Christian Perspectives in Education
Send out your light and your truth! Let them guide me. Psalm 43:3

Volume 4
Issue 1 *Special Issue, Christian Distance Education*

12-28-2010

Stewardship in Distance Education: A Comparative Analysis of Technologies that Support Student Learning

Amanda J. Rockinson-Szapkiw
Liberty University

Recommended Citation
Rockinson-Szapkiw, Amanda J. (2010) "Stewardship in Distance Education: A Comparative Analysis of Technologies that Support Student Learning," *Christian Perspectives in Education*, 4(1).
Available at: http://digitalcommons.liberty.edu/cpe/vol4/iss1/6

This Article is brought to you for free and open access by the School of Education at DigitalCommons@Liberty University. It has been accepted for inclusion in Christian Perspectives in Education by an authorized administrator of DigitalCommons@Liberty University. For more information, please contact scholarlycommunication@liberty.edu.

A Brief Report

Stewardship in Distance Education: A Comparative Analysis of Technologies that Support Student Learning

Overview

Christian educators are responsible to be wise stewards of what God has entrusted to them. Investing time and finances wisely and effectively facilitating the growth of the learners demonstrates prudent stewardship (Galatians 6:10; Genesis 2:15). As online courses and programs have been established as effective and are being increasingly offered in higher education institutions (Russell, 2001), Christian educators are faced with the challenge of finding time, money, and technology to support their learners' learning in the online environment. New technological applications offer a variety of options to support learning in the online environment. Traditionally, the content management system and its integrated tools (e. g. e-mail, discussion forums) have supported the delivery of online education. Although found suitable and sometimes effective, some researchers have deemed this traditional online delivery system and its tools as insufficient to serve the needs of some learners and support some learning tasks (Chang, 2004; Nentwich, 2003; Schullo et al., 2005; Thomas, 2002). Limitations of the traditional system such as misunderstanding due to lack of non-verbal communication cues, poor community, and lack of deep learning or higher-order thinking have been noted (Moore & Kearsley, 2005; Rovai & Jordan, 2005). Thus, technological applications such as chat and e-conferencing that allow real-time interaction have begun to be used in the online environment to address concerns and limitations of the traditional system. Research focused on these synchronous technologies is emerging, but exploratory research that has been published has been mixed (Alavi & Leinder, 2001; Hrastinski, 2008). Some researchers have suggested that the

Published by DigitalCommons@Liberty University, 2010

addition of synchronous technologies enhance the traditional asynchronous online learning environment in terms of community and learning confidence (Olubunmi & McCracken, 2008; Park & Bonk, 2007; Romiszowski & Mason, 2004, Wang & Chen, 2007), while others suggest that the technological difficulties that learners experience with the adoption of synchronous technologies may detract from the traditional environment (Chapelle, 2005; Garrison, Cleveland, Innes, Koole, & Kappelman, 2006). As bandwidth increases and the technological skills of learners continue to advance, more research is needed to determine if synchronous technological applications such as e-conferencing can enhance the facilitation of learning in various online higher education environments. Such research can assist Christian educators in making wise decisions about technology adoption for their online classrooms. Accordingly, the present case study compared online students' learning when participating in one of two groups: (a) learners who used the traditional content management system and its integrated tools for their online course and (b) learners who used the traditional content management system and its integrated tools as well as an e-conferencing system for their online course.

The Case Study

A convenience sample of 31 university students enrolled in online education courses in 2009 participated in the study. After attrition occurred within the first few weeks of the courses (at a rate of 30 - 40%, consistent with research on online attrition rates; Terry, 2001), the volunteer rate for the study ranged was 80% and 94%. The majority of participants were males (n = 16; 57.1%) and Caucasian (n = 21; 75%). Twelve (42.8%) participants were females and 2 (7. 1%) of the participants were African American, and 5 (17. 9%) of the participants classified themselves as other.

The two eight-week courses were taught by the same experienced female educator; one course was an undergraduate course and the other a graduate course. Upon enrollment in the course, all learners were notified that the courses were being used for research and were asked to complete an informed consent or choose the "opt out" option to enroll in another course. The students in each course were randomly assigned to one of two groups: learners who used the content management system, Blackboard™ e-learning system, and its integrated tools and (b) learners who used the Blackboard™ e-learning system and its integrated tools as well as the e-conferencing system, Elluminate Live! virtual classroom (an e-conferencing system).

