

A COMPARISON OF FEMALE AND MALE STUDENTS AS THEY PROGRESSED THROUGH AN ASYNCHRONOUSLY DELIVERED WEB-BASED COURSE

James W. Hynes, Texas A&M University
Jackie E. Price, Texas A&M University
James R. Lindner, Texas A&M University
Kim E. Dooley, Texas A&M University

Abstract

The purpose of this study was to compare female and male students as they progressed through an asynchronously delivered Web-based course. Content analysis techniques were used to describe student behavior in a graduate course delivered asynchronously. Students had 114 days to complete and submit all materials. No time constraints were placed on students as to when assignments should be submitted. Findings showed that female students engaged earlier, male students remained engaged longer, and female students completed the course sooner than male students. Male and female students' overall performance in the course as measured by accumulation of points on assignments was similar. Major recommendations include: (1) establishing early engagement activities for both females and males; (2) establishing time-goals and minimal engagement times for all students; and (3) evaluating the appropriateness and effectiveness of feedback provided by faculty on assignments.

Introduction/Theoretical Framework

Distance education offers many benefits for students and faculty. One of the touted benefits for faculty is the opportunity to develop individualized instructional sequences for students based on students' unique competencies (Dooley & Lindner, 2002). Another benefit for students is a greater opportunity to draw upon a variety of academic fields and knowledge bases to achieve personal and professional goals (Lindner & Dooley, 2002). Some literature indicates that distance education offers even more important opportunities for female students. For example, May (1994) found that women viewed distance education as a means to remove impediments to their education. She also noted that for women, access to education was more important to them than was the format of the educational opportunities.

The literature has thus far failed to identify significant differences in the nature or personality of distance learners and learners in a traditional setting. For example, in a comparison of Web-based and traditional classroom courses student temperament, or how students react to the use of a computer as a substitute for the classroom, was not shown to affect the outcome of learning or satisfaction with the course (Stokes, 2001). Human temperament theory has been recognized as a subject for study since the time of Plato (Stokes, 2001). On the other hand, the literature is unclear about the role that gender may play in distance learners' performance. Spronk (1990) proposed that distance learning might be a gendered activity. Instead of concern with programs for learners, she suggested that we examine how programs address the different life experiences of men and women. She speculated that the technologies of instruction might not be equally accessible to both groups. She also asked whether men and women require different levels of support while undertaking distance education courses.

Distance learners struggle with a unique set of challenges that often lead to non-completion of courses. High attrition rates of students enrolled in distance education courses are a concern of distance educators (Wickersham & Dooley, 2001). The literature identifies more steps that instructors can take to lower attrition in distance education courses. Instructors in Web-based courses should have a methodology to determine the level of involvement of students in the learning process (Pappas, Lederman, & Broadbent, 2001). The facilitator should look toward the initial engagement, continuous engagement, the completion of the course and the students' performance in the course as indicators of satisfaction with the method of instruction, whether the course is offered in a traditional classroom or Web-based setting. But in order to improve the completion rate, we must first understand the challenges that distance learners face and the coping behaviors that they adopt. Online learning provides the responsible learner with both the tools and the environment for a quality learning experience (Weinstein, 2002). If students are not willing to make the commitment of managing their time and motivation, online learning will present them with additional problems to the ones they already have (Weinstein, 2002). Closer looks at student behaviors in distance education have shown, for instance, that distance students are less likely to constructively communicate with other students and teachers (Lindner & Murphy, 2001; Miller & Pilcher, 2000a). Further, distance students have varying levels of motivation, different life experiences, and require different levels of direction from instructors (Merriam, 2001).

Additional literature indicates that gender may also be a factor in these various expectations among distance learners. Burge and Lenksyj (1990) noted that women participating in distant learning experiences required content that validated the events and happenings of their lives infused into the instructional and learning process. They noted that women living in small towns and rural environments (where distance education opportunities may be particularly important) have diverse life experiences that should be taken into consideration in distance education environments. They suggested that women are best served when the educational approach is both woman- and learner-centered.

Educators have tried a variety of strategies in an attempt to help distance learners overcome their unique challenges successfully. Indeed, Cookson (1989) asserted that it is the responsibility of all educational institutions to provide a range of tools and experiences in order to maximize the learning of diverse student populations. While the academic rigor of courses delivered at a distance must remain similar to those offered on campus, instructional direction requirements can and should range from continuous input from instructors to self-directed learning by the students.

