

Online technology issues in communication teaching

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Although the use of online technology tools to support learning has been advocated for good academic and pedagogical reasons, the issue is that students do not readily or always have a good experience with it. Previous research on this subject concluded that a comparison of online and traditional essay submissions revealed lower online use than expected, lower preference for online submission, and lower quality online work. It is not clear whether this finding is consistent over time, is related to the student experience, and to previously unexplored issues. This led to the speculation that students needed better preparation and a fuller, more integrated, and longer-term experience to assess their use of online technology in a blended learning environment. This study examines student experience in two offerings of the same communication course to assess the nature and use of online and traditional submission modes, and to explore the issues relating to online technology. Using discrete and overlapping data from two cohorts, this study combines textual analysis and survey results to analyze and discuss the emergent issues.

Keywords: Online technology issues, student experience, communication, undergraduate education

Introduction

Online technology support for learning has been advocated for good academic and pedagogical reasons. This advocacy has been based on principles to guide good teaching (Chickering & Ehrmann, 1996; Bender, 2003), practical suggestions and activities for applying these principles (Bender, 2003; Conrad & Donaldson, 2004), and a recognition of the associated issues and challenges (Leonard, 2000; Goode, 2010). The academic and pedagogical support, which online teaching can provide has been largely argued from a teacher perspective. The issue for this paper, however, is that students do not readily or always have a good experience with online technology support. A previous study on this subject concluded that a comparison of online and traditional essay submission revealed lower online use than expected, lower preference for online submission, and lower quality online work (Steele, 2008). In that study (referred to as Study 1 in this paper), it was recognized that three questions required further investigation: It was not clear whether this finding was consistent over time, was related to student experience, and to the previously unexplored issue of student experience.

The current study, referred to as Study 2, addresses those questions and the previously unexplored issue of student experience by exploring the experiences of online technology tools from a student perspective using mixed methods of research: a survey and content analysis (Benoit & Holbert, 2008).

Given the findings of previous research and a review of the literature, two main concerns arise. The first concern is with which learner characteristics appear to influence the learner's use of online tools in education. The learner characteristics such as gender, age and frequency of use were identified as potentially useful variables for investigation. The second concern is with the issues which affect the learner's access and actual use of technology. Together these two concerns constitute the focus of this study on the influence of learner characteristics and issues which affect the learner's use of online tools. In addressing these concerns, a review of the literature identifies four themes for attention: student use of online technology, student experience of online technology, learner characteristics, and issues faced by learners.

Literature review

A previous investigation of the use of technology in a blended learning communication instructional context revealed similarities and differences between online and face-to-face modalities, such as low use of online resources, preference for traditional submission, and lower quality of work (Steele, 2008). That study concluded that "technology use seems to hold less interest for students and may be accounted for by theoretical explanations of technology acceptance, similarities and differences in student performance, and human factor subjective issues" (Steele, 2008, 18). That investigation found differences in student performance on traditional and online submissions but did not account for their preference for traditional over online submissions (Steele, 2008, 17). Because the scope of that design did not anticipate or address this issue, it is explored in this study.

Frances et al (1999) found no significant differences in educational outcomes when the results of instructional technology were compared with conventional methods of delivery but wide differences among subjective measures such as student perception of the quality of instruction using conventional and instructional technology, where the latter was regarded as inferior. They contended that the human factor may account for the degree of satisfaction with conventional over electronic modes of delivery. This factor may account for the apparent lack of interest in online modes of communication and response to assignments as compared to conventional modes of delivery which appear to provide more contact, interaction and collaboration. Thus, although no differences appear to exist in outcomes, students' perceptions of the value of educational technology use may not be consistent with those results based on performance outcomes.

Student use of online technology

Student use of online tools refers to their effort and practical tasks in using the online tools and is distinguished from student experience as discussed later. Previous studies focused on student perceptions of technology use suggesting cautious optimism (Schacter, 1999) and provided evidence of enhanced learning (Kulick, 1994; Sivin-Kachala, 1998; Krentler and Willis-Flurry 2005). Others noted the potential impact of student characteristics as moderators which have an indirect influence on the student use of online tools (Greenagel, 2002) and found that students' comfort and familiarity with technology affect student learning (Piccoli, Ahamad, & Ives, 2001). These studies reflect the institutional/teacher perspective but do not necessarily reflect the learner's view. Best practices should be informed by this view.