Using the Blackboard™ e-learning system, students in both groups were able to create homepages, access and retrieve content posted by the educator (e.g. syllabus, PowerPoint), submit assignments, complete quizzes, and have discussions using e-mail and the discussion forum. The Elluminate Live! virtual classroom enabled students in the second group to communicate via their computers and headsets in real time using the audio chat tool and interact in real time with the educator and peers using features of the e-conferencing system such as the white board tool, the application sharing tool, and the small group tool.

Students in both courses completed similar assignments and the groups within the course completed the same assignments. The only difference was that three of the assignments, similar in both the graduate and undergraduate course, were completed in different mediums: (a) the class overview, (b) the presentations, and (c) the guest speaker discussion. In the group that only used the Blackboard™ e-learning system, the class overview and guest speaker interview were presented as pre-recorded video sessions that students could view at their convenience during the specified timeframe. Discussion about the content took place via discussion board. For the presentation assignment, learners posted their presentations and discussed them via the

discussion forum. In the group that used the Blackboard™ e-learning system and the Elluminate Live! virtual classroom, the instructor overviewed the course and technology in a real-time interactive session using the video tool application, the white board tool, and the application sharing tool. The learners' presentation sessions were also held in real-time using the audio and application sharing features of Elluminate Live! This enabled learners to share and discuss their presentations with their peers. In the guest speaker discussion, students listened to a guest speaker's presentation and engaged in an interactive question and answer session using the audio and chat applications. The live sessions ranged from 30 to 90 minutes in length. These three assignments accounted for 25% of the course grade. At the end of the courses, the researcher obtained all final grades from the instructor's grade book and sent a letter to all learners via their university e-mail requesting that they complete a survey.

Differences in learners' learning between the two groups were measured. Learning was defined as both the overall course grade and perceived learning. Traditionally, in educational literature, grades have been most commonly used to measure leaning and educational success (Dumont, 1996); however, researchers have also purported that adult learners' perception of learning is also a valid measure of learning. In fact, some researchers have argued that learners' perceptions may be more valid than an assigned grade due to the fact that a grade can be influenced by the learners' life events (Carrallo, 1994). For example, a learner may turn in an assignment late because of caring for a sick child and receive a low grade for the late submission of the assignment.

In the present study, the students could earn up to 500 points for the courses. The grading scale used was 90-100% of points, A; 80-89% of points, B; 70-79% of points, C; 60-69% of points, D; and less than 60% of points, F. In the present study, the Perceived Learning

Instrument (Richmond et al., 1987) was used to measure perceived learning. One question of the perceived learning measure was posed: "On a scale of 0 to 9, how much did you learn in this course, with 0 meaning you learned nothing and 9 meaning you learned more than in any other course you've had?" The instrument has good test–retest reliability, .85 in a five-day study with 162 adult learners (McCroskey, Sallinen, Fayer, Richmond, & Barraclough, 1996).

Results

Descriptive statistics disaggregated by the Blackboard™ e-learning system only and combination of the Blackboard™ e-learning system and Elluminate Live! and academic level are shown in Table 1.

Table 1

Descriptive Statistics Disaggregated by Course Type and Level

	Graduate				Undergraduate			
Variable	Only (n = 7)		Combination (n = 8)		Only (n = 9)		Combination (n = 7)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Final Grade	. 64	. 27	. 82	. 16	. 86	. 11	. 82	. 24
Perceived Learning	5.00	2.00	6.75	.71	5.86	1.96	6.67	1.00

Since grades of graduate and undergraduates are not comparable, separate independent *t* tests for both the graduate students and undergraduate students were conducted to evaluate whether the group that only used the Blackboard™ e-learning system and the combination of the Blackboard™ e-learning system and Elluminate Live! differed in their final grades and perceived

Published by DigitalCommons@Liberty University, 2010

learning. The normality assumptions for the *t* tests were found to be tenable. Levene's test was used to evaluate the assumption of homogeneity of variance for each *t* test. The results of Levene's test for all *t* tests conducted indicated that the variances of the two populations could be assumed approximately equal. Thus, the standard *t* test results were used. The results of the *t* test final grades are listed in Table 3. The results of the independent *t* tests were not significant, suggesting no differences in the final course grades between groups. The results for the independent *t* test that compared the undergraduate learners' perceived learning were not significant, t (14) = -1.08, $p < .29$, partial $\eta^2 = .07$, Observed Power = .17. The results of the t test that compared the graduate learners' perceived learning between groups provided evidence to reject the null hypothesis. Results yielded those learners' who used the combination of the Blackboard™ e-learning system and Elluminate Live! in their online courses reported a significantly higher sense of learning than learners' who only used the Blackboard™ e-learning system, t (13) = -2.33, $p < .037$, partial $\eta^2 = .29$, Observed Power = .58.

