Virtual Worlds: Can virtual worlds promote a higher level of collaboration, engagement and deeper thinking for students than traditional Web 2.0 tools?

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Abstract

An investigation will compare students using the virtual world environment of Second Life to those using traditional methods of distance education (Web 2.0 tools and resource materials) to determine whether there are variations in the amount of collaboration and discussions by students with these synchronous and asynchronous eLearning tools.

All students will undertake the same assessment tasks and the results compared. The Second Life group will participate in a number of online sessions to familiarise them with the environment.

Studies have reported that asynchronous eLearning can engage the students in deeper thinking (Dabbagh & Bannan-Ritland 2005). In contrast, synchronous eLearning is reportedly more useful for spontaneous discussions (Woodman 2003). This study will explore whether using a virtual world environment, predominantly relating to synchronous interaction, can engage the student in deeper thinking than traditional synchronous eLearning methods while maintaining the spontaneous interaction.

All students will be given set tasks to complete. One group will utilise any social computing resource they wish, whilst the other can utilise only resources offered in Second Life. The participant experience will be monitored by pre and post surveys and online interaction will be recorded and compared.

Introduction

Tools currently being used in Higher Education institutions to support distance education students are either synchronous or asynchronous eLearning online tools, or Web 2.0 tools. These are being used as either standalone or embedded tools in Learning Management Systems, such as Blackboard, Sakai or Moodle, or as links to external public access tools. The tools that are being incorporated into higher education learning are either Web 2.0 or emerging eLearning tools such as wikis, blogs, podcasts, discussions boards, chat rooms, collaborative online documents, online whiteboards, online quizzes, video conferences, video streaming, video uploading and sharing, webinars or virtual worlds.

These Web 2.0 tools provide interaction which are either synchronous, real time, or asynchronous, not at the same time. Dabbagh and Bannan-Ritland (2005) state that synchronous eLearning communications, don't give the students time to reflect on the question and therefore have more "off the cuff" responses. In contrast, asynchronous forms of communication (such as discussion boards, wikis and blogs) enable the student to reflect and consider their response (Woodman 2003). Emerging tools include elements of synchronous and asynchronous communication therefore potentially giving the distance education student a more complete experience with their learning. Universities were among the first to make extensive use of virtual classrooms where they combined synchronous and asynchronous technologies in the one environment (Clark & Kwinn 2007). Figure 1 displays the various Web 2.0 and emerging tools currently being utilised by higher education institutions (Gregory 2008).

