

Office of the Registrar
Reed College
ONLINE LEARNING LITERATURE REVIEW
September 2012 – Bao Quoc Phan
EFFECTIVENESS & OUTCOMES

In 2009, the US Department of Education¹ produced a report of a meta-analysis (of experimental results published between 1996 and 2008), conducted by SRI International² under contract, titled *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* (revised in 2010, referred to as the DOE/SRI Intl. report from this point). The authors concluded that online education is modestly superior to traditional education in terms of student outcomes; however, the improvements were mostly realized in study contexts that blended online instruction with in-person contact, with additional instructional elements that might have been responsible for the improvements, not the medium of instruction by itself (Means, Toyama, Murphy, Bakia, Jones, 2010, p. xviii (Executive Summary, Conclusions), & p. 51). Nonetheless, certain media outlets seized on this opportunity to praise the merits of web-based learning and advocated for the expansion of its implementation³. In response, three other research organizations—the National Bureau of Economic Research (June 2010, Cambridge, MA), the Community College Research Center at Teachers College–Columbia University (July 2010, New York, NY), and Ithaka S+R⁴ (May 18, 2012, New York, NY)—published a number of papers to critique the meta-analysis report, built upon the current experimental research body, complemented the report with further analysis of more recent studies, and gave recommendations for future research. Even though the authors disagreed about certain points, they have agreed on two main findings:

1) *That there is no concrete evidence to conclude that fully online instruction, in a standard full-term-length, for-credit college level course, is either superior to or inferior to in-person instruction* (Means et al., p. xviii & p. 51; Jaggars & Bailey, p. 1;

¹ Specifically the Policy and Program Studies Service, of the Office of Planning, Evaluation, and Policy Development.

² See discussion in comments on Means et al., pg. 4 of this report.

³ As cited in Jaggars & Bailey, 2010, p. 2: “... popular media discussions of the findings (e.g., Lohr, 2009; Lamb, 2009; Stern, 2009) focused on the report’s seemingly clear-cut generalization that ‘on average, students in online learning conditions performed better than those in face-to-face courses’ (U.S Department of Education, Office of Planning, Evaluation, and Policy Development, 2009, p. ix)”

⁴ See discussion in comments on Bowen & Lack, pg. 11.

Figlio, Rush, Yin, 2010, p. 21). The medium of instruction by itself appears to have very little impact on student outcomes. Positive effects observed in hybrid situations (one that blends online with face-to-face instruction) may have been attributed to other curricular features and pedagogical practices (Means et al., p. 37-49, 51-53)

2) *That the current status of research in online learning is very weak: the field has produced very few rigorously conducted experimental studies, while even fewer of them were both carefully designed and tested in relevant contexts.*⁵ This shows that institutional decisions to move classes online have been motivated mostly by economic concerns, and not based on evidence of improved student outcomes.⁶ More extensive and rigorous research is needed to conclusively prove that online instruction is superior, inferior, or similar to traditional instruction in teaching effectiveness, and to guide policy making at the postsecondary level.

Well-designed online courses can be effective. Ithaca S+R particularly advocate so-called Interactive Learning Online systems (examples of which include courses developed for use in Carnegie Mellon University's Open Learning Initiative), which can provide instant feedback and dynamically adapt the course to individual student's needs. A quote from the authors of the study, *Interactive Learning Online at Public Universities: Evidence from Randomized Trials* (Bowen, Chingos, Lack, Nygren, May 2012), explains this idea best: "By 'ILO' we refer to highly sophisticated, interactive online courses in which machine-guided instruction can substitute for some (though not usually all) traditional, face-to-face instruction. Course systems of this type take advantage of data collected from large numbers of students in order to offer each student customized instruction, as well as allow instructors to track students' progress in detail so that they can provide their students with more targeted and effective guidance." (pg. 9) As long as the courses are student-centered, professors still hold authority and are responsible for guiding and interacting with students, there are reasons to be cautiously optimistic about these learning systems, which can potentially demonstrate tangible improvement over large lecture-based introductory courses in learner-teacher and learner-learner interaction.

