

2016

Enhancing the Learning Space with Technology

Alexandra Blanc

George Washington University - School of Medicine and Health Sciences, ablanc14@gwmail.gwu.edu

Geoffrey Dick

George Washington University, gfdick@aol.com

Mary Granger

George Washington University, granger@gwu.edu

Follow this and additional works at: <http://aisel.aisnet.org/siged2016>

Recommended Citation

Blanc, Alexandra; Dick, Geoffrey; and Granger, Mary, "Enhancing the Learning Space with Technology" (2016). *2016 Proceedings*. 18.
<http://aisel.aisnet.org/siged2016/18>

This material is brought to you by the SIGED: IAIM Conference at AIS Electronic Library (AISeL). It has been accepted for inclusion in 2016 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

ENHANCING THE LEARNING SPACE WITH TECHNOLOGY

Alexandra Blanc
Department of ISTM
George Washington University
ablanc14@gwmail.gwu.edu

Geoffrey Dick
Franke School of Business
Northern Arizona University
gfdick@aol.com

Mary Granger
Department of ISTM
George Washington University
granger@gwu.edu

Abstract:

This paper reports on a small study of students who were required to use communications and document sharing technologies to complete group work for class assignments. The students used a range of technologies and reported on their satisfaction with them and the contribution the technologies made to the learning environment. The objective of the study was to determine whether the technologies made for a good learning environment and if so, what contributed to this. In this study, those students with the confidence and technical ability to use such tools, and in possession of the internet and computing skills and resources to use them successfully, found that they made for an effective, even preferred, learning environment. The authors would like to see more studies with more diverse groups of students.

Keywords: Communications tools, collaboration, student teams, on-line learning environment

I. INTRODUCTION

Higher education is witnessing a massive shift towards online education. This shift is due to the commoditization of laptops and internet access that allows most of the student population to get and stay connected. Colleges and Universities are facing an increasingly strong pressure to offer online courses and entire online degrees, an initiative that they not only find crucial to keep their current students, but also to grow their student base. Online degrees have allowed many to receive a higher education, all the while pursuing a full-time career, something that wasn't previously possible with on-campus degrees. Another growing trend is hybrid courses, where some classes are offered in traditional format and some are offered online. The hybrid course enables students to have perks of both delivery methods. To large extent these changes in the way students work mirror the changes in the workplace; a wide variety of collaborative tools is available and these are extensively used. They are used so extensively that the line between traditional face to face interaction and technology enhanced interaction is becoming blurred. These tools are being used outside the organization too for inter-organizational communications with supply chain partners and after sales service to customers

With the rapidly evolving technologies made available to the public, educators see an opportunity to integrate new tools in online and traditional courses to both engage students and to increase learning, collaboration and communication. Students are able to participate and learn without being physically present. Collaboration tools such Google Drive and communication tools such as Skype, Google Hangouts and WebEx enable students to stay connected and collaborate with their instructors and peers, no matter where they are located. Using internet collaboration technologies,

instructors may conduct virtual office hours and students may 'meet' electronically to complete projects and other team assignments.

The purpose of this paper is to examine what was done in terms of communication tools used for both traditional and online education to better understand how this shift in a teaching method impacts student learning and satisfaction. The importance of this topic lies in its increasing adoption among educational institutions and the impact it has on learning. While there is increased pressure to offer online courses and degrees, the question remains "are they using the right tools and methodologies to offer the same or better quality courses as traditional courses"?

The paper is organized as follows. First, there is a review of research findings on the implementation and impact of these tools in online classes and draw implications of their use and usefulness. Next, the research questions, data, methodology and results are outlined. Finally, there is a discussion of findings and their implications for research and practice.

II. BACKGROUND

Online courses' formats vary tremendously depending on institutions, instructors, subject taught, and learning outcomes. However, several components come back as classic tools used among all platforms to enable computer-supported collaborative learning (CSCL). CSCL may be defined as using the computer to enhance the learning environment. However, just because the tools are available does not necessarily mean that the students will use them, and when they do use them, whether the tools are effective.

Wu and Hiltz, (2003), examine another type of online course: mixed. The "mixed course" is a hybrid between online and face-to-face (traditional) instruction. This type of course is also quite common as it offers convenience, place-independence, time-independence, and potential for users to become part of the virtual community (Berge and Collins, 1993). A combination of traditional class and computer-mediated discussion may provide a superior learning environment compared to the traditional classroom alone (Althaus, 1997). Specifically, it allows greater participation among students, as often large classes may prevent many students from participating in discussions. It also allows for an in-class discussion to continue, even after class time is over. Internet collaboration tools may facilitate this hybrid model, allowing collaboration during the non-traditional sessions.

