience of social networking, including the social, cultural and environmental aspects necessary to engender a meaningful learning experience. This should enable educators and learners to be more creative and to develop new effective ways of teaching and learning rather than to purely replicate real life and classrooms in Second Life. Thus a highly immersive and socially interactive way of enhancing university teaching could be provided with increased immersion and engagement with learning activities.

Moreover, further research should be done to determine the best ways to integrate these tools into existing e-learning programmes for students and build new levels of engagement by students that will aid better participation, in learning activities. By understanding and identifying overlap between user needs, new integrative applications that bind the best of both technologies through online activities may be created in order to provide a more coherent learning experience.

REFERENCES


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