Most of these authors advocate for blended approaches to postsecondary education, a marriage of sort between online and face-to-face instruction (but both of which need to be well-thought-out and carefully designed), to *both* reduce cost and improve learning effectiveness and student experience. From a policy standpoint, it is an

⁵ See discussion in comments on Jaggars & Bailey (pg. 7), and Figlio et al (pg. 9 of this report). Jaggars & Bailey assert that only 7 studies were conducted in typical college course settings, while Figlio argues that none of those studies is rigorous enough.

⁶ Figlio et al., pg. 2. Jaggars & Bailey does assert that student access is one of the top reasons to consider increases in online course offerings (pg. 2); a quick look at Figlio et al., Bowen & Lack (pg. 11-12), and Bowen et al. (pg. 5-8, and Appendix B, pg. 37-42), however, reveal a considerable focus on the economic side.

intriguing proposition. From Reed's perspective, at the moment due diligence is still needed in evaluating credit transfer for online courses; nonetheless, at the very least there is no evidence to suggest that students are worse off by taking an online course in place of an on-campus course provided by the same college or university.

REFERENCES

- Means, B., Toyama, Y., Murphy, R., Marianne, B., Karla, J. (2009, rev. 2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. US Department of Education, Office of Planning, Evaluation, and Policy Development. Washington, DC. Retrieved from <http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>.
- Jaggars, S. S., & Bailey, T. (2010). Effectiveness of Fully Online Courses for College Students: Response to a Department of Education Meta-Analysis. Community College Research Center (CCRC), Teachers College, Columbia University. New York, NY. Retrieved from <http://ccrc.tc.columbia.edu/Publication.asp?UID=796>.
- Figlio, D. N., Rush, M., Yin, L. (2010). Is it Live or is it Internet? Experimental Estimates of the Effects of Online Instruction on Student Learning. Working Paper 16089. National Bureau of Economic Research (NBER). Cambridge, MA. Retrieved from <http://www.nber.org/papers/w16089.pdf>.
- Bowen, W. G., & Lack, K. A. (2012). Current Status of Research on Online Learning in Postsecondary Education. Ithaka S+R, ITHAKA. New York, NY. Retrieved from <http://www.sr.ithaka.org/sites/default/files/reports/ithaka-sr-online-learning-postsecondary-education-may2012.pdf>.
- Bowen, W. G., Chingos, M. M., Lack, K. A., Nygren, T. I. (2012). Interactive Learning Online at Public Universities: Evidence from Randomized Trials. Ithaka S+R, ITHAKA. New York, NY. Retrieved from <http://www.sr.ithaka.org/sites/default/files/reports/sr-ithaka-interactive-learning-online-at-public-universities.pdf>.

1) EVALUATION OF EVIDENCE-BASED PRACTICES IN ONLINE LEARNING

Barbara Means, Yukie Toyama, Robert Murphy, Marianne Bakia, and Karla Jones

US Department of Education & SRI International

Published June 2009

Revised September 2010

<http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>

ABSTRACT

A systematic search of the research literature from 1996 through July 2008 identified more than a thousand empirical studies of online learning. Analysts screened these studies to find those that:

- contrasted an online to a face-to-face condition,
- measured student learning outcomes,
- used a rigorous research design, and
- provided adequate information to calculate an effect size.

As a result of this screening, 50 independent effects (*Bao: from 45 studies*) were identified that could be subjected to meta-analysis. The meta-analysis found that, on average, students in online learning conditions performed modestly better than those receiving face-to-face instruction. The difference between student outcomes for online and face-to-face classes—measured as the difference between treatment and control means, divided by the pooled standard deviation—was larger in those studies contrasting conditions that blended elements of online and face-to-face instruction with conditions taught entirely face-to-face. Analysts noted that these blended conditions often included additional learning time and instructional elements not received by students in control conditions. This finding suggests that the positive effects associated with blended learning should not be attributed to the media, per se. An unexpected finding was the small number of rigorous published studies contrasting online and face-to-face learning conditions for K–12 students. In light of this small corpus, caution is required in generalizing to the K–12 population because the results are derived for the most part from studies in other settings (e.g., medical training, higher education).