Table 3

t- test Results

Variable	*t*	df	Sig.
Graduate Final Grade	1. 57	13	. 14
Undergraduate Final Grades	-. 52	14	. 61

Conclusion

In the New Testament, two Greek words are used to illustrate our English word stewardship, *epitropos* and *oikonomos*. Both words mean manager, procurator, steward, and administrator. The latter is sometimes translated as management, administration, plan, training,

or order. Thus, Biblical stewardship, in essence, is recognizing that our purpose on this earth is to manage or administer what we have been given wisely to build God's Kingdom (Matthew 28:19-20). Paul describes the biblical doctrine of steward ship as follows: "For we are God's fellow workers; you are God's field, God's building" (1 Corinthians 3:9). For Christian educators wise stewardship includes wisely implementing tools and resources to educate learners. This includes using technologies that most effectively support learners' learning. And, since the effectiveness of the online delivery system has been established and is not being readily used, it is vital for Christian educators to identify tools that most effectively support learning in the online environment.

Accordingly, the purpose of the present study was to add to the emerging body of online education literature and to determine if differences exist in learning (e.g. grades and the perceived learning) between university students who use two different types of technology applications in their online courses -- the combination of the Blackboard™ e-learning system and Elluminate Live! versus the Blackboard™ e-learning system. Previous research has demonstrated that using only a content management system and its integrated tools can support student learning (Mitchell, 2003); however, the addition of a synchronous technological application, such as instant messaging or e-conferencing, may serve to enhance the online educational delivery (Chapelle, 2005; Hrastinski, 2008). Conversely, research has also documented that the addition of synchronous technologies may also detract from the online learning experience (Jennings & Bronack, 2001). Present case study findings indicate that the addition of synchronous technologies does not detract from learners' learning. In fact, graduate learners indicated that the addition of synchronous technologies to their course enhances the learning experience. Findings of the present study provided evidence that online graduate

learners who used the combination of the Blackboard™ e-learning system and Elluminate Live! reported significantly higher perceptions of learning than learners who used only Blackboard™ e-learning system. There was no significant difference between the graduate learner groups in their course grades; no difference was found between the undergraduate groups in terms of final grades or perceived learning.

Although limitations exist (e.g. small sample size, self-report bias, and attrition) and further research on this topic is needed, results of this study still imply, especially for graduate students, that both synchronous and asynchronous "modes…warrant use within the online courses." (Davidson-Shivers, Muilenburg, & Tanner, 2001, p. 365). Therefore, Christian educators would be wise to consider adopting both a content management system as well as an e-conferencing system when teaching online learners.

Christian educators would also be wise to study the literature to gain further insight about guidelines to follow and issues to consider when adopting technological applications to support online learners and online learning activities. The online education literature provides several points to consider when adopting technology. In conclusion, three points are outlined here, as they specifically relate to the adoption of e-conferencing systems.

1) It is important that technology adoption takes into account learners' academic, social, spiritual, and emotional needs and preferences. While some learners take online courses to avoid interaction with others and for the sake of convenience, learners have the need to socially interact to maximize learning. E–conferencing has been shown to support learners' social learning needs (Rockinson-Szapkiw, Baker, Neukrug, & Hines, 2010). Balancing asynchronous and synchronous technology integration into online courses can serve learners' diverse needs.

2) It is important that technology adoption is varied and supports the completion of instructional activities to meet course objectives (Moore & Kearsley, 2005). Moore and Kearsley (2005) suggest that instructional tasks that involve interpersonal tasks or highly abstract tasks most likely require media that allow for synchronous interaction while a simple exchange of information may only require asynchronous interaction. Educators should avoid adopting technologies simply because they are "neat." University administrators should avoid focusing on the adoption of a specific technology for course development simply for the sake of convenience and standardization. Technology needs to be adopted based on instructional objectives.
3) It is important to consider the constraints of the learning environment; learners' software, hardware, knowledge; and time. For more complex technologies, it is important that sufficient time and technological support is given to students to learn the technology.