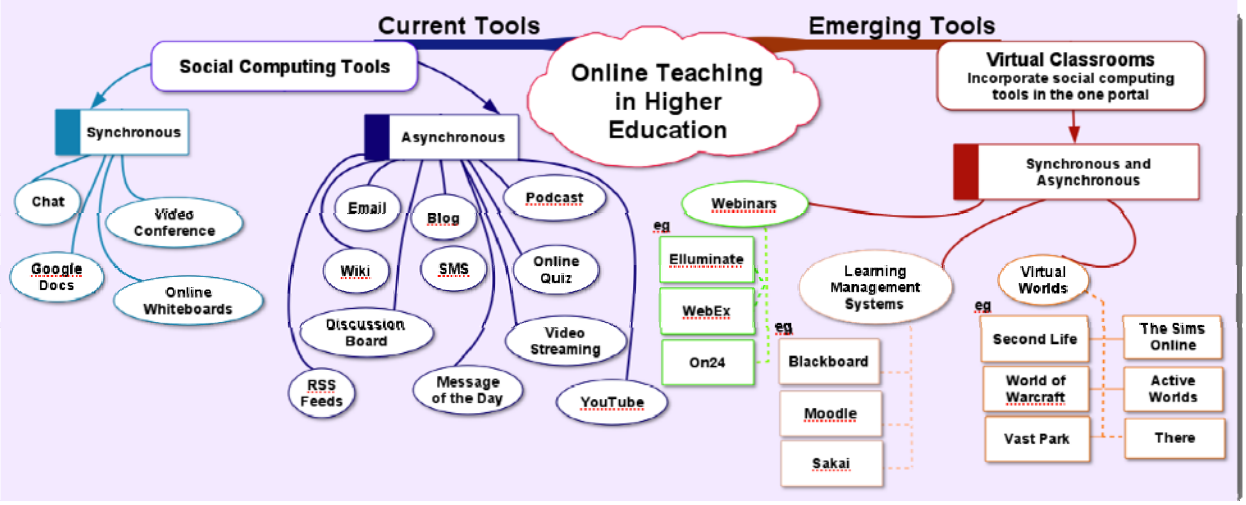

Figure 1: Online Tools currently being utilised in Higher Education

Literature Review

There is expansive literature on the current Web 2.0 tools, however the literature is limited on emerging technologies. This literature review will explore the findings available for the various tools to discover if these tools are really engaging students or whether there are doubts as to their authenticity and effectiveness indicating a need for further research.

Today's students have spent their lives surrounded by technology, which is now an integral part of their lives, and they think and process information differently (Prensky 2001b). Some of the fundamental differences in the new "digital natives" is that they can annotate work on the screen without having to print it off and they can talk to people online without having to use the telephone or seeing them face-to-face. However, Aedo (2002) disputes this, pointing out that reading online is not a comfortable task and it is not possible to underline and make notes when reading material from a screen, however there are web browsers that enable editing and saving of pages such as wikis.

Today's teachers have to learn to communicate in the language and style of their students and the preference for teaching the digital natives is to invent computer games even for serious content because this is what these students are familiar with (Prensky 2001b). To some degree Antonacci and Modaress (2008) support Prensky's views by pointing out that almost all college students have experience with games and in order to solve a problem they immerse themselves in games that are active, immersive learning environments where they can integrate information. They go on to state that learning through games "incorporates discovery, analysis, interpretation, performance as well as physical and mental activity" and this technology is both affordable and accessible.

Prensky (2001a) maintains stimulation of various kinds actually changes brain structures and affects the way people think as the brain constantly reorganises itself throughout our lives. The students of today crave interactivity and immediate responses to their each and every action. Digital natives are "twitch-speed, multitasking, random-access, graphics first, active and connected" and these attributes are being ignored by educators. He further notes that in learning, practice works, but digital natives don't like to practice and by incorporating their learning into games they capture their attention and make this practise happen. The design of the tool is important so that they are practising the right things (Prensky 2001b).

Some Web 2.0 tools have come under criticism because of their casual nature, lack of accountability, and ability to present information without verification (Parameswaran 2007). Often materials offered by Web 2.0 tools is a duplicate of materials provided by different mediums and is not personalised (Boyd & Ellison 2007) and therefore not capturing the attention of the "digital kids".

Kennedy, Judd, Churchward & Gray (2008) state that there is a lack of homogeneity in the younger university student population with regards to technology and a potential digital divide between students within a cohort of a single year level. This is in contrast to (Prensky 2001b) who states that there is a divide between the younger and older generations, not within generations, as outlined in his statements in relation to digital natives and digital immigrants.

While there is enthusiasm for the use of the technology, there are some concerns that even though Web 2.0 technology is dynamic and mobile in nature there are issues of scalability, quality, security and interoperability. Some other disadvantages of these environments are the fact that criminal communities are easily able to use these environments whilst being under the radar (Parameswaran 2007). Many environments encourage posting of documents that can contain viruses and other threats. In several Web 2.0 environments users take the opportunity to masquerade under other identities and are far more vulnerable to crime (Parameswaran 2007) such as using chat rooms and within virtual worlds people can also masquerade behind their avatar. Privacy issues amongst younger users of Web 2.0 are a concern (Boyd & Ellison 2007).