COMMENT

The authors found 1,132 studies published between 1996 and 2008 that pertain to online learning (pg. 11). However, of these 1,132 empirical studies, only 176 were conducted using quasi-experimental (non-randomized, with or without statistical control) or randomized experimental design. Furthermore, only 99 out of 176

studies actually compare and contrast internet-based (either fully online or a combination of online and face-to-face instruction, referred to as a “hybrid” or “blended” approach) to in-person instruction, while a mere 45 of them contain sufficient data to extract for the meta-analysis (pg. 11–14).

For such a fast growing field as online education, the research body of its effectiveness is very thin and lacking in rigor. If we consider only studies conducted in full-term undergraduate or graduate credit-bearing course settings, the number of studies is reduced even further to 7 (Jaggars and Bailey, 2010, pg. 4). Ithaca S+R researchers exclaimed in their literature review, “Current Status of Research on Online Learning in Postsecondary Education (May 2012, pg.),” that “sadly, this rapidly growing field has been built largely on the proverbial ‘wing and a prayer.’”

Despite the weakness of the research corpus, we should not dismiss the findings of the DOE/SRI Intl. meta-analysis. A broad and thorough reading of the report (not just focused on the narrow generalization—that internet-based instruction is more effective than in-person instruction—since most of the studies are not representative of typical college courses) provides insights into good pedagogical practices that might account for improved student outcomes in either traditional or online learning. For example, students in blended learning environment (online instruction combined with some face-to-face interaction) often receive additional learning time and resources (pg. 29, 51), such as individualized course elements (pg. 44). Most effective among those course features is the “inclusion of mechanisms to prompt students to reflect on their level of understanding as they are learning online (pg. 44–45, 48),” which reinforces the notion that *critical and reflective learning is most effective*, even in an online environment.

What does this report imply for acceptance of online course credits at Reed? I do not believe there is a short and straight answer. What we can draw from it is that well-designed internet-based courses can be at least as effective as their in-person counterparts. And since not all online courses are well-designed, caution is still necessary in evaluating them on a case-by-case basis. At the minimum, there is no hard evidence to suggest that courses conducted entirely online are, by virtue of the medium, significantly superior or inferior to courses conducted on a college campus. Since we do thoughtfully evaluate courses from other accredited institutions for transfer credit, it is not out of the question that we apply a similar level of scrutiny to evaluating internet-based credit-bearing courses conducted by the same institutions.

SRI International is a contract research firm that focuses in areas of technology.⁷ We may assume that the company has interest in promoting the use of technology; however, the analysis appears to be balanced and not heavily biased, despite the misleading media coverage that ensued.

⁷ From Wikipedia (http://en.wikipedia.org/wiki/SRI_International):

SRI International (SRI), founded as Stanford Research Institute, is a nonprofit research institute headquartered (sic) in Menlo Park, California. The trustees of Stanford University established SRI in 1946 as a center of innovation to support economic development in the region. SRI is now one of the largest contract research institutes in the world.

[...]

SRI's focus areas include biomedical sciences, chemistry and materials, computing, Earth and space systems, economic development, education and learning, energy and environmental technology, security and national defense, as well as sensing and devices.

See more at <http://www.sri.com/about>

2) EFFECTIVENESS OF FULLY ONLINE COURSES FOR COLLEGE STUDENTS: RESPONSE TO A DEPARTMENT OF EDUCATION META-ANALYSIS

Shanna Smith Jaggars and Thomas Bailey

Community College Research Center, Teachers College, Columbia University

July 2010

<http://ccrc.tc.columbia.edu/Publication.asp?UID=796>

ABSTRACT

Proponents of postsecondary online education were recently buoyed by a meta-analysis sponsored by the U.S. Department of Education suggesting that, in many cases, student learning outcomes in online courses are superior to those in traditional face-to-face courses. This finding does not hold, however, for the studies included in the meta-analysis that pertain to fully online, semester-length college courses; among these studies, there is no trend in favor of the online course mode. What is more, these studies consider courses that were taken by relatively well-prepared university students, so their results may not generalize to traditionally underserved populations. Therefore, while advocates argue that online learning is a promising means to increase access to college and to improve student progression through higher education programs, the Department of Education report does not present evidence that fully online delivery produces superior learning outcomes for typical college courses, particularly among low-income and academically underprepared students. Indeed some evidence beyond the meta-analysis suggests that, without additional supports, online learning may even undercut progression among low-income and academically underprepared students.

