

STUDENT INTERACTION IN DISTANCE LEARNING PROGRAMS

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Many would believe that distance learning is a contradiction to the traditional West Point learning model. Do we not expect to confine cadets within the gray stone walls for four years like the leaders before them? Ten years ago, only the best cadets were given the opportunity to spend the fall semester away at a sister academy. Less than 1% of the cadets had the opportunity to learn overseas as exchange cadets limited to programs sponsored by Foreign Service academies. Today, cadets expect to participate in a semester abroad program or service academy exchange programs which West Point offers in both the fall and spring semesters to nearly a hundred and fifty cadets each year. Cadets are no longer limited to Foreign Service academies for their overseas experience; cadets now select foreign universities based on their language competency and university program of study. The most enticing aspect of the program is the focus on cultural immersion which provides the cadets with the opportunity to dress and act like their foreign student counterparts. What cadet would not want to participate in this type of program?

For the Department of Systems Engineering, there are many difficulties with matching a cadet with a service academy exchange program (SAEP) or semester abroad program (SAP). The constraint that is different for our cadets compared to civilian institution counterparts is the four year program of study. Undergraduates at civilian universities can select semester abroad programs without any consequence of graduating if their glide path varies off the traditional four year timeline. In fact, the civilian counterparts take an average 5.6 years¹ to complete a bachelor's degree. Likewise, many of the students that participate in the semester abroad program study liberal arts, business, and environmental studies verses engineering.² ABET accreditation for the course work is the most difficult limitation to finding a good fit for the cadet. Finding the appropriate courses offered that provide the minimum engineering design and engineering seminar discussion hours is troublesome. SAEP should be easier to find a good fit; however, the difficulty is matching a cadet's timeline to the exchange academy's course offerings. Additionally, the Naval Academy has adopted a naval concentric course of study in their topics which does not provide our cadets with the depth of engineering knowledge or design hours required to maintain ABET accreditation.

In order to provide Systems Engineering or Engineering Management majors the opportunity to study away from West Point for a semester, the Department of Systems Engineering has instituted a distance learning program. The Department of Systems Engineering decided to provide distance learning courses to satisfy ABET accreditation requirements without compromising the four year graduation constraint for engineering majors. The department's distance learning strategy focuses on providing quality education while providing the cadets flexibility in their schedules studying abroad. The challenge ahead is structuring each distance learning course to integrate the cadet into the classroom as much as possible. How do we

¹ U.S. Census Bureau, *Facts for Features*, <http://www.census.gov/press-release>, 2008.

² Result determined after observing international study programs available during fall 2010 and academic year 2010-2011 provided by CIEE. <http://www.ciee.org>.

integrate cadets with courses that use active learning styles to teach software? What are the best practices to integrate students? What technological infrastructure should we have to satisfy the integration?

I would like to begin by describing our current methods and procedures for conducting distance learning courses. Our department tapes each lesson lecture, provides copies of the board notes posted on an external website, and provides copies of classroom materials for each lesson on an externally hosted wiki website. Cadets away from West Point do not have access to the internal website because of firewall protection. The current protocol is for cadets to download and print the in-class exercise material along with the board notes to follow along as they watch the video. The cadets then complete the in-class exercise, scan, and email back to the instructor for feedback. The cadets also email the instructor questions concerning ungraded homework and in-class problems. The current external website has the capability to host live webinars using web cameras. However, the cadets involved in the distance learning program did not possess web cameras which limited the capability to have live classes or additional instruction.

Next I would like to describe the current trends under the current procedures that we would like to remedy. Cadets fail to submit the routine in-class assignments. It requires excessive contact by the instructor to receive assignments for feedback. Likewise, distance learning cadets routinely ask questions explicitly explained on the video or board notes. The instructor has received numerous emails requesting assistance with material that was explicitly covered in class captured by video and displayed on the chalk boards. These observations indicate that cadets rarely watch the web video. The instructor confirmed this observation by surveying the distance learning cadets and asking them specifically about how often they watch the videos. By lesson 10, the cadets watched about half of the lessons. By lesson 20, the cadets watched less than half of the videos. The cadets stated that the videos took about 10 minutes to download which deterred them from watching them all the time.