Web 2.0 technology that comes from academic success and self-directed learning have a direct link, however, when bringing in the dimension of web-based environments, the results are not as positive (Chou & Chen 2008). They do, however, acknowledge that there are a number of variables that should be taken into consideration, such as quality of online learning materials, demographics, educational background and prior knowledge.

In a study by Ostlund (2008) it was revealed that students chose distance learning due to obligations in their working and family lives and would have preferred regular campus education. Their results revealed that students missed the collaboration and social activities with others that come from face to face settings (Ostlund 2008). Virtual worlds offer, to a certain degree, another medium for emulating the face to face settings.

However, despite some concerns and conservatism, Web 2.0 tools have come to the attention of higher education institutions because of their affordances and reach (Boyd & Ellison 2007) and their use is increasing at a rapid pace (Kian-Sam & Ai Cheng Lee 2008). Dryer (1999) states, “imagine a future in which individuals use mobile computers to maintain constant contact with a vast information network that unites everyone in a single community”. This time is here with many different resources to draw upon to unite communities. The difficulty is, which tool is best to use for eLearning situations? Tools sustainability is an issue in this regard. Some eLearning tools come and go very quickly, whilst some, such as blogs and wikis are becoming more popular. Second Life has a five year track record and appears to becoming more popular amongst educators (Lester 2008).

Many of the current Web 2.0 tools (wikis, blogs and podcasts) have become increasingly adopted by a number of distance education institutions due to their ease of use and rapidity of deployment, affordability and offer powerful information sharing and collaboration (Boulos, Maramba & Wheeler 2006). However, Belanger & Jordan (2000) maintain some provide almost no interaction or communication between the learner and the instructor. Some of their disadvantages also relate to their openness and ease of use because almost anyone can alter, edit and contribute to collaborative web pages. This can be problematic to gauge the reliability and accuracy of resources.

Web 2.0 has increased in usage because of the wider availability of broadband connectivity and more powerful computer requirements, whilst in some communities this technology is still unavailable due to poor access at some locations, widening the digital divide (Parameswaran 2007). People are able to display their creativity, engage in social interaction, contribute their expertise, collaborate, share content, collectively build tools and disseminate information using Web 2.0 technology.

Barnes & Tynan (2007) state that universities live in a competitive environment and the traditional lecture is not an appealing product to the new generation who find it old-fashioned and boring. They claim that undergraduate students prefer not to attend lectures if effective online alternatives are available. This is supported by Kehoe, Tennent, & Becker (2005) in their study where less than half of their respondents preferred a traditional lecture. As students prefer effective online alternatives, educators need to be mindful of the tools they choose to use to engage their students with study materials. The literature reveals that students would prefer to engage with their materials in an online environment so long as there was interaction, engagement and collaboration. However, if learning experiences are

not designed properly, many of the Web 2.0 tools will not offer these functions and students often loose interest in using them.

The problem with many Web 2.0 tools is that they have been developed by reusing digital resources (Elliott & Sweeney 2008). By reusing these resources, small, discrete blocks of educational content that can stand alone are being aggregated to form more complex learning objects with varying effectiveness.

Joly (2007) quotes Jon Lester, who is the Academic Program Manager at Linden Lab, the creator of Second Life, as saying that there is a growing interest in higher education in Second Life which is a logical development because virtual worlds enable distance education, experiential learning, simulation and scientific visualisation in a collaborative environment. He believes that educators using Second Life have the opportunity to engage their students in an environment that is compelling and "natural".

According to Ondrejka, Salen, John, & MacArthur (2008) the features of a virtual worlds enable the emergence of different approaches to education and engage traditional, large-scale educational institutions. He states that students are approaching learning with a passion and excitement they may not have possessed in school.