COMMENT

The authors of this paper give balanced and thoughtful criticism about the DOE meta-analysis. Of the 45 studies cited in the DOE report, 28 studies compare fully online with in-person course sections, and only 7 of them were conducted with undergraduate or graduate students in term-length courses (pg. 4). That is a very small number of rigorous and relevant studies in a relatively large body of research, one that has produced mixed results regarding the efficacy of online learning.

The authors succinctly introduce some background information about research in online education. They assert that the body of research suggests that “students who complete online courses learn as much as those in face-to-face instruction, earn equivalent grades, and are equally satisfied (pg. 1),” while raising concerns about students who don’t complete their courses. As researchers on community

colleges, the authors focus on issues that significantly (and disproportionately) affect community college students, such as course access and retention. These issues are certainly of little relevance to our discussion; however, we should pay attention to the section that summarizes and compares the 7 studies that approximate typical college course settings (pg. 4-6). Some notable points are:

- All seven studies were conducted at relatively selective mid-sized or large universities, with relatively well-prepared students (pg. 8). If we assume that Reed students are at least as prepared and motivated as these students, we can predict that Reedies would achieve similar outcomes in similar settings. In other words, Reedies in general may be well-suited for online courses, in that they have a good chance of completing the course and achieve the learning goals.
- Access may be part of the reason Reed students would want to take an online course. If a Reed student would like to work in the summer and take college courses to complete a group requirement, it may be prohibitively expensive to take those courses on a college campus (taking into consideration the lost wages from having to work fewer hours; in addition, if the student is an international citizen or is working out-of-state, they have to pay the non-resident surcharge). However, if the student could take a course online, provided that they would achieve similar outcomes, they could shop around for courses that fit their budget (which may cost as little as \$157/credit hour, such as those provided by Brigham Young University—see <http://is.byu.edu/site/courses/tuition.cfm>), could have much more flexibility with their schedule, and would not have to cut as many hours off of their work shifts to fit in the chosen courses. Another scenario: an (international or domestic) student could work or volunteer in another country, while taking an online course provided by Oregon State or University of Massachusetts, if there is no alternative in that country.

Of course, the aforementioned scenarios are mere speculation. Nonetheless, banning all online courses from transferring (which is not our current practice) might affect certain students more than others, especially international students, non-traditional students, and students with high financial need.

3) IS IT LIVE OR IS IT INTERNET? EXPERIMENTAL ESTIMATES OF THE EFFECTS OF ONLINE INSTRUCTION ON STUDENT LEARNING

David N. Figlio, Mark Rush, and Lu Yin

NBER Working Paper No. 16089

National Bureau of Economic Research

June 2010

<http://www.nber.org/papers/w16089.pdf>

ABSTRACT

This paper presents the first experimental evidence on the effects of live versus internet media of instruction. Students in a large introductory microeconomics course at a major research university were randomly assigned to live lectures versus watching these same lectures in an internet setting, where all other factors (e.g., instruction, supplemental materials) were the same. Counter to the conclusions drawn by a recent U.S. Department of Education meta-analysis of non-experimental analyses of internet instruction in higher education, we find modest evidence that live-only instruction dominates internet instruction. These results are particularly strong for Hispanic students, male students, and lower-achieving students. We also provide suggestions for future experimentation in other settings.

COMMENT

In this working paper, the authors criticize the DOE report, mostly on the basis of the research that forms the foundation of the meta-analysis. They point out the lack of rigor in the design of the studies, the irrelevance of the study context, and lack of control for student characteristics:

In summary, none of the studies cited in the widely-publicized meta-analysis released by the U.S. Department of Education included randomly-assigned students taking a full-term course, with live versus online delivery mechanisms, in settings that could be directly compared (i.e., similar instructional materials delivered by the same instructor.) The evidence base on the relative benefits of live versus online education is therefore tenuous at best (pg. 4).

