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Editor’s Note: With an increasing array of communication tools to support teaching and learning, teacher training institutions and school administrators must be aware of what is needed and how it will be used. Tools such as PowerPoint have become standard fare, but the question is, what else is needed by teachers and students to promote excellence in teaching and learning?

Investigating Ways of Enhancing Online Research

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Abstract

We live in an era characterized as ‘the Digital Age’ and the ways in which we engage in teaching, learning and research are evolving with the increased use of digital technologies. This paper describes a study that investigated the ways in which a cohort of Education students in Victoria, Australia engaged in online research projects using Information Communication Technologies (ICT) as the main form of communication during the research process. When an array of technologies, related resources and training are made available to staff and University students, what are the key influences that effect their adoption and application of the selected mediums? Understanding the answer to this question is important in informing instruction and technological pedagogies for distance education and research. Data was gathered from students and their research supervisors via the use of online surveys. The research identified a number of key factors that influenced people’s preferences for using certain digital technologies. The study revealed that there was a tendency for people to prefer the use of asynchronous forms of digital communication. It is argued that more research is needed in this area in order to improve the application of online modes of communication and ensure that those researching via distance/technological modes are not disadvantaged in their research and learning experiences.

Keywords: online research, online teaching, distance education, web based, web based instruction, educational technology, asynchronous, ICT, information communication technologies, online.

Introduction

Scholarship and research in teaching and learning have always been of utmost importance to Universities. As Information Communication Technology increasingly becomes a part of our lives, its application within the University as a form of communication, a teaching tool and a resource, amongst other things, has emerged strongly. There is a significant increase in the number of students and faculties involved in online education (Maddux, Sprague, Ferdig & Albion 2007). Many educational institutions are exploring the utilization of electronic learning environments and the study of online units (Williams 2002). The teaching methodology of higher education is changing as a result of online teaching (Greenwood 2000, Warren & Holoman 2005). The context of the study under discussion is quite unique in that the focus is upon the conduction of supervised ‘online research projects’, as opposed to the common focus in the literature upon ‘teaching and learning online’. The study took place in a University in Victoria, Australia and focused upon the ways in which students and academics that were engaging in a wholly online research Unit of Study communicated with one another and developed their final research project assessment task.

Context

The participating cohort of students was Education students in a University in Victoria, Australia, undertaking a core online unit of study as a part of their Degree. These students are categorized as ‘Pathways’ students, the majority of whom had previously completed a Diploma of Children’s Services (or equivalent) at Technical and Further Education (TAFE) colleges and now were studying their 2nd and final year at University in order to upgrade their qualifications to a Bachelor of Early Childhood in Education. For the majority of students, it was the first time that they had studied solely online. The students engaged in online research projects using Information Communication Technologies (ICT) as the main form of communication during the research process.

Review of the Literature

There is a range of benefits associated with the conduction of online units of study. However, there is also a range of associated problems that commonly arise and issues that need to be addressed (Williams, 2002) to better promote learning and research. Prior research has identified the importance of creating a nurturing and communicative, supportive culture between students and facilitators in enhancing the online learning experience (Weller and Mason, 2000; Hara and Kling, 1999). Alexander (2001) argues that students also value prompt and informative feedback from educators, clearly communicated course expectations and high levels of online activity. Amongst recent research literature there are reports about online ‘group work’ in Teacher Education (An & Kim, 2006), the use of online lectures (Nast, Schafer-Hesterberg, Zielke, Sterry & Rzany 2009, Bassili & Joordens 2008) and the issue of ‘participation’ in online learning...
(Vonderwell & Zachariah 2005). Much of the research is about ‘teaching’ and ‘learning’; however, this study focuses upon online ‘research’. Niemiec, Sikorski & Walberg (1996) and Bassil & Joordens (2008) highlight the importance of ‘learner control’ in online learning environments and, in this light, this study aimed to give its participants increased control over the technological choices made for communication and presentation purposes.