References

Alavi, M., & Leidner, D. E. (2001). Research commentary: Technology-mediated learning—A call for greater depth and breadth of research. *Information Systems Research, 12*, 1–10.

Carrallo, S. (1994). The progress of a study identifying the speaking and communication skills of graduate student. In S. Morreal & M. Brooks (Eds.), *1994 NCA summer conference proceedings and prepared remarks: Assessing college students competency in speech communication* (pp. 51-54). Annadale, VA: National Communication Association.

Chang, S. (2004). High tech vs. high touch in distance education. *International Journal of Distance Education Technologies, 2*(2), i-iii.

Chapelle, C. A. (2005). Hints about CALL use from research. *PacCALL Journal 1*(1), 1-8.

Davidson-Shivers, G. V., Muilenburg, L. Y., & Tanner, E. J. (2001). How do students participate in synchronous and asynchronous online discussions? *Journal of Educational Computing Research, 25*(4), 341-366.

Dumont, R. A. (1996). Teaching and learning in cyberspace. *IEEE Transactions on Professional Communication, 39*(4), 192–204.

Garrison, D. R., Cleveland-Innes, M., Koole, M., & Kappelman, J. (2006). Revisiting methodological issues in the analysis of transcripts: Negotiated coding and reliability. *Internet and Higher Education, 9*(1), 1-8.

Granello, D. H., & Wheaton, J. E. (2004). Online data collection: Strategies for research. *Journal of Counseling & Development, 82,* 387-393.

Hrastinski, S. (2008). The potential of synchronous communication to enhance participation in online discussions: A case study of two e-learning courses. *Information & Management, 45*, 499-506.

Jennings, M., & Bronack, S.C. (2001). The use of desktop video conferencing as a medium for collaboration between beginning instructional designers and intern teachers. *International Journal of Educational Telecommunications, 7*(2), 91-108.

McCroskey, J. C., Sallinen, A., Fayer, J. M., Richmond, V. P., & Barraclough, R. A. (1996). Nonverbal immediacy and cognitive learning: A cross-cultural investigation. *Communication Education, 45(3)*, 200-211.

Moore, M. G., & Kearsley, G. (2005). *Distance education: A systems view.* (2nd ed.). Belmont, CA: Wadsworth.

Nentwich, M. (2003). *Cyberscience – Research in the age of the Internet*. Vienna: Austrian Academy of Sciences Press.

Olubunmi, S., & McCracken, J. (2008). Detecting critical thinking in synchronous online discussions: The potential role for instant messaging in higher education. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2008* (pp. 3078-3086). Chesapeake, VA: AACE.

Park, Y. J., & Bonk, C. J. (2007). Is online life a Breeze? A case study for promoting synchronous learning in a blended graduate course. *Journal of Online Learning and Teaching, 3*(3), 307-323. Retrieved from http://jolt.merlot.org/vol3no3/park.htm

Richard, V. P., Gorham, J. S., & McCroskey, J. C. (1987). The relationship between selected immediacy behaviors and cognitive learning. In M. A. McLaughlin (Ed.), *Communication yearbook* (pp. 547-590). Newbury Park, CA: Sage.

Rockinson-Szapkiw, A. J., Baker, J.D., Neukrug, E., & Hanes, J. (2010). The efficacy of computer mediated communication technologies to augment and to support effective online counselor education. *Journal of Technology in Human Services 28*(3).

Rovai, A. P., & Jordan, H. M. (2004). Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *International Review of Research in Open and Distance Learning, 5*(2).

Russell, T. (2001). *The "No significant difference phenomenon."* Retrieved from http://teleeducation.nb.ca/nosignificantdifference/

Schullo, S., Venable, M., Barron, A. E., Kromrey, J. D., Hilbelink, A., & Hohlfeld, T. (2005). Enhancing online courses with synchronous software: An analysis of strategies and interactions. *Proceedings of the National Educational Computing Conference*, Philadelphia, Pennsylvania.

Thomas, M. J. W. (2002). Learning within incoherent structures: The space of online discussion forums. *Journal of Computer Assisted Learning, 18*(3), 351-366.

Wang, Y., & Chen, N.S. (2007) Online synchronous language learning: SLMS over the Internet. *Innovate, 3*(3). Retrieved from http://innovateonline.info/index.php?view=article&id=337