To demonstrate the kind of rigorous design that they propose, the author conducted an experiment in a Principles of Microeconomics class taught at a large research university, attempting to isolate the effect of the media (online vs. in-person) of delivery of course lectures. The experiment, however, could not escape the problems that plagued previous studies in sample size and confounding, which the authors attributed to the restrictions imposed by the university's Institutional

Review Board in recruiting participants (pg. 8–9), and the possibility of contamination (for example, students in the in-person section could borrow a friend’s account to get access to the online lectures, which are normally available to all students regardless of which section they registered for (pg. 14)). The particular comparison between in-person lectures with a particular mode of online video presentation also appears narrow and not applicable to large varieties of online courses currently available, which may include interactive and multimedia features, and provide for more interaction between students via online threaded discussions. In addition, the grading is based entirely on three exams, and there is no discussion sessions (pg. 7). All together, these characteristics make the course incomparable to many offerings elsewhere, leading to limited external validity.

In short, Figlio and his co-authors have provided accurate and useful criticisms of the DOE meta-analysis, called for more extensive research, and provided one of such attempts, albeit one that is flawed and not very relevant. In addition, we get a chance to learn about how a large public university conducts an introductory course (which in this case is an Introduction to Microeconomics course). Notable characteristics of the course are:

- That between 1600 and 2600 students register for the course each term (pg. 6). The course is offered in both online and lecture formats. All registered students in this course are allowed to access to the online video lectures, regardless of their sectional status (pg. 7).
- That the lecture section has 190 seats. Attendance is not enforced. A vast majority of students, even those who registered for the lecture section, ends up watching the lectures online (pg. 6–7).
- That grading is based entirely on three multiple-choice exams. There is neither any writing assignment nor in-class discussion (pg. 7).

4) CURRENT STATUS OF RESEARCH ON ONLINE LEARNING IN POSTSECONDARY EDUCATION

William G. Bowen and Kelly A. Lack

Ithaka S+R, ITHAKA⁸

May 2012

<http://www.sr.ithaka.org/sites/default/files/reports/ithaka-sr-online-learning-postsecondary-education-may2012.pdf>

ABSTRACT

As online courses continue to gain in popularity at colleges and universities throughout the country, knowledge about the effectiveness of this mode of instruction, relative to that of traditional, face-to-face courses, becomes increasingly important. A 2009 report by the U.S. Department of Education provided a meta-analysis of articles published up to 2008, examining the relative gains in learning outcomes from the different delivery formats. This Ithaka S+R literature review complements that effort, examining several studies that were not included in the DOE report, but focuses more specifically on the relative effectiveness of semester-length, undergraduate-level, credit-bearing online, and hybrid courses.

The review yields little evidence to support broad claims that online or hybrid learning is significantly more effective or significantly less effective than courses taught in a face-to-face format. At the same time, it highlights the need for further research on this topic, with particular attention paid to differences in outcomes among different student populations and different sets of institutional users. The importance of research of this kind will only grow as even more sophisticated, interactive online systems continue to be developed, and the current budgetary constraints and enrollment pressures on postsecondary institutions strengthen the case for improving productivity.

COMMENT

The literature review is thoroughly researched and well-written. It provides background information about the DOE meta-analysis and the papers published in response, comments on them (pg. 4-6), then moves on to discuss newer studies. A

⁸ From <http://www.sr.ithaka.org/people/about-us>:

Ithaka S+R is a research and consulting service that helps academic, cultural, and publishing communities in making the transition to the digital environment. We pursue projects in programmatic areas that are critical to the advancement of the academic community. Ithaka S+R is part of ITHAKA, a not-for-profit organization that also includes JSTOR and Portico.

highlight feature of the document is a table summarizing all the studies cited in a clear and concise format (pg. 14-15). Overall, it is a good supplement to the DOE report and worth reading if we are looking at the overall state of research in online education.

We should note that Ithaka S+R is a not-for-profit research organization that focuses in technology in education, and their mission statement (see footnote 5) suggests that they have a rather large stake in the advance of technology and web-based instruction in higher education. In addition, Henry S. Bienen, chairman of ITHAKA (the parent organization of Ithaka S+R) is both a President Emeritus of Northwestern University and vice chairman of the board of directors of Rasmussen College Inc., a for-profit postsecondary institution with a large catalog of online offerings. Ithaka S+R papers appear to be balanced and thoughtfully crafted; nonetheless, we should keep in mind that the organization may be advocating for online education, and should pay attention to potential bias.