Online discussion boards are built-into Course Management Systems (CMS) and often they become the major collaborative tool for the course. Discussion boards in a CMS allow students time to prepare before participating in the course and enable students to express a more articulate idea in written form, thereby leading to more gains in individual learning outcomes (Pena-Shaff and Nicolls, 2004). However, this platform also presents many limitations. Since use of the discussion board is often required in the course, and grades are based on the use, not the content of the use, responses may be superficial. Starting with shallow processing of central ideas from instructional materials (e.g., Peters and Hewitt, 2010; Slakmon and Schwarz, 2014), students are also more apprehensive to tackle more difficult topics. (Eryilmaz et al., 2015; Paus et al., 2012). Additionally, it was found that, in order to meet participation requirements, students had a tendency to gravitate towards familiar topics and avoid challenging ones (Eryilmaz et al., 2014). The combination of the aforementioned drawbacks may not produce satisfactory learning outcomes. Revere & Kovack, (2011), focus on how online courses engage students and how the implementation of new technologies can further student engagement and learning. In the frequently-used course management systems such as Blackboard, WebCT, or Moodle, instructors are able to post course-related materials and interact with students throughout the platform, whether it is through discussion boards, live chat sessions, blogs, wikis, group tasks or peer assessments. However, these systems lack the support level of engagement desired by today's online students. "Despite the advances in technology, existing online course management systems are often far behind in the technological applications needed to deliver the highest quality of education" (Li, 2007, p. 311). While the aforementioned tools allow instructors and students to be engaged, they have some serious limitations. Discussion boards do not deepen analytical and evaluative skills. Chat sessions

have a tendency for out-of-sync contributions and overlooked or misread comments. Blogs posts are typically longer than that seen in discussion boards or chat sessions. Internet collaboration tools are central in this study. While the online discussion board is very handy, if the collaboration aspect is not synchronous, positive learning outcomes may be minimal.

Guo and Stevens (2011) focus on how the implementation of a Wiki technology impacts student learning. The research is not solely on the impact of wikis on group collaboration, but investigates how and why that technology was accepted and beneficial. A student is much more likely to use a technology in a course if they have used it in the past. Following findings in TAM studies, the user adoption rate is much higher if the use of the technology is made mandatory. Linked to the successful implementation of a new technology in a course is the students' attitude towards the required technology. If enthusiasm surrounds the use and usefulness of a technology, students are much more inclined to using it. Similarly, if they dread using it, students will not make the effort to work with it. The importance of ongoing use is also critical where the technology needs to be used frequently throughout the course, not just sparingly. The impact of experience with other technologies also plays a crucial role on the use and perceived usefulness of new technologies (Ventkatesh, Morris, Davis & Davis, 2003). Finally, future use depends on the usefulness of the technology. If using it becomes more of a burden, then the odds of users fully adopting it are low. The effective implementation and use of new technologies to enhance student learning in online courses depends on the alignment of many factors: choosing the right technology, designing a suitable group task, making use mandatory, training instructors and students, and maintaining a positive attitude.

In an effort to improve engagement in online courses, new tools are being implemented, such as twitter feeds, Google applications, audio and video technologies and internet collaboration technologies. By allowing students to use technologies they frequently use in their daily routine, the user adoption rates may be much higher, making those technologies useful to students. When used appropriately, collaborative technologies can foster student engagement in the learning process, which many students find beneficial and research has shown to decrease attrition, enhance learning outcomes, and improve student satisfaction (Revere & Kovack, 2011). These technologies differ from discussion boards in CMS because they enable students to collaborate in a synchronous, real-time mode. Additionally, many allow simultaneous editing of documents and presentations.

Composition of groups can affect performance due to socialization issues (Guo and Stevens 2011). Group tasks are made a bit more tedious as teams must learn how to work together virtually and figure out proper work equity. Online and hybrid courses have proven to be very varied in their use of teaching techniques, providing diverse outcomes that must be weighed and understood properly. Many technologies are already available for students in online courses, but how do they impact student learning and satisfaction? The studies mentioned above agree on high levels of collaboration and student engagement to allow students to fully benefit from their online educations.

The following section explores students' perceptions in a traditional face-to-face course and an online course where using a collaborative tool was mandatory. The students were able to select the technology they were familiar with or wanted to learn. It appears that all the teams used Google Docs for editing and exchanging documents. The collaborative tools teams used are WebEx, Google Hangouts, Skype for Business, Slack and Skype. They are all Web-based and support applications on the iPhone, Android and Windows Phone. Not all support Mac usage. While they all enable file sharing, the teams preferred Google Docs. Google Docs and Google Hangouts are supported by the university and they may have had prior experience with those tools. The others offer free downloads. A search of the Internet reveals many more available tools for students and businesses, with no overwhelming preference for selecting one.