According to Kirkup and von Prummer (1990) men and women require different levels of interaction and support during distance education classes. Women need to interact more with the instructor and other students. The authors attributed this need to differences in intellectual development between women and men. They recommend that this difference between the genders be accounted for in distance education courses.

Distance education students requiring help may receive it in a different format than students in classroom settings (Taplin, Yum, Jegede, Fan, & Chan, 2001). It is necessary for the instructor to maintain a sense of community regardless of where the learning takes place. While this is readily accomplished in a classroom setting, it requires a little more planning and effort for Web-based courses (Brown, 2001). In short, effective learning seems to require student engagement (Kearsley & Shneiderman, 1999). Instructor behaviors alone cannot determine student success rate, however.

Another important factor to study in distance education is course design. In particular, the unique challenges faced by distance learners may be exacerbated when the course is offered asynchronously. This method of instruction and education is the result of an attempt to provide flexibility for work time and place. It usually involves the use of learning materials, discussions, written assignments, and grading results at a distance and over the Internet. For asynchronous courses, there may be definite start and completion dates or there may be a flexible beginning and end. While asynchronous courses may seem to conform to the principles of andragogy and thus have wide appeal for adult learners, the literature has not yet shown that distance learners are more successful in any particular format.

Purpose

The purpose of this study was to compare female and male students' progress through an asynchronously delivered Web-based course.

Several key questions guided the analysis of each student's progress and performance in the course:

1. When will males and females begin and end engagement in the course?
2. How long will males and females remain engaged in the course?
3. How will the males and females perform in an entirely asynchronously delivered course?

Methods

For this descriptive and historical research, content analysis techniques were used by the researchers to analyze students' engagement and achievement in a graduate course delivered asynchronously to both female and male students. "Content analysis is a technique that enables researchers to study human behavior in an indirect way, through an analysis of their communications" (Fraenkel & Wallen, 1999, p. 405). The content analysis for this study consisted of both qualitative and descriptive techniques as described by Fraenkel and Wallen.

As with any study, it is important for the researcher to establish internal validity, external validity, reliability, and objectivity. However, in the qualitative paradigm these terms are referred to as credibility, transferability, dependability, and confirmability. Credibility and dependability were established by using the technique of triangulation. The description of the data provides sufficient detail and/or richness so that the reader can interpret and make meaning of the data (thick description), thus establishing transferability. And finally, confirmability was established by conducting an audit trail. The researchers used a variety of qualitative methods to ensure truth-value, applicability, consistency, and neutrality as described below (Erlandson, Harris, Skipper & Allen, 1993).

The naturalistic setting for this study was students enrolled in a graduate course entitled *Principles of Adult Education* during the Spring 2002 semester. This course was a departure from our usual design for graduate-level distance education courses. Unlike our other distance-delivered graduate course offerings that have included and even emphasized the use of synchronous delivery strategies (face to face meetings, audio and videoconferencing), this course employed only the asynchronous technologies and delivery strategies available through WebCT. WebCT is a commercial software set of Web course-development tools for creating instructional environments at a distance (WebCT, 2001). No synchronous interaction was planned or conducted.

There were 24 students enrolled in the course (16 male students and 8 female students). Students had 114 days to complete and submit all materials. January 14, 2002, was the first day students could submit assignments and May 7, 2002, was the last day. No time constraints were placed on students as to when assignments should be submitted during this time frame. Students were provided the following written instructions:

Welcome to Agricultural Education 610 “Principles of Adult Education”. This course is designed to be asynchronously delivered...meaning you can work on meeting the course objectives at any time or location. You can also work on most assignments out of sequence. For example, you may wish to work on Module 1 and 4 before working on Module 2 and 3.

There are 14 course modules that you will work through over the semester. You will complete 12 assignments along the way (ALL ASSIGNMENTS MUST BE SUBMITTED THROUGH WEBCT'S ASSIGNMENT FEATURE): Four reaction papers; four argument papers; twenty online discussion postings; one student lead instruction; one learning contract; and one application project.