5) INTERACTIVE LEARNING ONLINE AT PUBLIC UNIVERSITIES: EVIDENCE FROM RANDOMIZED TRIALS

William G. Bowen, Matthew M. Chingos, Kelly A. Lack, and Thomas I. Nygren

Ithaca S+R

May 2012

<http://www.sr.ithaca.org/sites/default/files/reports/sr-ithaca-interactive-learning-online-at-public-universities.pdf>

ABSTRACT

Online learning is quickly gaining in importance in U.S. higher education, but little rigorous evidence exists as to its effect on student learning outcomes. In "Interactive Learning Online at Public Universities: Evidence from Randomized Trials," we measure the effect on learning outcomes of a prototypical interactive learning online (ILO) statistics course by randomly assigning students on six public university campuses to take the course in a hybrid format (with machine-guided instruction accompanied by one hour of face-to-face instruction each week) or a traditional format (as it is usually offered by their campus, typically with 3–4 hours of face-to-face instruction each week).

We find that learning outcomes are essentially the same—that students in the hybrid format "pay no price" for this mode of instruction in terms of pass rates, final exam scores, and performance on a standardized assessment of statistical literacy. These zero-difference coefficients are precisely estimated. We also conduct speculative cost simulations and find that adopting hybrid models of instruction in large introductory courses have the potential to significantly reduce instructor compensation costs in the long run.

COMMENT

As stated, the authors conducted this experiment to compare two formats of a introductory statistics course: a hybrid format using a so-called Interactive Online Learning course (which was a prototype during the experimenting period, 2010–2012) with 1 hour of in-person contact each week, versus a traditional format (pg. 11–12). The authors explain the methodology in great detail.⁹ The experiment is rigorously designed and conducted, with characteristics such as:

⁹ The authors also discuss the process of conducting the experiment, and the lessons they learned from it, in Appendix C, page 43–52

- The inclusion of a “control” (students taking the normal course) and a “treatment” (students taking the redesigned, “hybrid” course) group (pg. 2);
- The large sample size (605 participants, out of a total of 3,046 course enrollees, spread over 6 public institutions (pg. 11));
- The typical term-length college-level course settings (which are, in this case, a statistics courses (pg. 9–10));
- The randomization of study participants (pg. 12).
- In addition to the experiment, the authors also conducted a cost analysis and included the results in the final report (Appendix B, pg. 37–42).

Overall, this is a well-designed study that demonstrates the kind of experiments needed in the field of online learning. The result is that the hybrid course design is as effective as the traditional course design, while potentially lowering cost. However, since the study compares a hybrid course design to a traditional course design, it does not support the current need for evidence about the efficacy of fully online instruction that is widely available across campuses; it is, instead, a kind of forward-looking experiment, to test a kind of course design (as stated, the course design was still in the prototypical phase at the time the experiment was conducted) that has the potential to become a standard in higher education. And as in previous research efforts, the authors add their own voices to calling for more rigorous testing of online learning systems, and emphasize the need to confront cost problems, one of whose solutions is the adoption of sophisticated (and rigorously tested) learning systems that can lower cost without sacrificing student outcomes (pg. 27–30).

ASSESSMENT

Assessment in online learning mostly follows the principles of assessment in on-campus courses. Since there is no face-to-face interaction between peers, and between students and instructors, online discussion forums play a key role in class participation (Vonderwell, Liang, & Alderman, 2007; Al-Shalchi, 2009). However, it appears class participation is not always part of students' grades, thus in many cases participation in online discussion remains voluntary (Liu, 2007; Kim, Smith, & Maeng, 2011). There are both advantages and drawbacks to online discussions comparing to in-class discussions: the spontaneity is erased, students are forced to be more deliberate when voicing their opinions, and in those sections that requires participation, everyone gets to speak; however, the quality of student participation remains a point of concern, particularly when students run out of ideas and start repeating their peers' thoughts, or when they choose not to participate at all (Liu, 2007; Al-Shalchi, 2009; these problems also apply to in-class discussion, however). A small but not insignificant body of research is dedicated to the conduction of online discussions and its effectiveness, although these studies also appear to suffer from lack of rigor (many are case studies, not experimental in design).