Ball State University offered courses in the virtual world of Second Life in English when they began using the virtual world in July 2006 (Robbins 2007). At their last intake, Spring 2008, they had over 300 students apply for 18 available positions. It has been found a very successful and popular environment for learning (Koch 2007). Robbins states (Koch, 2007) that in a 20 minute class there is about 20 pages of dialogue where the "discussions extend beyond what we'd be able to do in a traditional classroom", which is supported by Lagorio (2007) as "things pop up in a less linear fashion in the virtual world than they do in a regular classroom" because of the nature of the discussions in the virtual world. This is supported by Weatherwax, Baranski, & Pietras (2008) who state that during interactive meetings, student pose provocative questions which force others to take part in the discussion and integrates the group more than in real world, indicating reduced inhibitions. Even though students are self selecting, the 300 applications for Robbins' course would indicate the popularity of this method of study amongst the students from the reputation that is being created.

According to Robbins (2007), Second Life is being used in Higher Education in almost any discipline that one can think of. The environment has been established for those who wish to use it. All it requires is a clear understanding, structure and imagination as to how it will be utilised, as is the case for all eLearning tools. Kovela (2008) supports this notion by stating that the potential uses of Second Life could include social interaction, collaboration, creative construction, raising awareness, information resource, data visualisation, simple simulation and in a teaching and learning environment.

A virtual world should appeal to those people who learn by seeing (visual), doing (kinaesthetic), and hearing (auditory). Weatherwax et al. (2008) state that we learn best by seeing and touching. Virtual worlds provide a means of distance teaching where students can meet in a virtual environment to see, hear and touch. Touch in a virtual world is regarded as not physically touching but the perception of touching, where the user imagines they are touching something within the environment, without physically doing so.

Many educational institutions are starting to use the virtual world of Second Life but the research is limited to back up the opinions and beliefs of its benefits. Educators are stating that using a virtual world engages the students in greater collaboration and more in depth discussions.

Most of the literature surrounding virtual worlds as an educational tool for creating deeper thinking, immersion, collaboration and engagement are in the form of blogs, news articles, mail lists or websites. There are very few peer reviewed published articles in this area as it is a new and emerging field. Jennings & Collins (2008) state that few studies have been done to document current practices and uses of virtual worlds, which is supported by Townsend (2005) who states that virtual worlds have emerged as a rich and complex platform for research though few seem to have taken up the challenge.

This research will explore the educational use of a virtual world, assessing its effectiveness in engaging students and efficiency in terms of educational workload. This data that will assist

educators to decide whether to use a virtual world as an educational tool and whether it does create greater collaboration, deeper thinking, immersion and engagement. It appears from the literature to date that Web 2.0 tools do not offer this from the one environment. Virtual worlds provide a unique and different learning experience.

Methodology

Overview

This research will collect and analyse quantitative and qualitative data to determine whether a virtual world can be a worthwhile tool to use in higher education. It will discover whether virtual worlds create greater collaboration amongst students and lead to deeper thinking and responses than other Web 2.0 tools and if virtual worlds are an effective environment to teach in and whether they are viable in terms of student participation, engagement and immersion and educator work load. The study will also explore if it is the virtual world by itself or the learning experience facilitated by the means of presentations and interactions that creates a more immersive learning environment.

The research study will be conducted using volunteer students from two university units, approximately 20 fully online distance education students in one unit, and, approximately 500 fully online distance education and 50 internal students from another unit will be given the opportunity to participate. This is a total of 570 students. All students will undertake the specified studies as outlined in the course materials with the option of using the virtual world or other Web 2.0 tools to complete a section of their studies. The study will compare participant text discussions conducted through discussion boards, chat rooms, wikis, blogs and virtual world.

Research Design

Two university technology education units will request volunteer students to participate in the research. During the semester all participants will undertake set tasks provided in the unit materials. Two surveys will be conducted; the first at the beginning of the semester is to find out computer expertise, knowledge of Web 2.0 eLearning tools and preferred learning style. The second at the end of the semester to discover knowledge gained from using different Web 2.0 tools and collaboration undertaken throughout the semester. All participants will be requested to complete both surveys, however, it is completely voluntary. All participants will receive the same survey except for those participants choosing to use a virtual world for one of their assessment tasks will be requested to answer additional questions in the second survey.