Blended learning, sometimes called hybrid learning or mixed learning, combines multiple approaches to learning which include a combination of online technology-based materials and face-to-face sessions used together to deliver instruction supported by online materials (Blended learning, 2007; Kirschner, Sweller & Clark, 2006). Blended learning environments (BLEs) encourage student engagement by going beyond providing access to information to fostering intellectual development (Aspden and Helm 2004; Palloff & Pratt, 1999), encourage "high contact" situations (Naisbitt, 1999), and draw staff and students together virtually and physically (Cairncross, 1997; Graetz & Goilber, 2002). BLEs also have the potential value of encouraging contact and co-operation between staff and students highlighted by the use of seven principles for good undergraduate education (Chickering & Gamson, 1987; Chickering & Ehrmann, 1996) as demonstrated by the application of these principles (Skill & Young, 2002). Thus, access alone is not the whole picture for studying best practices; student's engagement and response are important too.

Student experience of using online technology

Student use is limited to their practical efforts and tasks, but student experience (Ramsden, 1991; Broomfield & Bligh, 1998; Steele, West & Simeon, 2003) focuses on the students' perceptions of that experience. A study by Steele (2008) posed questions about the reasons behind students' experience of using online technology and referred to the possibility of using self-report and observational data to investigate students' use of technology (Aspden & Helm, 2004). Student response to assignments in Study 1 (Steele, 2008) showed a preference for traditional over online submission but it was unclear whether this preference was related to the issues of access, training and preparation, familiarity and degree of comfort and satisfaction with using online technology as opposed to other traditional technologies of handwritten and typed written essays. In the current study referred to as Study 2, these issues were addressed by providing student-lecturer contact for an entire semester and by infusing online activities throughout the course rather than in shorter, more limited contact sessions. Given the view that students' prior

experiences and knowledge, skills and attitudes towards the use of online tools in learning can affect their experiences as learners (Groff & Mouza, 2008), it was found useful to investigate learner experience in Study 2 in a manner that was not contemplated or possible for Study 1.

Gender, age, frequency of use

Gender as a variable in technology use has been studied in pre-university, university and work environments. While the findings show differences and variations in male and female use and attitudes to technology use, the gender gap seems to be narrowing, but remains persistent, even as the profile seems to be changing. From an educational policy perspective, although the gap seems to be less of an issue, males and females appear to use educational technology differently (Reed & Taylor, 2006, n. p.), leading to the conclusion that “the consensus appears to be that there is little to no gender gap in terms of actual access. On the other hand, there does seem to be some consensus regarding the fact that men and women are different in terms of their frequency of use, duration, and content when accessing the Internet.”

After reviewing studies on the gender factor in technology adoption in learning environments between 1986 and 2006, Zhou and Xu (2007, p.141) shared the views of other researchers (Colley & Comber, 2003; Vale & Leder, 2004) and noted that the gender gap persisted. The review found a similar situation existing at the post-secondary level although the number of studies in university settings was smaller (Zhou & Xu, 2007, 141). This finding was supported in previous studies which acknowledged that gender was a significant factor in post-secondary learning. For example, males had significantly higher positive perceptions of the use of a digital library (Koochand, 2004), and although Internet use among males and females had increased, males were more likely to use web-based instruction in an open university (Enoch & Soker, 2006), and they reported more computer experience and had higher perceptions of their competence (Williams, Ogletree, Woodburn, & Raffeld, 1993). On the other hand, the reviewers reported that some studies did not reveal significant gender differences in, for example, students’ receptivity for distance learning (Zhang, 2005), and overall perceptions of computer competence (Davis & Davis, 2007). Based on the research reviewed, gender, age differences and the extent of use of educational technology are worth investigating among students. Based on the literature reviewed above, it appears that the terms gender and sex may have been used synonymously in the studies cited. However, the socially constructed and differentiated perceptions and attitudes to technology use linked to males and females imply a focus on gender rather than sex. An interesting question then is: RQ1: What are the gender, age and frequency of use differences among students in higher education, with regard to the use of online tools for learning?