Critical thinking, a basic tenet of a Reed College education, also receives considerable attention in research. Although there are not many recent studies on this topic, the DOE meta-analysis already established, or rather reaffirmed, that pedagogical features that requires reflection on students' parts are most effective in stimulating learning. The discussion around this topic, therefore, is HOW to stimulate critical thinking in an online "classroom" (Bruning, 2005; Runyon & Holzen, 2003).

The bulk of discussion in this area is, however, not about how assessment is conducted in online courses. Instead, it is mainly about how assessment SHOULD be conducted in online courses. Therefore, the number of studies useful for our discussion is rather limited. Moreover, the use of different assessment strategies is at the discretion of the instructors, so it is hardly uniform (Liu, 2007; Kim et al., 2011).

REFERENCES

- Liu, S. (2007). Assessing Online Asynchronous Discussion in Online Courses: An Empirical Study. Proceeding from Technology, Colleges and Community (TCC) Worldwide Online Conference 2007.
<http://tcc.kcc.hawaii.edu/previous/TCC%202007/liu.pdf>
- Vonderwell, S., Liang, X., Alderman, K. (2007). Asynchronous Discussions and Assessment in Online Learning. *Journal of Research on Technology in Education* 39(3), 309-328. International Society for Technology in Education (ISTE). Eugene, OR.
<http://www.eric.ed.gov/PDFS/EJ768879.pdf>
- Al-Shalchi, O. N. (2009). The Effectiveness and Development of Online Discussions. *MERLOT Journal of Online Learning and Teaching* 5(1).
http://jolt.merlot.org/vol5no1/al-shalchi_0309.htm
- Kim, N., Smith, M. J., Maeng, K. (2011). Assessment in Online Distance Education: A Comparison of Three Online Programs at a University. *Online Journal of Distance Learning Administration (OJDLA)*.
<http://www.westga.edu/~distance/ojdl/spring11/kim11.html>
- Bruning, K. (2005). The Role of Critical Thinking in Online Learning Environment. *International Journal of Institutional Technology and Distance Learning*.
http://www.itdl.org/Journal/May_05/article03.htm
- Runyon, D., Holzen, R. V. (2003). Effective Assessment Techniques for Online Courses. EDUCAUSE. Presentation.
<http://www.educause.edu/ir/library/powerpoint/EDU03150.pps>

1) ASSESSING ONLINE ASYNCHRONOUS DISCUSSION IN ONLINE COURSES: AN EMPIRICAL STUDY

Shijuan Liu

Department of Instructional Systems Technology, Indiana University

2007

Refereed conference proceeding, The Teaching Colleges and Community Worldwide Online Conference (TCC)¹⁰

<http://tcc.kcc.hawaii.edu/previous/TCC%202007/liu.pdf>

ABSTRACT

Online asynchronous discussion is argued to have many benefits for student learning. However, whether student participation in the asynchronous discussion should be assessed is controversial. Furthermore, how to assess their participation has been a huge challenge faced by many online instructors. While there is a growing body of literature addressing these issues, there is still a lack of empirical studies in this regard. This paper reported the results of a recent empirical study conducted at a large, public, Midwestern university. Fifty online courses offered by five different Masters' programs were examined and twenty instructors were interviewed. Major research questions included: How was the online discussion organized in the courses examined? How did the instructors grade the discussion? Why did they make certain decisions on these issues, such as what their rationales, considerations, and concerns were?

¹⁰ From TCCHawaii.org/about

The Teaching Colleges and Community Worldwide Online Conference (TCC) is a virtual conference held annually online. This event is designed for faculty, staff and administrators in higher education worldwide to share their expertise and engage in productive forums about innovations and practices that accompany the use of technology in teaching and learning.