ALL ASSIGNMENTS ARE DUE MAY 7, 2002.

The data collection instrument was based on the research questions. Four categories were used to classify the data: initial engagement, continuous engagement, completion of course and performance in course. Initial engagement was defined operationally as the first day students submitted an assignment. Continuous engagement was defined operationally as the number of days between the submission of the first and last assignment. Completion of course was defined operationally as the last day students submitted an assignment. Performance in course was defined operationally as the percentage of points earned on each assignment and overall.

Additionally, nine students were interviewed by telephone or face-to-face to help the researchers gain a more thorough description of why the students engaged and performed as they did. Interviewees were selected to include at least one of each gender for each category as defined above (purposive sampling). Students were coded by gender (Male or Female), location (Distance or Campus), and a number based upon when they were interviewed (1 through 9) to ensure confidentiality. These students were divided into three categories based on when and how long each engaged: starts early and finishes early; starts early and finishes late; starts late and finishes late.

The researchers recognize the design limitations of using intact classes. Caution is warranted against transferring these findings beyond this class. Additional research is needed to support and prove the transferability of findings and recommendations to other naturalistic settings. This study is a part of a larger study examining how students engage and perform in asynchronously delivered courses.

Findings

The findings of this study were reported in four areas: initial engagement, continuous engagement, completion of course, and performance in course.

Initial Engagement

Overall students' initial engagement in the course varied widely (Min=4 days to engage; Max=113 days to engage). Students, on average, initially engaged in the course approximately 43 days (SD=39.5) after the beginning of the course. The first quartile of the students began submitting materials online within 8 days of the start of the course. The second quartile of students began submitting materials online between 12 and 21 days from the start of the course. The third quartile of students began submitting materials online between 25 and 83 days from the start of the course. The fourth quartile of students began submitting materials online between 83 and 113 days from the start of the course.

On average, female students (M=39 days to engage) tended to engage in the asynchronously delivered course more than six days sooner than male students (M=45 days to engage).

Continuous Engagement

Overall students' continuous engagement in the course varied widely (Min=1 day engaged; Max=110 days engaged). Students, on average, engaged in the course approximately 58 days (SD=32.2) after initial engagement. The first quartile of the students engaged in the course for 79 to 110 days. The second quartile of students engaged in the course for 69 and 77 days. The third quartile engaged in the course between 30 and 67 days. The fourth quartile engaged in the course between 1 and 27 days. On average, female students (M=55 days engaged) tended to engage in the asynchronously delivered course over 5 days less than male students (M=60 days engaged).

Based upon the qualitative findings, three patterns emerged in terms of continuous engagement: (1) start early and finish early; (2) start early and finish late; and (3) start late and finish late. Starting early is defined as submitting the first assignment within the first month of the course. Starting late is defined as submitting the first assignment in April of the spring semester. Finishing early is defined as submitting the last assignment by the first week in April. Finishing late is defined as submitting the last assignment by the last class day, which was May 7, 2002.

The researchers were interested in looking at gender and location in terms of engagement in an asynchronous course. Of the total students enrolled in the course, there were 11 males at a distance, 5 males on campus, 6 females at a distance, and 2 females on campus. Percentages were calculated based upon the number in each category divided by the total number of students who fit into that category (Table 1). The percentages are provided as a snapshot of the patterns of engagement. Although the number of respondents is small, in the qualitative paradigm the researchers seek a deeper understanding of phenomena in lieu of an attempt at generalization. These patterns of engagement pose interesting findings in need of further investigation.

Table 1

Patterns of Continuous Engagement (N = 24)

Students	#/Total	Percentage
Start Early, Finish Early		
Males		
Distance	1/11	9.09%
Campus	2/5	40.00%
Total	3/16	18.75%
Females		
Distance	3/6	50.00%
Campus	2/2	100.00%
Total	5/8	62.50%
Start Early, Finish Late		
Males		
Distance	4/11	36.36%
Campus	3/5	60.00%
Total	7/16	43.75%
Females		
Distance	0/6	0.00%
Campus	0/2	0.00%
Total	0/8	0.00%
Start Late, Finish Late		
Males		
Distance	6/11	54.54%
Campus	0/5	0.00%
Total	6/16	37.50%
Females		
Distance	3/6	50.00%
Campus	0/2	0.00%
Total	3/8	37.50%

More females started early and finished early (63% compared with 19%). All of the females on campus started early and finished early. In the category of starting early and finishing late, it is interesting that there were no females. In terms of percentages, there were more males on campus in this category than at a distance. None of the on campus students (male or female) fell into the category of starting late and finishing late. The percentage of students falling in this category was essentially the same regardless of gender.