Issues: access/facilities, challenges, preferences

The foregoing studies suggest the need to investigate the role of gender, age and frequency of use of online learning technology among university students, but other issues warrant attention as well. The extent to which students have access and use of facilities is the first issue. A review of educational policies identified gender bias, funding and affordability, accessibility (economic, educational, racial, and geographical factors), hearing and visual disabilities, learning disabilities and assistive technology as main challenges that educators need to recognize and incorporate in their use of technology (Hayenga, Incrocci, Pearl, & Taylor, 2006).

A second critical issue is the range of barriers that users confront. Among the factors that are often cited among faculty are unstable hardware or software, lack of training opportunities, lack of time, and limited research evidence on the value of technology use (Zhou & Xu, 2007; Spotts, Bowman, & Mertz, 1997), but it is not clear whether these issues also apply to students.

A third main issue is students' preferences and is related to educators' training and ability to develop and integrate learner-centred curricula in their use of online technology tools (Keengwe, Onchwari, & Onchwari, 2009). To take the learner into account, consideration should be given to three pedagogical areas: (a) Emphasis on a learner's unique identity; (b) Fostering learning through active learning activities; and (c) Integrating technology into classroom instruction. Accordingly Keengwe, Onchwari, & Onchwari (2009) argue that:

the focus on these areas is grounded on the need to establish a pedagogical model that requires teachers to think about what students are learning, the process of learning, the environments supporting student learning, and ways in which current learning position the students for future learning. (p. 11)

A better understanding of this issue can be gleaned from students' perspectives, which are not usually taken into account. Given the three main sets of issues outlined above, a second research question is posed: RQ2 What issues affect students' use of online tools?

Method*Overview*

This study used a mixed methods design combining the survey method and content analysis. Students enrolled as communication majors complete courses in communication theory and communication research methods in their third and final year of study at one campus in a regional university. The students attend one two-hour lecture session and one one-hour workshop weekly over 13 weeks. They are assessed individually by four, in-class, paper-based quizzes on completed modules and an out-of-class essay submitted in hard copy (traditional) or online. All students have access to face-to-face large classroom contact with the course

lecturer and assigned tutors in smaller workshops of 8-12 students. The online tools used are, therefore, the assignments tool that allows for submission of assignments and the use of e-mail.

The 2007-2008 and 2008-2009 cohorts took the communication theory class in Semester 1 and two to three other courses each semester. In Study 1 (Steele, 2008), textual analytic data on traditional and online use and submission of assignments were collected from the 2007-2008 cohort. In the present Study 2, textual analytic data on traditional and online submission of the same assignment were also collected from the 2008-2009 cohort, but additional survey data on online communication use by students were collected. Student privacy and confidentiality were guaranteed, the questionnaires were distributed randomly in class and students were not required to provide their names on the questionnaire. The responses were coded and summarized using frequency counts and summary percentages.

Discrete and overlapping data from both cohorts were used to analyze and discuss the emergent issues. This provided a richer spectrum of data and allowed for modification of the previous methodology in Study 2 to probe unanswered issues and questions arising from the data set in Study 1. This methodological approach reflects the recursive and emergent nature of classroom research in a scholarship of teaching and learning context. A version of this approach is used to elicit variables in one study, and then explore issues from the first study in a more focused manner in communication, social-science and humanities-based methods of quantitative and qualitative inquiry (see, for example, Nabi, 2009; Ferguson, Moye, & Friedman, 2008).

Students in two cohorts were taught by the same lecturer in an undergraduate communication theory course in 2007 and 2008. In 2007, however, the instructor taught a guest lesson while in 2008 the lecturer taught the entire course. The main difference between the two cohorts was the duration and frequency of contact with the course lecturer. Both cohorts submitted an assignment with the option to use traditional or online modes. Although the assignments were different, and different assessment criteria were used, a global comparison of relative performance was made.

Study 1

The study of Cohort 1 (2007-2008) (Steele, 2008) explored the use of an online course management system Moodle, to encourage participation by students. Participation was operationalized as students' use of online course resources and selection of an online or traditional submission mode for the same essay assignment and instructions. Communication majors (n=55) enrolled in a communication theory class in one of the campuses of a regional university were invited to submit an assignment for a guest lecturer on cultural studies and communication in Week 10 of the 13-week semester. Student online responses to the assignment were

collected, analyzed and compared with traditional submissions from the same students.

