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Improving Online Communication for Students in Higher Education Contexts

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Abstract
The study reported here sought to identify Higher Education students’ preferred modes of online communication whilst studying a wholly online research subject at University. The teacher education student participants from an Australian university were required to collaboratively conduct inquiry research projects in groups whilst relying upon computer-mediated communication. How do students communicate as a collaborative research group whilst only meeting online? The data were collected via the use of online pre-test and post-test surveys conducted ‘prior to’ and ‘post’ involvement in the unit of study and descriptive statistical analysis was applied. The findings revealed that important influences affecting students’ choice of communication mode included their own views on the capacity of online communication, their prior experience and the availability and accessibility of the modes. Furthermore, it was found that when given a choice, students preferred the use of asynchronous forms of digital communication to synchronous forms. Recommendations for improving online teaching, learning and research contexts in Universities are provided and the importance of considering blended mode delivery for wholly online units is argued.

Keywords Higher education, information communication, online, research, distance education, educational technology, early childhood, teacher education.

Introduction
In a short space of time digital technologies have become an integral part of many people’s lives, with the immediate access provided by mobile technologies blurring the boundaries between work, education and personal and social spaces in their lives. This ‘emerging technology landscape’ (Hanewald & Ng 2011 p.1) commonly known as the ‘Digital Age’ is characterized by an increase in the development, use and reliance upon digital technologies on a global scale. As western society becomes increasingly dependent upon the use of online technologies, so too does the University that aspires to cater for students in the 21st Century. It is not surprising that the application of technologies is increasingly prevalent in the University sector as a form of communication, a pedagogical tool, a resource, and now even as a means of communicating in order to conduct research. Universities and an array of other educational institutions world-wide are confronted with the issue of how to engage students in communication within online
learning contexts. This study was conducted in order to better understand how Higher Education students prefer to communicate in online environments. The main focus of the study was to identify and understand the students’ reasons behind the technological choices made in relation to communication and digital presentation mediums.

**Utilising Online Technologies in Higher Education**

Universities are attempting to capitalize on the affordances offered by technologies and have been exploring the use of electronic learning environments and the study of on-line Units, (Williams 2002) which have now become an essential part of the University’s course offerings. Much of the attraction to the expansion of online modes of learning and research in Universities relates to their ability to provide increased flexibility for students who are unable to attend face-to-face sessions. Online course modes provide access and allow students the opportunity to undertake university study regardless of whether they work business hours, reside long distances from the campus location or overseas and also enables participation by overcoming of other limiting factors such as illness, incarceration and unforeseen circumstances.

There is a growing body of research that is concerned with the role, application and effect of utilizing digital technologies in Education and the University sector. On-line teaching has made notable changes to University teaching pedagogies (Greenwood 2000, Williams 2002, Warren & Holloman 2005). Although learning and teaching in online spaces has benefits for students and teachers it is not without a number of associated problems. Williams (2002) identified three main issues that commonly arise and need to be addressed when designing and implementing online courses: pedagogy, participation and access. Vonderwell & Zachariah’s (2005) review of research on ‘e-learning’ also highlighted the importance of ‘participation’ and how it is conceptualised and defined in online learning contexts. They argue that participation must go beyond measures of frequency alone and probe more deeply to understand how the participants feel about their participation and their level of engagement in the participation. Alexander’s work (2001) identified on-line students as valuing clear course expectations, rich feedback from educators and high levels of on-line activity. Earlier research purports that the on-line learning experience is positively enhanced by the development of a nurturing, communicative culture between students and facilitators (Weller & Mason 2000, Hara & Kling, 1999).

Research concerned with the use of on-line contexts is growing rapidly in Teacher Education with a range of studies focusing upon on-line ‘group work’ and collaboration (An & Kim, 2006) and the use of on-line lectures (Nast, Schafer-Hesterberg, Zielke, Sterry & Rzany 2009, Bassili & Joordens 2008). Much of this research is specifically about ‘teaching’ and ‘learning’, however the current study focused upon students conducting on-line ‘research’ in collaborative groups. Niemiec, Sikorski & Walberg (1996) and Bassili & Joordens (2008) highlight the importance of ‘learner control’ in on-line learning environments and in this light, this study aimed to give its participants increased control over the technological choices made for communication.