After establishing these three categories of continuous engagement, students were chosen by purposive sampling and interviewed to help the researchers understand more thoroughly why these students engaged as they did. Based upon these student interviews, five themes emerged: content relevancy, interaction/feedback, initial engagement, continuous engagement, and course completion (Table 2).

Table 2

Audit Trail of Themes of Engagement

Theme	Category		
	Start Early, Finish Early	Start Early, Finish Late	Start Late, Finish Late
Content Relevancy			
Usefulness & Applicability	FC5, FD6, MD8	MD1, MC2, MC3	FD4, FD7, MD9
Enhanced Self-Directedness	FC5, MD8	MD1, MC2, MC3	none
Peaked Interest in Subject	none	MC2, MC3	none
Interaction/Feedback			
Not Necessary	none	MD1	none
With Instructor	FC5, FD6, MD8	MC2, MC3	FD7
With Other Students	FC5, FD6, MD8	MC2, MC3	FD4, FD7
Initial Engagement			
Effect of Deadlines	none	MD1, MC2, MC3	FD4
Planning	FC5, FD6, MD8	MD1, MC2	FD7, MD9
Technology Challenges	FC5	MC3	none
Continuous Engagement			
Need to Finish/Goal-Oriented	MD8	MD1	MD9
Plan Time for Class	FD6, MD8	MD1	FD4
Catch Time for Class (Sporadic)	FC5	MC2, MC3	FD7
Course Completion			
Other Classes/Factors	FC5, MD8	MD1, MC2	FD4, FD7, MD9
Interaction With Other Students	FD6, MD8	MC2	none
Usefulness/Applicability	FC5	MC2	none
Deadlines	MD8	MC3	FD4, MD9

According to Burge and Lenksyj (1990), women need course content to be relevant to events and happenings in their lives. Therefore, the first theme explored was content relevancy. Both males and females found the course content to be relevant. They specifically addressed its usefulness, applicability, enhancement of self-directedness, and ability to pique their interest in the subject matter. None of the late starters mentioned an increase in their self-directedness. Perhaps their lack of self-directedness led to their procrastination in engaging in the course. Kirkup and von Prummer (1990) contend that women tend to need to interact more with the instructor and other students. All students in our sample, except one male (MD1), found interaction with other students and interaction with the instructor to be a critical component of course engagement. In particular, student responses noted that peer accountability helped them to complete assignments and to continue to engage in the course.

Kearsley and Shneiderman (1999) indicate that effective learning requires student engagement, i.e. initial engagement, continuous engagement, and course completion. Our findings support this notion but provide interesting patterns based upon gender and location. Some mention of unfamiliarity with the technology features of this course surfaced, but this unfamiliarity did not seem to have an effect on the initial engagement of the student. A substantial finding within the theme of initial engagement is the student's perception of deadlines. None of the students who started and finished early found the deadlines to have an impact on their initial engagement. An intrinsic self-motivation, rather than an imposed external deadline, might have compelled these students to engage early. When planning time for working on course assignments, competing courses with multiple deadlines tended to have precedence, thus affecting some student's initial and continuous engagement in the course. In terms of completing the course, respondents brought up several previously mentioned themes that had an impact on their completion of the final assignment: other classes competing for time, interaction with other students, and the usefulness and applicability of the material. Although the students who started and finished late pointed out that student interaction and course usefulness/applicability were important factors in their course satisfaction, they did not state this as a motivator for course completion.

Completion of Course

Overall students' completion date in the course varied (Min= day 61; Max=day 114). Students, on average, completed the course on approximately the 101st day (SD=17.7) of the course. The first quartile of the students completed the course by the 80th day. The second quartile completed the course between the 85th and 105th day. The third quartile completed the course between the 111th and 112th day. The fourth quartile was completed on the last day (114th day). On average, female students (M=93 end date) tended to complete the asynchronously delivered course almost 12 days sooner than male students (M=105 end date).