Research Questions

The principal objective in undertaking this study was to address the following questions:

1. Did the online communications and document sharing tools used in these classes make for a good learning environment?
2. If so, what contributed to this?

III. DATA

The data for this study was collected from two graduate information systems classes in the business school of a large east coast university. In one of these classes, although a traditional face-to-face format, the students were required to work in teams of five to develop a web-based system or an app, from feasibility study, through the systems analysis and design stage, and coding to a working prototype. They were required to meet and complete almost all of their team-related activities online, using communications tools and document sharing tools of their choice. The other class was an online class, and the students, in teams of four, had no other option but to use communications tools and document sharing tools. They choose their own tools. They had to design an interface, from user interviews to paper prototyping, to a high-fidelity prototype. They were also responsible for documentation for the project.

A total of 45 students from the two classes completed the survey, representing a 76% response rate of the respondents, there was an even split between male and female students, and 90% were aged between 18 and 29. Almost all students reported “good” or “very good” internet access at home and a high degree of familiarity with internet applications, including the communications and document sharing tools used in these classes.

The data was gathered by an online survey (a link was provided to the students but no incentive or inducement was offered) which took around 10 minutes to complete. The survey was adapted from that used by Guo and Stevens (2011) and used a diverse scale approach. The data was downloaded from the online survey tool and analyzed using Excel.

IV. RESULTS

Students were given the option to use the communications and document sharing tools of their choice. In all cases they chose the Google Drive (Docs) for sharing their documents. For communications to enable their online work, they used Google Hangouts, WebEx, Slack, Skype and Skype for Business. There was no indication in the data that the choice of communication tool affected the learning or usefulness of the tools.

The students in these classes saw the online tools (communications and document sharing) as contributing to learning (Figure 1). It is perhaps also relevant that the students expressed a high degree of satisfaction with the classes in general, perhaps indicating that the learning environment contributed to this result

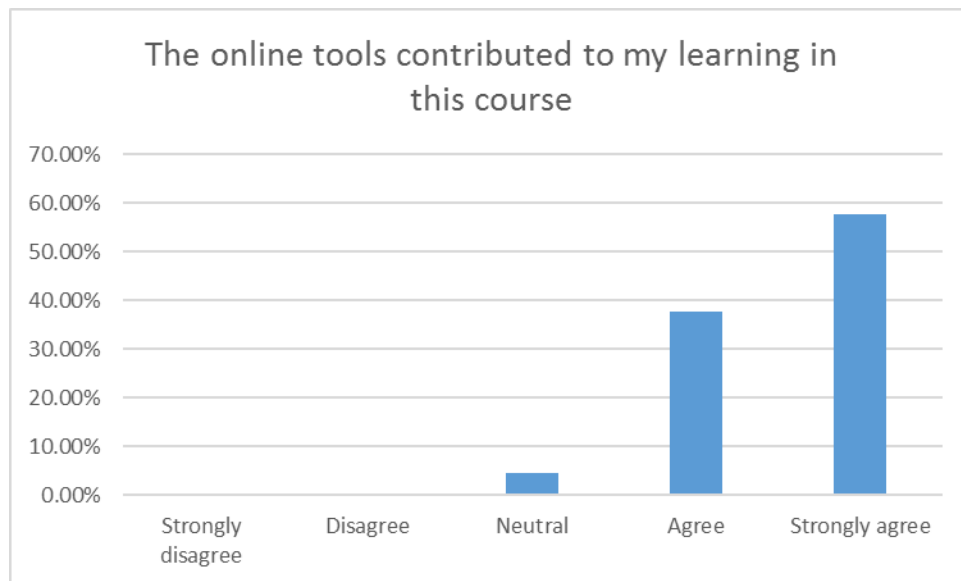


Figure 1: Contribution

In addition, in almost equal measure, they agreed that such tools should be part of similar courses (Figure 2) and that they were “useful” (Figure 3):