Synchronous communication describes that which takes place in real time with learners and teachers involved in the communication process simultaneously whilst online. Asynchronous communication involves delayed communication and takes place between individuals over a period of time, for example via discussion board or electronic email (Joliffe, Rotter & Stevens 2001). Asynchronous communication, being a cost effective and flexible mode of communication, is typically adopted for distance learning (Williams 2002). At the end of her literature review on Asynchronous Learning Networks in Higher Education, Scagnelli (2006) concludes that there are insufficient 'specific guidelines on how to design effective asynchronous online instruction in order to encourage interaction and learner satisfaction’ (2006:14). In order to better understand online research, teaching and practice, this project involved consciously providing opportunities for students and staff to select from an array of synchronous and asynchronous communication technologies and to gauge the influences upon the decisions made. In this manner it is hoped that this study would further the pursuit of identifying core principles for effective online communication.

Methodology and Data Collection

This study investigated the experiences of undergraduate University students and academic staff working together using online technologies in a purposeful and effective manner to support the research process. To satisfy the requirements of this Unit all students were required to work in small groups, based upon common interest areas and to develop a topic of focus for a small inquiry based research project. The project was to be completed over a period of one Trimester (equivalent to 12 weeks) and was to be supervised online by an Academic Supervisor who had expertise in the selected area. As this was a wholly ‘online’ Unit, many of the participating students and staff were from different campuses of the University, situated in geographically distant places. All groups were expected to use online information communication technologies to communicate regularly with one another and their designated Group Leader was to communicate regularly with the academic Project Supervisor in order to establish a research topic, research questions and a research plan that would drive them to complete the associated research tasks.

Throughout the Trimester, all research groups had a selection of ICT communication modes specifically available to their group, offering the choice of ‘asynchronous and synchronous’ online communication. The University’s online system was supported by a Learning Management System platform called ‘Blackboard’. Each research group was provided with its own private online space which was to be utilized for communication and planning purposes. Within these spaces were the following technological tools:

§ A Discussion Board that could be used as a private forum or email space

§ A Wikipaedia, commonly known as a ‘wiki’, was used by each group to present their group’s work at each stage of the research. Wikis, however, are most useful as a collaborative space in which to build knowledge together and to share ideas etc. In this way they can be used for communication purposes, for the gathering and sharing data.

§ An E-Live space, this space allows people to meet together online in real time; also considered as ‘live’ time. Using this space allows the option to converse with one another, via microphone and speakers/headsets, to share and discuss information that can be displayed through a range of Microsoft Software such PowerPoint, Word, Excel, etc., or even to see and interact with one another online via the use of web-cameras.

Additionally, all participants had their own pre-existing University email addresses that could also be utilized.

Data collection was in the form of “Online Surveys” with participation being voluntary and the responses anonymous. The questions were comprised of a collection of multiple choice, Leichardt scale ratings and short answer formats. This method was selected as the surveys were viewed as a means of ensuring a quick return and minimized time and effort required on the part of the participants.

Two online surveys were developed for each group; the students and the Academic supervisors. The first survey for each group was released at the beginning of the Trimester period and the other conducted at the end of the Trimester, after the completion of the assessment period. The surveys were developed as a means of receiving feedback about the array of technologies available, the reasons for the selections made and the effectiveness or ineffectiveness of this technology. In this way, successful components and core issues that arose in relation to working in an online environment were identified.

The Key Findings

The research results revealed that all available modes of online communication on the Blackboard system were utilised by the students, in addition to the use of the social networking site ‘Facebook’ and communication via telephone (see below Figure 1). Furthermore, the Staff and Students agreed that it was important to be given the choice from a range
of technologies in order to effectively engage in the Supervision and research processes in an online environment.

As shown in Figure 1, there was a notable preference to use familiar asynchronous modes of online communication such as ‘email’, the ‘group discussion board’ and the group’s wiki, even though there were synchronous modes of communication available. The survey results represented in Figure 2 (below) demonstrate that this preference for using asynchronous modes was influenced by group decisions to select these largely due to ‘the ease’ of using these modes of communication and people’s pre-existing ‘familiarity’ with them.