Although the field is rapidly expanding there is general consensus in the literature that there is a need for more research in the area of on-line teaching and learning and how to improve collaboration and communication on-line (Greenwood 2000, Williams 2002, Warren & Holloman 2005, Ohi 2011). Communication via digital modes is often classified as either being ‘synchronous’, simultaneous communication taking place live whilst on-line, or ‘asynchronous’ communication, such as via email or discussion board whereby communication is delayed, taking place over a period of time (Joliffe, Rotter & Stevens 2001). Asynchronous communication is commonly used in distance learning and is considered a cost effective, flexible mode (Williams 2002). Scagnelli’s (2006) review of literature on asynchronous learning in Higher Education argued that there is a need to conduct further research in the area in an attempt to identify
guidelines for the design of effective asynchronous online instruction that enhances interaction and engagement with learners.

The significance of the study reported here is that it addresses a gap in the research literature that addresses online research experiences. In order to better understand on-line research, teaching and learning this project provided opportunities for students and staff to select from an array of synchronous and asynchronous communication technologies. Also of importance was the identification of the reasons underpinning the digital decisions that they made. This project importantly explored aspects of the student’s experience in relation to their views, skills, choices and expectations of the course.

Methodology
The Context and the Participants
This study was conducted with adult students from an Australian University in the South Eastern suburbs of Melbourne, Victoria. Sixty-six students were invited to participate in the project and a cohort of 39 volunteered for the pre-test survey and 17 for the post-test. The student participants held a Diploma of Children’s Services (or similar) and had entered a university pathway to upgrade their qualifications. They were undertaking their second and final year of a Bachelor of Early Childhood Education. The core subject that they were studying required them to undertake an Independent Research Project whilst working solely on-line whereas their prior subjects were conducted either face-to-face or in blended mode. The project involved them working in collaborative groups to undertake an inquiry research project under the supervision of an Academic Supervisor over a 12-week period. The students were given the opportunity to identify an area of interest in the area of Early Childhood and to put together a proposal for a project of inquiry that would be undertaken during the trimester.

The participating students and staff were located across the state of Victoria with some residing hundreds of kilometres away from one another. Some were based at one of the University’s three campuses, whilst others studied in distance mode from rural and overseas settings. Seventeen research groups were comprised from a cohort of 66 students, overseen by 13 assigned Academic research supervisors. One group was comprised of two students whilst all others had four group members. Each group was required to collaborate online to negotiate a research topic, identify research questions and develop a research plan and a literature review. The students were assessed on their research proposal (topic & questions), the literature review, the key findings and their final presentation reporting their research findings in digital mode. The research findings were to provide implications for the field of Early Childhood and to describe their direct application to practice. The presentation was to be in a form that could be shared online with their cohort as an on-line conference and that could be used in the future to present to professionals and colleagues once in the field.

The Research Questions
The purpose of this study was to investigate the experiences of undergraduate University students in Education (across multiple campuses) as they collaborated through the use of on-line technologies to engage in research processes via distance mode. The aims were to:

1. Investigate the attitudes and opinions that the participants had towards the use of ICT and its potential use within this Unit as a mode of communication and research.
2. Identify their preferred modes of online communication and to establish what influenced their choices.

Essentially, the project explored collaborative approaches of communication education during team-based learning that took place during an investigative project. As such the following questions were posed:
1. How do students view the effect of ICTs as the main form of communication during the research process?
2. When an array of technologies and related resources and training are made available to University students, what are the key influences that effect their uptake and application of the selected mediums?

The Methods
Given that the study participants were working in an online environment it was considered practical and essential that the data collection also be made in that same environment. Data was collected from the participants via the use of on-line surveys, valued for their potential to enable a quick return of data and minimal time and effort required on the part of the participants (Gillham 2000). The pre-test survey sought information about the students’ pre-conceptions and expectations of on-line communication and their confidence levels and previous experience in using various aspects of technology. The post-test survey was designed to elicit specific feedback about the usefulness and effectiveness or in-effectiveness of the technologies used and the reasons behind the technological communication choices made and to receive general feedback about the structure and content of the on-line Unit.

The format of the survey questions varied and included a collection of multiple choice, Likert ratings and short answer questions. The surveys were initially trialed by the University's Education Development Unit and feedback provided to inform the development of the final survey tools. Descriptive statistics were used for analytical purposes and in most cases presented visually.