Students reviewed online materials including lecture notes and slides, and they used the assignments tool. There was also online views from students via email, and discussions were posted to the forum ($n=857$, 71.18%). Student mean usage was lower (14.28) than staff mean usage (19.28) of the online resources. This study revealed lower mean online resource use among students compared to staff, a preference for traditional over online submission mode and lower quality of online submissions. However, it was not clear what accounted for these findings.

An analysis of online and traditional assignment submissions revealed differences. The results showed that most traditional submissions included a required question/issue (88.5%) but fewer online submissions did so (71.4%). Traditional submissions had a thesis/argument (76.9%), but fewer online submissions did so (57.1%). However traditional and online submissions were comparable in showing evidence of understanding of relevant supporting concepts (57.7%, 57.1%) and evidence of application of relevant supporting concepts (57.7% and 57.1%), respectively. The data were analyzed using coding criteria developed for the study by the researcher and based on assessment criteria reviewed and used by two markers (tutor and course lecturer) of student essays.

Study 2

After a review of the findings of Study 1 and the relevant literature, it was not clear whether student experience and other variables such as sex, age and frequency of use accounted for those findings relating to lower online use among students, a preference for traditional submission, and better performance on traditionally submitted assignments. Study 2 explored these issues in 2008, while repeating the comparison of mode of submission, but focusing on student use in the same course with the same lecturer throughout the course.

A 20-item questionnaire survey was distributed and collected in the final week of classes. There were 36 respondents (56.25%) out of a class population ($n=64$). The sample and population characteristics were comparable. The female-male ratio was similar for the sample (females $n=28$, 87.5%; males $n=4$, 12.5%) and the population (females $n=57$, 89%; males $n=7$, 11%). The age range of the sample was 21-33; mean 23.84; SD =2.81.

In Study 2 new survey data on students' weekly use of the online resources in two courses indicated consistent frequency rates for COMS 2901 (mean=2.53; SD 1.56) and for COMS 2902 (mean=2.25; SD 1.25). Student use ranged between 2.25 and 2.53 times weekly throughout the year. Comparable data using statistical logs from mylearning as used in Study 1 was not possible arising from an unexpected administrative removal of this information from the course reports.

Table 1 shows students used more traditional than online methods to submit assignments in 2007 and 2008, but there was an increase from 13% to 39% for the online submission mode. Table 1 also shows that fewer assignments were submitted by traditional means with a reduction from 81.5% in 2007 to 61% in

2008. A few students submitted the assignment in both online and traditional formats (n=3, 5.5 %) in 2007, but none in 2008.

Table 1. Online and traditional assignment submission: 2007 and 2008

Assignment	2007		2008	
	N	%	N	%
Online submission	7	13.0	25	39.0
Traditional submission	44	81.5	39	61.0
Both	3	5.5	0	0.0
Class No.	54	100.0	64	100.0

In 2008, the online assignments (n=25) received better grades (mean=7.63, SD= 1.35) than the traditional assignments (n=39; mean=6.70, SD=1.28). This is in contrast to the 2007 comparison of online and traditional grades using a different assessment system. In 2007 traditionally submitted assignments were better in comparison to online submissions in quality and grades (Steele, 2008).

Issues from survey

Access and facilities Q18-20: Student access to online technology was high with most students owning a laptop or desktop computer (91%), having access to mylearning (94%), and having hi-speed or dial-up access (78%) and wireless or other type of connection (22%) Facilities: Q3 “Was there any online resource that you found useful for COMS 2901?” Most respondents found the online resources useful (n=27, 75%). Most of the persons who found the resources useful, identified text resources (n=9, 25%), no specific resource (n=6, 16.7%), or lecturer resources such as slides, summaries and handouts (n=5, 13.9%), or lecturer resources combined with text resources (n=5, 13.9%). Challenges Q5: “Did anything present a problem for you in using the online resources in semester 1 for COMS 2901?” Most respondents reported no problems in using the resources (n=34, 94.4%), but one student encountered a software problem (2.8%)

Preferences: Q7, 9, 11, 13, 14

Q7 “What would make it easier for you to use the online resources for COMS 2901?” Most students did not suggest anything that would make it easier to use the resources or found it easy enough (n=22, 61%). However, some wanted better home Internet or laptop Internet connection or a personal laptop (n=5, 13.9%).