As a part of their assessment the students were required to demonstrate the knowledge that they had acquired from their research investigation in a manner in which the knowledge accrued could be shared with their profession once they entered the field of Early Childhood teaching. A range of digital options were available for them to present this information in any digital form. The preferred presentation types are represented in Figure 3, listed here in order of popularity,

1<sup>st</sup> Digital Slideshow
2<sup>nd</sup> Wiki
The use of PowerPoint slideshows was the most popular digital means of presentation, selected via group decision. This choice was largely influenced by people's familiarity with the technology, followed by its suitability, availability and lastly, the newness of the technology for a few people (see Figure 4. below). The second most popular mode of presentation was the Wiki, however, as mentioned earlier, each research group had its own Wiki in which they were required to develop and present each stage of their group's research; the group members, research questions, literature review, etc. This explains the left column representing the Wiki as being prescribed by the Unit Chair of the Unit.

In the survey, the students were asked to identify any barriers that prevented them from trying any of the technologies
made available to them within the Unit. Seventy percent of the student participants gave responses that identified lack of familiarity with the technology and lack of time as the main factors limiting their selection of technologies. The following two quotations are examples of this,

"I was not familiar with the wiki, and as this subject prescribed it, I spent a lot of time getting familiar with it. Therefore I didn't use other technologies such as E-live, or live chat, as I was also unfamiliar with these, and didn't have enough time to learn them all. My other group members were also learning about the wiki, so we used our group Discussion Board as our main communication as we were all familiar with this"

"Time played a big factor - I felt I didn't have much time to be learning new technology methods as I had so many other tasks to complete (in University and in life)"

Murphy’s (2004) study sought to measure collaboration in online asynchronous discussion and defined ‘producing shared artefacts’ as the highest category of the collaborative process. The student participants in this study all developed shared digital artifacts with their groups via online communication and although not reported here this may be an indicator that the collaborative process was engaged in successfully.

In summary, when an array of technologies and related resources for training are made available to staff and University students, there are key influences that effect their uptake and application of the selected mediums. This research revealed that ‘asynchronous communication’ was preferred over synchronous modes and that digital PowerPoint presentations were the preferred method of public presentation, largely due to the perceived ‘ease’ and pre-existing familiarity with these technologies, followed by the availability of the technology and its suitability to adequately fulfilling the set task. The research identified these areas as key factors that influenced people’s preferences for using certain digital technologies in online research for communication and presentation purposes.

**Implications and Conclusions**

Universities need to address the pedagogical issues that arise in relation to the use of online technologies and accept the responsibility to provide online Units that are innovative and characterized by excellence in learning and teaching. I concur with Warren & Holoman (2005) and Williams (2002) that more research is needed in the area of online instruction. If students are simply opting to only use ‘familiar technologies’ because of their perceived ease of use, then there may be other valuable, technologies that they are lacking exposure to or not learning to use. It is suggested, therefore, that Education providers build the following into their courses: the provision of time for students to become familiar with, and develop a working knowledge of a range of ICT modes, resources and tools. In this manner students will be well equipped to readily draw upon and implement these ICT’s as necessary, throughout their educational life journey. Engaging in online teaching and research is a complex process, not only requiring students and staff to be prepared for the use of technology, but also the changes that it brings to pedagogical practice, altered social roles and ways of developing shared understandings.

As Universities seek to cater to students nationwide and abroad that wish to study and research via distance, online modes, it is important, that the providers of those courses seek to ensure that the learning experiences provided by the courses are relevant, innovative and responsive’, to provide excellence, developing collegiality amongst its students and staff and commit to continuous improvement. It is hoped that the findings from this study assist others to refine the development of online units of study for future use and thereby contribute to the ongoing improvement of online research and online units of study.

Universities have a responsibility to provide, maintain and improve online units of study. University students, who are required to balance work, family and study commitments for extended periods of time, appreciate the flexibility created by online study (Ginns & Ellis 2007). Given the continuing growing demand for online education (Kim & Bonk 2006) it is imperative that Higher Education institutions continue to strive to provide quality online programs.

**References**


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