Students were invited to participate in the pre-test and post-test surveys at the beginning and end of the academic trimester via the University’s on-line learning space and again via email. Although the research was developed and led by the students’ Education Lecturer who taught, coordinated and chaired the online unit being studied, the invitation to participate was sent under the guise of the University's Education Development Unit for ethical reasons. This was to ensure that the students that volunteered did not feel coerced or obliged to participate in the research project. Also for ethical purposes, the responses to the surveys were entirely anonymous. The Education Development Unit therefore acted as a neutral third-party that sought voluntary participants. The surveys clearly stated that the purpose of the research was to improve the structure and design of this core unit of study and to understand a range of issues associated with engaging in research processes via on-line communication. Also stated was the fact that the anonymous data would be invaluable in improving this and other on-line units and that the findings could contribute to the body of knowledge about online pedagogies.

Throughout the semester, a range of ICT communication modes offering the choice of asynchronous and synchronous on-line communication were made available to each student research group. Supported by the University’s Blackboard Learning Management System, each group was provided with their own online space in which to utilise any of the following interactive e-tools and the surveys would identify if any other modes of communication were used by students (see figure 1.)
It must be noted that using the use of a Wiki was a focal point in this unit of study as students were required to create a group wiki containing separate wiki pages for recording and organizing aspects of their research. A template of a wiki was provided which had the following headings (Research Questions, Literature Review, Design, Findings, Analysis, Recommendations) under which students could insert and share their information. It was the first time for the students to engage in formal research processes and so the template was structured in this rigid form, as it was believed that they would benefit from this support. The wiki was selected in light of its capacity to serve as a group meeting place for sharing, structuring and storing information. Furthermore multiple members can edit a wiki and records of all changes are viewable.

**Results**
The findings elicited from the pre-test and post-test surveys are reported in this section. Descriptive statistics were employed.

**Students’ technological capabilities prior to the semester**
It was important from the outset to gain an understanding of the participants’ initial views and their perception of themselves as technology users, so they were asked to rate their level of confidence in approaching new technologies in the pre-test survey. The total number of respondents to the pre-test was 39, although not everyone responded to all survey questions. All participants responded to the question: *How would you describe yourself in terms of your capabilities with Information Communication Technology (ICT)*? Some claimed to be novice users of technology 12 (31%), whilst others claimed reasonable familiarity 26(66%), and the remaining 1(3%) cast themselves as an expert user. Those who claimed to be technological novices, 12 participants, 4 agreed that they were experienced and confident, while two of this group, disagreed that they were experienced and claimed to lack confidence too. However, when asked if they considered themselves experienced in using a range of computer and on-line technologies, 24 (63%) agreed
or strongly agreed this to be true, and only 14 (37%) disagreed. This would suggest that even novices have had experience with a range of technologies. One participant failed to respond to this question.

With respect to feeling confident to try new technologies, the participants were divided between agreeing 25 (65%) and disagreeing 14 (35%). On closer inspection of these data, it was found that of the 26 participants reasonably familiar with technology, 13 maintained that they were both experienced and confident, and 6 claimed that they were neither experienced nor confident. The remaining 7 were mixed in their responses to these two questions.

The participants were asked to provide a statement about how they felt about beginning a Research Unit of study, which utilized a totally on-line environment. As expected, there was a wide range of responses, which fell into two broad categories: positive and negative feelings. In the negative category were statements like ‘a little nervous’ and ‘I am very scared’. However, some participants, while nervous or apprehensive, also suggested that this could change, ‘apprehensive but enthusiastic to learn’. Figure 2. shows the distribution of participants’ feelings about studying wholly on-line for the 38 who made a response.

![Figure 2. Students’ initial feelings about commencing research and communication in a wholly online environment](image)

As expected, the majority of participants were suggesting nervousness or apprehension at the thought of researching and studying in an online environment whereby communication was wholly online. They expressed this in a variety of ways, not all fearful.

‘I am scared and hoping that I am able to understand what is written and use it to the best of my ability. I also feel some sort of accomplishment, as this will be a challenge for me. I look forward to the challenges and the "not so good" moments. This will be all new to me!’

Interestingly, those who felt positive included one who was ‘curious’. Several participants (6) said at this initial stage, that they would prefer face-to-face classes.

The participants enrolled in the ICT-based university unit were also asked whether they believed that ICT could be used effectively as the main form of communication during the research process the semester. The participants were overwhelming positive about this prospect. Thirty of the 39 participants agreed, or strongly agreed, that ICT could be used effectively. Seven participants disagreed, and two did not give a response. The main reasons underpinning these views were that they believed online communication has benefits in terms of accessibility, ease of and flexibility of timing; all viewed as important as the modern world uses ICT and they need to become ICT capable. ‘It is more convenient as you can work on the assignments without having to physically meet with other team members or teachers’.