Q9 “What would you like to see more of in the COMS 2901 online resources?” Most respondents indicated there was nothing more that they wished to see in the online resources (n=16, 44.4%) but some wished to see more past papers/ exams or forums or guidelines (n=7, 19.4%), more readings/links/interaction/ activities (n=4, 11.1%), and more slides of seminars/presentations (n=3, 8.3%).

Q11 “What would you like to see less of in the COMS 2901 online resources?” Most respondents indicated that there was nothing that they wanted to see less of in the online resources (n=32, 88.9%).

Q13 “If you submitted an online essay assignment in COMS 2901, why did you prefer that method of submission? If you did not submit an online assignment, circle NO”. Of the 35 valid respondents, 15 (41.6%) made online submissions. Those who submitted online did so mostly for convenience (n=8, 22.2%), for economical reasons such as saving time, ink or paper (n=5, 13.9%).

Q14 “If you submitted a traditional hard copy essay assignment in COMS 2901, why did you prefer that method of submission? If you did not submit a hard copy assignment, circle NO”. Of the 35 valid respondents, 20 (55.6%) made traditional submissions. Those who submitted traditionally did so mostly for the certainty of delivery (n=6, 16.7%), on-time reliability (n=4, 11.1%), or to avoid technical issues such as uploading or the quality of their Internet connection (n=4, 11.1%).

In summary, Study 2 showed that the student level of access and use of facilities was high, most reported no difficulties, and most wanted better technical facilities, and more focus on assessment and examination resources and a wider range on activities. They preferred online submission mostly for reasons of convenience or economy, but preferred traditional submissions for reasons of reliability, certainty or avoidance of technical issues. These findings demonstrate a growing confidence and better performance in online submissions and offer new insights into student preferences relating to levels of convenience and security.

Overall discussion and conclusion

This paper demonstrates a changing profile in student use of online technology in communication and offers new insights into their preferences. In order to improve and develop best practices attention should be paid to emerging trends relating to student use and experiences in online technology support in the classroom. The findings on issues of students’ access and use of facilities, challenges and preferences establish new benchmarks for evaluating e-technology use in communication teaching. The findings of this study are based on the imbalanced, but real sample characteristics such as the female-male ratio which limits generalization of these findings to populations with a similar imbalance. The study also relies on self-report data which, though useful in establishing benchmarks, needs to be complemented and cross-referenced by other sources of data such as peer reports and observational data such as access and use logs that are normally generated and archived in mylearning, the online course management software, but which were not available at the time of the study.

The base line data in this study establish the presence and potential influence of gender, age and actual use of technology. However, a limitation in the study is that it did not account for the influence of these variables. Future investigations should focus on the influence of these variables on online technology

use in the communication classroom.

Study 1 demonstrated there was more rigour and a higher quality of response to the assignments submitted in the traditional manner as opposed to those submitted online. This led to questions such as: Was this related to different psychological and sociological orientations to traditional and online modes of assignment submission? However, it was not clear whether these factors were present or what effect they might have had in Study 1. Further exploration of these questions and issues was attempted in Study 2. A new profile emerged after employing sustained use of online technology tools and collecting new survey data on students' access to and use of facilities, challenges and preferences.

A challenge for instructional design is to minimize cognitive load or the demands made on the simultaneous processing of limited short-term and relatively unlimited long-term memory. The learner's experience comprises motivation and interest in, and the degree of comfort with the learning media. The issue of cognitive load has been shown to affect the learner's experience with the resultant recommendation that appropriate instructional design should help by providing direct guidance and scaffolding (Artino, 2008). Thus, in considering the learner's experience, the learner's motivation and interest in the online technology should be taken into account. Using the benchmark data on student variables such as gender, age and use of technology, it may be possible to explore ways of varying cognitive load by controlling for the effects of these variables.

Further, using the baseline data on students' access to and use of facilities, the challenges they face and their preferences, it may be possible to develop a better understanding of the impact of these issues on best practices for online technology in the communication classroom when changes to the cognitive load in instructional designs are made.

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