Distance learning is not a relatively new practice. Most authors on the subject date the first distance learning programs to the mid to late 1800s with the use of correspondence courses (Mehotra, 2001 & Johnson, 2003). Students enrolled in correspondence courses request materials and receive them in the mail. The student completed a graded assignment, mailed it to the instructor, the instructor graded it, and mailed the graded assignment back. This practice is still in use.

Another practical application of distance learning occurred in the 1930s. The invention of the radio allowed students to hear lectures for the first time outside of the classroom. Traditional instruction at the time was word of mouth. Educators provided lectures while students took notes. Therefore, transferring information over the radio was acceptable. As the invention of the television appeared in 1950, it provided a means for distance learning students to hear and see the instructor thus improving the student's visual stimuli. By 1980, video tapes were an economical option to deliver course material to students via distance learning. Videotaped

instruction provided specialized courses as opposed to the general courses provided on public television.

The most influential inventions that improved distance learning have been the personal computer and the internet. By the mid 1990s, most families had a computer and internet connection which made distance learning via the internet descriptive, responsive, and affordable. Instructors had different means to provide information with more clarity. The use of presentations, video assisted instruction, and color pictures enhanced the student's perception and comprehension of the material. The internet provides a means for the student to communicate at faster rates than mail correspondence and with more efficiency than telephone messages. The internet decreased the marginal cost of providing the distance learning. By 2000, more than 3 million people practiced some form of distance learning (Gubernick and Ebeling, 1997). Today, students have the ability to complete courses through computer based training, computer aided instruction, web-based training, teleconferencing, or video teleconferencing (Belanger & Jordan, 2000, Mehotra, Hollister, and McGahey, 2001).

There are many benefits to distance learning programs. Mehotra, Hollister, and McGahey (2001) discuss several of these benefits. The potential for advancement in the workplace requires a college education. Most employees must maintain their careers and support a family while completing a college degree or receive training. Saving time in a commute is another benefit of distance learning. People aspiring to lifelong learning can do so outside of the traditional classroom. Johnson (2003) notes that distance learning courses online have increased communication and interaction of students anywhere and everywhere. Technology has brought students together that otherwise would not have communicated.

Conflicting views about improving distance learning interaction

Early research regarding interaction in distance learning discovered several pitfalls which educators should consider when developing a new distance course. One problem is the implementation of technology and procedures used to communicate the course material should be as transparent as possible to all users. A study conducted by Patricia Comeaux determined that "the lack of spontaneity created by the audio protocol" significantly affected the interaction of the students (Comeaux). The students in the study felt inhibited by the use of cameras and television screens which displayed the classroom. Comeaux recommended redirecting the students' dismay for the cameras as a tool to communicate rather than the focus of the course. Likewise, her research recommended that educators confront the distance issue early by having all stakeholders introduce themselves at the beginning of the course to improve the interpersonal atmosphere in the classroom.

Another difficulty discovered by Comeaux was including the distance learning students in the classroom discussion. The distance learning students in her study "described the experience like 'watching TV.'" The students did not feel welcome into the discussion and did not like watching

something that was not very entertaining. To address this concern, Belanger and Jordan (2000) stress the importance of having feedback loops from the students to the instructor in order to evaluate student comprehension. Instructors should evaluate strategies to integrate the distance learner into discussions and have the technology to support it.

Distance learning provides opportunities to members of society with barriers to higher education. Single mothers, skilled laborers, the physically disabled, and geographically dislocated students have the ability to enroll and take courses on a flexible schedule. To provide this great service, instructors can easily transfer their normal routines in the traditional classroom to the distant learner, right? One conflicting view is teaching the course the same way on line as in the classroom as a major fallacy (Johnson, 2003). Distance learning requires a different pedagogy than the traditional classroom. Learning must become student centered versus teacher to student centered. The student loses interaction with the instructor and other students which changes the dynamic of student learning styles. Distance learning students must have more self discipline to complete the readings and to the assignments without the watchful care of the instructor. Therefore, the teacher must plan different activities for the traditional and distance learner.