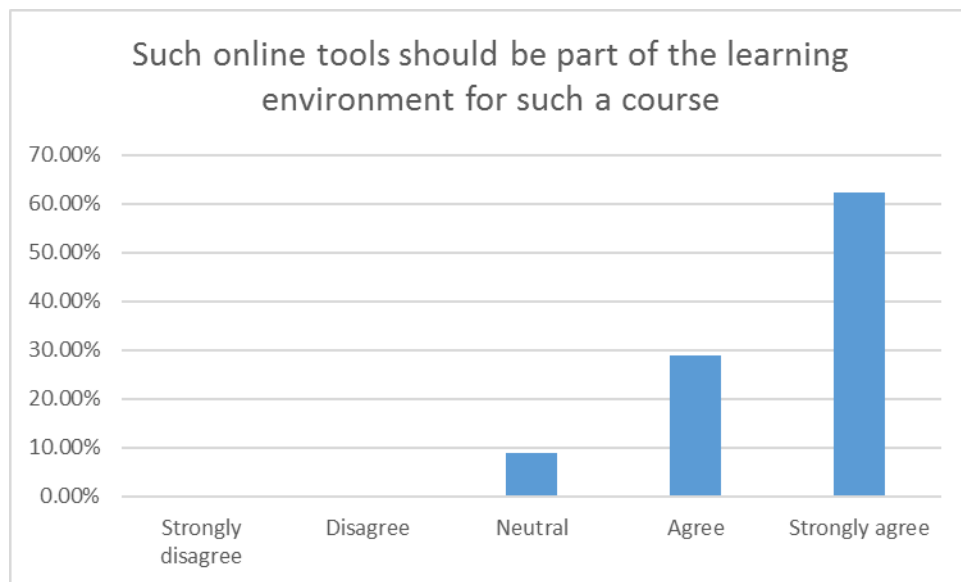


Figure 2: Requirement

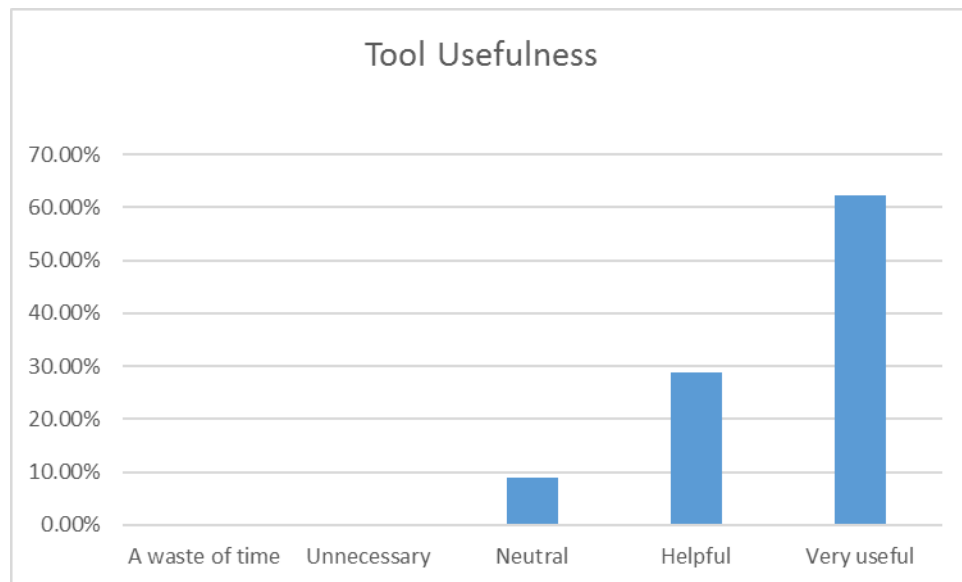


Figure 3: Useful

In one possible indication of causality, there was a high degree of correlation (the Pearson correlation co-efficient was .71) between the contribution of the tools (as measured by learning and their usefulness) and the suitability to the individual's work style (Figure 4).