This research will compare all conversations in the smaller unit of study (approximately 30 students) using Sampling Strategy of Convenience (Schneider 2002). Those choosing to use a virtual world for their studies were compared with the other students choosing traditional Web 2.0 tools.

This research will utilise the qualitative paradigm, using conversation analysis. According to Babbie (2007), conversation analysis of the details of conversation is based on a complete transcript. Participants will be asked direct questions which will be recorded for analysis. They will be responding to questions about their experiences using different eLearning tools to create an educational project. These responses will all be via text in chat rooms, discussion boards, wiki, blogs or virtual world and will be recorded and compared.

Sampling Strategy

The study will use Convenience sampling where students in two units of study will volunteer to participate in the surveys or have conversations recorded. There are approximately 570 students enrolled in the two units. From both units, students have the option of choosing an assessment task around the use of a virtual world. In the group using the virtual world there will be a maximum 50 students comprising of approximately four students from the smaller unit and six internal students and forty distance education from the other unit.

Data Collection

In the smaller unit of approximately 20 students, all students will be given a choice of learning to use a variety of eLearning tools in their course materials. Students will record their experiences using the different tools through unit wikis, blogs, discussion boards, chat rooms and virtual world. All students will be asked the same questions via the discussion board and the virtual world.

Quantitative data will be collected by analysis of two surveys conducted at the beginning and end of semester. All students in both units will be asked to participate in the survey, which will be totally online. All data obtained will be de-identified.

Recording all conversations that occur throughout the semester through wikis, blogs, discussion boards, chat rooms and the virtual world, will collect the qualitative data. These eLearning tools have assessment tasks aligned with them to ensure that students use the tools. A course discussion group will pose questions that each participant must answer as it is an assessable task. Students will be working collaboratively in groups to complete one assessment task through the wiki.

Proposed Data Analysis Techniques

The study will use Conversation Analysis which, according to (Babbie 2007), is an appropriate qualitative method of study when all conversations are recorded and analysed.

The study will be conducted totally online via the Learning Management System of Sakai. It will utilise discussion boards, chat rooms, wikis, blogs and a virtual world. Students participating in the study could be located anywhere worldwide.

Both surveys will ask questions using the five-point Likert scale of questioning and some open ended questions in relation to: Web 2.0 tools, collaborative work and preferred learning style.

Within the smaller unit of study, all conversations will be recorded and analysed. Statements to be addressed by the participants will be based on “guided peer questioning,” outlined by Cuseo (2000). There will be generic questions and questions that encourage reflection and are open ended.

Participants in the group choosing to use the virtual world will have different tasks to complete and will be led by the educator to a certain degree. The educator will pose different questions/statements to the students each week for them to comment on (these will be the same as on the discussion board). The educator will also organise tours of other educational institutions to find out how they are using Second Life with their students. An educational environment has been set up for the participants where they can meet and hold discussions. Guest lecturers will attend non-compulsory session to discuss how they have been using the virtual world with their students at other institutions. The virtual world has an advantage of being able to provide synchronous and asynchronous participation. Volunteer participants can send messages to fellow participants or the educator who will receive them when they are next online or via email. Alternatively, they can “talk” to someone in real time if they online together.

Conclusion

The collection of qualitative and quantitative data will provide rich evidence to analyse for this study. For this reason, both methods will be used to ascertain whether the use of a virtual world can provide a higher education institution with an alternate method to educate students. Does this type of environment create deeper conversations as is suggested by the anecdotal evidence? Can it create greater collaboration between colleagues? This emerging technology has been adopted by many institutions around the world, but is it actually of benefit to the student? Does this technology engage the students in greater collaboration and deeper conversations? This research will ascertain if using a virtual world can be of benefit to the higher education institution and the students to promote deeper conversations, immersion, engagement and greater collaboration.

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Figures

Figure 1: Gregory S., 2008, Online Tools currently being utilised in Higher Education, Retrieved on 6 May 2008 from http://www.virtualclassrooms.info