Another conflicting view is that the best technology will result in higher interaction between student and instructor. Ehrmann (1995) addressed the fact that distance learning teachers must first develop strategies to teach the material and to accommodate different learning styles. Only after addressing the strategies to improve interaction can the instructor determine the functional requirements to develop strategies for use of technology.

Recommendations

Researchers have observed and chronicled the growth of distance learning over the past decade. The following are the best practices to improve interaction in undergraduate education as stated by Chickering and Gamson (1987).

- Establish early frequent student-faculty contact.
- Use collaborative teaching techniques and assignments.
- Teacher develops structured exercises, challenging discussions, team projects, and peer critiques in distance courses to promote active learning.
- Teacher provides prompt feedback on performance.
- Teachers mentoring students on time management in a distance learning course.
- Maintain high expectations of the distance learning students.
- Recognize and develop lesson plans for different student talents and learning styles.

As a best practice, Belanger and Jordan (2000) recommend evaluating the suitability of the course for distance learning. Belanger and Jordan developed a distance learning course screening form. The screening form asks teachers about the following requirements: hands on activities, specialized tools or equipment, group training, group problem solving, continuous feedback, instructor guided discussion, group discussions, and learner performance data required. Seven or more “no” responses to these questions results in a positive screening for suitability. As you can see, the authors place a great deal of weight on highly active learning requirements which would be difficult to replicate in a distance learning program.

Likewise, Belanger and Jordan (2000) have provided a useful assessment form to evaluate the type of technology required to successfully teach a variety of learning objective types. Having a thorough understanding of instructional activities, learning objective types, and how to assess the learning objectives, distance learning teachers can select the appropriate interactive technology media to use for the course. Belanger and Jordan have provided an excellent framework for ensuring a successful implementation of distance learning courses.

Understanding Chickering and Gamson’s *Seven Principles* and applying the assessment tools provided by Belanger and Jordan will assist teachers in designing distance learning courses that in theory improve interaction. Teachers should also have mechanisms to monitor and evaluate the distance learning course for interactive qualities. Roblyer and Ekhaml (2000) have provided a solid foundation for evaluating distance learning courses on the dimension of quality measured by the level of interaction. Roblyer and Ekhaml have provided a qualitative rubric to assess four elements of the distance learning course. The four qualitative elements include social rapport building activities created by the instructor, instructional designs for learning created by the instructor, levels of interactivity of technology resources, and impact of interactive qualities as reflected in learner response. Suggestions of high level interactive course qualities include the exchange of distance learner emails culminating with several in-class and out of class activities, collaboration of work among students, use of two-way visual exchange technologies, and over 75% voluntary exchange of communication from the students to the instructor and/or other students. Roblyer and Ekhaml have provided distance educators a valuable tool to evaluate the quality of their program.

All of the above mentioned authors have placed great emphasis on the use of technology to achieve interaction between the instructor to student, student to instructor, and student to student. Belanger and Jordan (2000) provided the framework to select appropriate technologies. Likewise, Ehrmann (1996) updated Chickering’s *Seven Principles* and provided examples of technology implementation to achieve the best practices in distance learning.

Conclusion

This literature review has discussed practical problems to improve student interaction when developing and implementing a distance learning course. The Department of Systems

Engineering example provided symptoms to problems related to new distance learning courses. I have discussed the significant contribution of the personal computer and internet to the growth of distance learning. The growth of distance learning is a result of many perceived benefits, most importantly to the student is flexibility to receive an education any place and any time. The most significant conflicting view to distance learning is the perspective of technology verses pedagogy. A major pitfall to distance learning is selecting technology before designing a learning model for the course material. Distance teachers must develop strategies for achieving course objectives before deciding on the technology to communicate the message. Lastly, I have provided a useful framework to reference the design of distance courses using proven principles and a method to evaluate distance learning performance. The tools provided in the recommendation will significantly improve the quality of a distance learning program.