2) THE EFFECTIVENESS AND DEVELOPMENT OF ONLINE DISCUSSIONS

Olla Najah Al-Shalchi

Department of Modern Languages & Literatures

College of William & Mary

MERLOT Journal of Online Learning and Teaching

Vol. 5, No. 1, March 2009

http://jolt.merlot.org/vol5no1/al-shalchi_0309.htm

ABSTRACT

Both synchronous and asynchronous online discussions are an important component of effective distance education. They allow for the students to interact with each other without being in a classroom. In online discussion environments, students are able to build strong ties and relationships with each other. Online discussions can be presented in different ways and serve students for different purposes. In order for them to be effective, instructors must make their expectations clear, provide feedback, and lead the class down the correct path. This article deals with the importance of the effective design of online discussions and discusses ways that instructors can help students have effective discussions.

3) ASYNCHRONOUS DISCUSSIONS AND ASSESSMENT IN ONLINE LEARNING

Selma Vonderwell (Cleveland State University), Xin Liang and Kay Alderman (The University of Akron)

Spring 2007

Hosted on ERIC (Educational Resources Information Center)

<http://www.eric.ed.gov/PDFS/EJ768879.pdf>

ABSTRACT

This case study explored asynchronous online discussions, assessment processes, and the meaning students derived from their experiences in five online graduate courses at the Colleges of Education of two Midwestern higher education institutions. The findings suggest that asynchronous online discussions facilitate a multidimensional process of assessment demonstrated in the aspects of structure, self-regulatory activities, learner autonomy, learning community and student writing skills. The students valued the discussions as an essential component of their online learning. Further research is needed to understand the characteristics of online assessment, and what assessment strategies or criteria enhance assessment and learning. (Keywords: online learning, online assessment, asynchronous online discussion, learning community.)

4) ASSESSMENT IN ONLINE DISTANCE EDUCATION: A COMPARISON OF THREE ONLINE PROGRAMS AT A UNIVERSITY

Nari Kim (Doctoral Candidate, Instructional Systems Technology, Indiana University in Bloomington), Matthew J. Smith (US Coast Guard, USCGC Mobile Bay (WTGB 103)), Kyungeun Maeng (Korea Productivity Center)

Online Journal of Distance Learning Administration

Summer 2011

<http://www.westga.edu/~distance/ojdla/spring11/kim11.html>

Note: most relevant content is in page 8-16, especially page 12-13, where the authors break down assessment strategies used in each program and compare them.

ABSTRACT

The purpose of this study was to investigate whether or not the principles of assessment in online education are reflected in the assessment activities used by the developers and administrators of actual online distance courses. Three online distance education programs provided at a large mid-west university were analyzed; the School of Continuing Studies – undergraduate distance program, the School of Business – distance MBA program, and the School of Education – distance graduate program. The results of the study showed that the assessment activities of online distance courses do not strictly follow the principles suggested in the literature.

5) THE ROLE OF CRITICAL THINKING IN THE ONLINE LEARNING ENVIRONMENT

Kelly Bruning

International Journal of Institutional Technology and Distance Learning

May 2005

http://www.itdl.org/Journal/May_05/article03.htm

Note: The topic in this article is expanded in the following issue (June 2005) of this journal, included in the reading binder.

ABSTRACT

Research indicates that critically reflective learning provides students with an opportunity to evaluate concepts learned and apply them to their experiences, contemplating its affect on future learning. This process occurs in a learning community where student interaction and feedback fuels the learning process leading to a higher level of critical reflective thinking for the learner. The challenge for online instructors is how to incorporate critical thinking in the online environment in an effective manner. This paper addresses the issue of critical thinking and how it is applied in an actual online environment through an interactive exercise created by the instructor. The exercise not only fuels student learning but also creates a learning community in which students interact and share ideas. The BUS105 Create-A-Problem exercise described in this paper incorporates critical thinking in the online environment to meet the goals of developing reflective critical thinking in students and to nurture and online learning community that can be used as a model for other online instructors.

6) EFFECTIVE ASSESSMENT TECHNIQUES FOR ONLINE COURSES

Darla Runyon (Northwest Missouri State University), Roger Von Holzen (Northwest Missouri State University)

Presentation, Jan 2003

From EDUCAUSE

<http://www.educause.edu/ir/library/powerpoint/EDU03150.pps>

ABSTRACT

One question from faculty members teaching an online course for the first time is, "How do you do online exams?" This presentation will provide participants with a wide range of practical examples of effective assessment techniques that may be employed across a variety of online course subject areas.