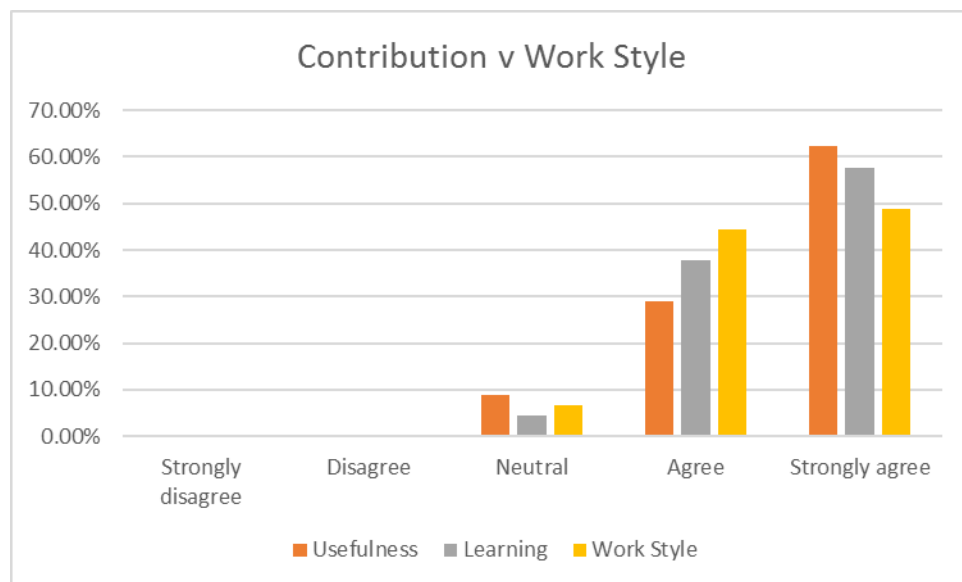


Figure 4: Suitability

V CONCLUDING REMARKS

The competencies of the students, and their access to the necessary resources were not sufficiently varied in this study to enable a detailed study of causality. Further work needs to be done to address the question of whether the technology-enhanced learning environment used here would be as effective in a class of students who lacked familiarity with the tools. In this study, almost all students had at least some experience using the tools; for example, in most cases that

experience was extensive. In addition, individual preferences for working online were not examined here; it is certainly conceivable that the personal circumstances (family and work commitments) may have an influence on the acceptability and perceived usefulness of that environment.

Given that the students were graduate students in an Information Systems program, their acceptance and use of the technology should not be surprising. Nevertheless, it seems that for those students with the confidence and technical ability to use such tools, and in possession of the internet and computing skills and resources to use them effectively, this makes for an effective, even preferred, learning environment. The students saw the technology-enhanced learning environment as contributing to learning, an efficient way to work, and one with which they would be expected to be cognizant of and competent in, in a future work environment.

There is sufficient indication in this study of the effectiveness of the tools to encourage us to call for further studies exploring when and how they might be best used. The authors believe that the technology-enhanced learning environment contributes a contemporary set of tools to enhance the assessable learning environments of communications and team work, and is a central component in equipping students for today's workplace. As such future studies where students in face-to-face classes are precluded from face-to-face meetings but encouraged to meet virtually and the effects of this on their preparation for the workforce are encouraged.

REFERENCES

- Althaus, S. L. (1997). Computer-mediated communication in the university classroom: an experiment with on-line discussions. *Communication education*. 46:3 pp. 158-74
- Berge, Z. and Collins, M. (1993) "Computer conferencing and online education" *The Arachnet Electronic Journal on Virtual Culture*, 1:33 pp 1-21
- Eryilmaz, E., Thomas, B., Mary, J., Kim, R. and Van der Pol, J. (2015) "Instructor versus Peer Attention Guidance in Online Learning Conversations" *AIS Transactions of Human Computer Interaction* 7:4 pp 234-268
- Eryilmaz, E., Chiu, M. M., Thomas, B., Mary J. and Kim, R. (2014) "Design and Evaluation of Instructor-Based and Peer-Oriented Attention Guidance Functionalities in an Open Source Anchored Discussion System" *Computers and Education* 7:1 pp 303-21
- Guo and Stevens (2011) "Factors influencing perceived usefulness of wikis for group collaborative learning by first year students" *Australasian Journal of Educational Technology* 27:2 pp 221-42
- Kovack, J. V., & Revere, L. (2011). Online Technologies for engaged learning, A meaningful synthesis for educators. *The quarterly review of distance education*, 12:2, pp 113-124.
- Li, X. (2007). Intelligent agent-supporte online education. *Decision Sciences Journal of Innovative Education*, 5:2, pp 311-331
- Paus, E., Werner, C. S. and Jucks. R. (2012) "Learning Through Online Peer Discourse: Structural Equation Modelling Points to the Role of Discourse Activities in Individual Understanding" *Computers & Education* 58:4 pp 1127-37
- Pena-Shaff, J. B. and Nicolls, C. (2004) "Analyzing Student Interactions and Meaning Construction in Computer Bulletin Board Discussions" *Computers & Education* 42:3 pp 243-65
- Peters, V. L. and Hewitt, J. (2010) "An Investigation of Student Practices in Asynchronous Computer Conferencing Courses" *Computers & Education* 54:4 pp 951-61

- Slakmon, B. and Schwarz, B. B. (2014) "Disengaged Students and Dialogic Learning: The Role of CSCL Affordances" *International Journal of Computer- Supported Collaborative Learning* 9:2 pp 157-83
- Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). "User acceptance of information technology: Toward a unified view". *MIS Quarterly*, 27:3, pp 425-78
- Wu. D and Hiltz, S. R (2003) "Online Discussion and Perceived Learning" in *Proceedings of the 9th Americas Conference on Information Systems* Tampa Florida.