Works Cited

Belanger, France and Diane H. Jordan. Evaluation and Implementation of Distance Learning: Technologies, Tools and Techniques. London: Idea Group Publishing, 2000.

Chickering, Arthur W. and Ehrmann, Stephen C. (1996) *Implementing the Seven Principles: Technology as Lever*. Washington, D.C.: American Association for Higher Education & Accreditation.

Chickering, Arthur W. and Gamson, Zelda F. (1987) *Seven Principles for Good Practice in Undergraduate Education*. Racine: The Wingspread Journal.

Comeaux, Patricia (1995) "The Impact of an Interactive Distance Learning Network On Classroom Communication." *Communication Education*.

Ehrman, Stephen C. (1995) *Asking the Right Questions: What Does Research Tell Us about Technology and Higher Learning?* Heldref Publications: Philadelphia. Pages 20-27.

Ekhaml, Leticia and M.D. Roblyer. "How Interactive are YOUR Distance Courses? A Rubric for Assessing Interaction in Distance Learning." DLA 2000 proceedings. Callaway: Journal of Distance Learning Administration, 2000.

Gubernick, L. & Ebeling, A. (1997). I Got My Degree Through E-mail. *Forbes*, 159(12), 84-92.

Johnson, Judith L. (2003) *Distance Education: The Complete Guide to Design, Delivery, and Improvement*. New York: Teachers College Press.

Mehotra, Chandra, Hollister, David C., and McGahey, Lawrence (2001) *Distance Learning: Principles for Effective Design, Deliver, and Evaluation*. Thousand Oaks: Sage Publications Inc.

Annotated readings:

Anderson, Terry (2003) *Modes of Interaction in Distance Education: Recent Developments and Research Questions*.

Anderson defines interaction in distance education and discusses six types of interaction. The forms of interaction discussed are teacher to teacher, teacher to content, content to content, student to student, student to content, and student to teacher. Anderson discusses how interaction satisfies Hannifin's functions of interactions. The functions of interaction include pacing of the experience, elaboration of content, confirmation of student success, navigation of the course material, and response to student inquiry.

Cohen, Vicki L. (2002) *A Model for Assessing Distance Learning Instruction*. *Journal of Computing in Higher Education*, Spring 2003 Vol. 14, No2, 98-120.

Vicki Cohen proposes a model for evaluating distance learning courses by evaluating six constructs. The six constructs include the teaching and learning process, community of learners, the instructor, the student, implementation of the course, and use of technology. For learning process, Cohen recommends the use of the seven principles of distance learning developed by Graham, Cagiltay, Lim, Craner, and Duffy (2001). Teachers can assess the community of learners by evaluating collaboration of work. Cohen recommends that distance education teachers receive training on pedagogical, social, managerial, and technical skills prior to teaching the course. As for the student, the teacher should evaluate each distance learner to determine success in the course.

Ehrman, Stephen C. (1995) *Asking the Right Questions: What Does Research Tell Us about Technology and Higher Learning?* Heldref Publications: Philadelphia. Pages 20-27.

Stephen Ehrman discusses the types of questions that researchers should pursue for problem statements concerning technology and education. He discusses how technology provides the means to change curriculum rather than be the cause of a curriculum change. Teachers can use "worldware" to promote active learning. As far as technology, teachers should focus on teaching strategies then find an appropriate technology to communicate the strategy. Ehrman argues that many teachers try to accomplish the opposite. Ehrman also provides a discussion on how education directors assume that teachers will change their teaching tactics and course material to adhere to the technology provided. The author then re-emphasizes the important to develop teaching strategies first and then find the technology to best support those strategies.

Graham, Charles, Cagiltay, Kursat, Lim, Byung-Ro, Craner, Joni, and Duffy, Thomas M. (2001) *Seven Principles of Effective Teaching: A Practical Lens for Evaluating Online Courses*. The Technology Source: Chapel Hill.

The authors evaluated a large university in the Midwest by compiling lessons learned for each of Chickering and Gamson's seven principles. The authors recommend to provide a policy on the types of communication to use and rules of engagement on timeliness of responses for all state holders. Require all learners to participate in discussion assignments for grades. For discussions, the instructor should make small groups with a focused task that results in a product.

Likewise, the instructor should provide feedback on the discussion. Instructors should design collaborate websites for students to post projects. Use the website as an opportunity to peer grade assignments with in-class students. Provide timely information feedback and acknowledgement feedback. Use acknowledgement feedback immediately and follow up with information feedback so that the distance learner knows the teacher will answer the question. Always provide deadlines even though teachers want to allow flexibility in schedules for distance learners.

Holmberg, Börje (1989) *Theory and Practice of Distance Education*. Rutledge: New York.

Börje Holmberg provides a useful text on the fundamentals of distance education. Most valuable to the text is the discussion on planning distance education. Holmberg uses a systems approach to assess the holistic view of developing processes for the distance learning course. The author provides strategies on course planning. Another important chapter discusses distance learning course development focused.

Keegan, Desmond (2003) *Foundations of Distance Learning*. London: Rutledge Falmer.

Keegan provides the ground breaking research in distance learning which all authors cite in their work. Keegan provides three theories for the manifestation of distance learning which include independence and autonomy, industrialization of teaching, and interaction/communication. Keegan explains the explosive growth of distance learning through these theories. Keegan also provides a chapter on distance learning planning considerations. His planning considerations span five different models to use for distance learning. Chapter 11 provides distance learning planners with metrics to appraise selected distance learning systems. The appraisal covers the quantity of the learning achieved, the quality of the learning achieved, the status of the learning achieved, and the relative cost of the learning achieved.

Moore, M. G. (1987) *University Distance Education of Adults*. Tech Trends 32, 4: 13-18.

Michael Moore provides distinction on the term interaction related to distance learning. He defines interaction in three different modes. The first mode discussed was interaction between the learner and the content. In order for this to occur, the learner must take the responsibility to learn the material on their own. The second mode is the interaction between the learner and the instructor. The instructor provides presentation of material, the student completes application of the material, the instructor evaluates the student's application, and then the instructor provides feedback. The third mode discussed is learner to learner. At the time of the chapter, technology had not transformed enough to allow the wide use of video conferencing that exists today. The author however did address the need for interaction in groups.

Race, Phil and Brown, Sally (1995) *Assess Your Own Teaching Quality*. London: Rutledge Falmer.

Race and Brown discuss four key strategies to improve learner interaction. The first strategy is to encourage the learners to want to learn. The second strategy is to promote learning by doing. The authors advocate a hands on approach to learning and using practical examples for work.

The third strategy is to provide mechanisms to receive feedback. Lastly, allow learners to digest material.

Smith, Patricia L. and Dillon, Connie L. (1999) *Lead Article: Comparing Distance Learning and Classroom Learning: Conceptual Considerations*. American Journal of Distance Education, 13: 2, 6-23.

Smith and Dillon discuss the use of comparative analysis for evaluation of distance learning technology to “maximize learning benefit.” The authors discuss the fallacy of using a pure cost benefit analysis in determining the type of technology to employ in distance learning. The authors advocated assessment of the “potential impact” of competing technologies to improve learner stimulation.

Wagner, Ellen D. (1997) *Interactivity: From Agents to Outcomes*. Jossey-Bass Publishers.

Wagner discusses provides a discussion on interaction. She differentiates between interaction and interactivity. The author also discusses interaction agents which she defines as learner to instructor, among other learners, and learners to content. The author argues that educators should switch from focusing on the agents to the outcomes of interaction. Therefore, educators must assess student interaction. Apart from the agents of interaction, Wagner provides a detailed discussion on the types of interaction. Lastly, the author leaves the reader with a method to applying interaction in practice.

Additional Resources

Bullen, Mark. "What's the Difference: A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education by Ronald Phipps and Jamie Merisotis" *The Journal of Distance Education / Revue de l'Éducation à Distance* [Online], 14 3 Sep 2007.

www.sagepub.com/mehortra

U.S. Census Bureau, *Facts for Features*, <http://www.census.gov/press-release>, 2008.
CIEE. <http://www.ciee.org>.