Performance in Course

Overall student achievement for female and male students was similar. The average overall score for all students was 92.8%. Female students averaged 93.3% and male students averaged 92.6% overall in the course.

Discussion, Conclusions, and Implications

As methods of delivering courses using asynchronous delivery strategies are implemented and tested, the findings from this study may provide useful information to those teachers delivering such courses. For example, we found several differences between how females and males engaged in the course. On average, females tended to engage 6 days sooner in the course than males. Females also tended to complete the course 12 days sooner than males. An implication exists that by not structuring early engagement activities for females and males, differences between these groups will be magnified. It is recommended that early engagement activities for both females and males be established.

Students' continuous engagement in the course varied. Female students tended to engage in the course for five fewer days than males. Previous research has shown that length of engagement in an asynchronously delivered course was positively related to a student's perception of learning (Lindner, Hynes, Murphy, Dooley, & Buford, 2002). An implication exists that female students will "learn" less in an asynchronously delivered course than male students. That is, if we accurately measure learning. The qualitative research presented here reveals that while the students engaged differently in terms of length of engagement, all of the students (both male and female) mentioned the usefulness and applicability of the concepts they learned in the course.

Male students were more likely than female students to wait until near the 114th day to complete their engagement in the course. While all the students were able to complete the course in 114 days, male students tended to "back-load" submission of assignments. This resulted in male students receiving less feedback than female students. An implication exists that in asynchronously delivered courses, an instructor's traditional role of providing feedback is less important than other roles such as motivator, coach, or delegator (Grow, 1991). The qualitative research presented here refutes Grow's idea (1991). The interviewed students noted the importance of the feedback from not only the instructor but also from their peers. It is recommended that methods for instructor feedback and student interaction be provided in an asynchronously delivered course.

Male and female students performed equally well on assignments. This finding is consistent with the literature on gender as a factor in learning in traditional settings. In a traditional classroom setting, Justice and Dornan (2001), found achievement to be the same for males and females.

The authors recognize the limitations of the study and realize the results cannot be generalized. It is recommended that we continue to study the factors affecting success in distance education. Our study clearly shows that male and female students approach and engage in distance education differently. Nevertheless, their performance does not appear to be affected by these differences in behavior. The reasons for gender's lack of impact on performance have not been determined. One may speculate, as did Carr, Fullerton, Severino, and McHugh (1996), that women who successfully completed distance education courses develop resilience in the face of adversity. On the other hand, women's strategies for learning in distance education courses may be more appropriate than men's, and thus, female students have an advantage over their male

counterparts in such nontraditional environments. These are questions we will continue to explore and welcome those willing to work with us.

References

- Brown, R. E. (2001). The process of community building in distance learning classes. *Journal of Asynchronous Learning Environments*, 5(2). Retrieved August 09, 2002 from http://www.aln.org/alnweb/journal/Vol5_issue2/Brown/Brown.htm
- Burge, E. & Lenksyj, H. (1990) Women studying in distance education: issues and principles. *Journal of Distance Education*. Retrieved September 12, 2002 from http://cade.icaap.org/vol5.1/9_burge_and_lenskyj.html
- Carr, K. C., Fullerton, J. T., Severino, R. and McHugh, M. K. (1996) Barriers to completion of a nurse-midwifery distance education program. *Journal of Distance Education*. Retrieved August 30, 2002 from <http://cade.icaap.org/vol11.1.carretal.html>
- Cookson, P. (1989) Research on learners and learning in distance education: a review. *The American Journal of Distance Education*, 3(2), 22-34.
- Dooley, K. E., & Lindner, J. R. (2002). Competencies for the distance education professional: A self-assessment to document professional growth. *Journal of Agricultural Education*, 43(1), 24-35.
- Erlandson, D. A., Harris, E. L., Skipper, B. L. & Allen, S. D. (1993). *Doing naturalistic inquiry*. Newbury Park, CA: Sage Publications.
- Fraenkel, J. R., & Wallen, N. E. (1999). *How to design and evaluate research in education*. New York: McGraw-Hill.
- Grow, G. O. (1991). Teaching learners to be self-directed. *Adult Education Quarterly*, 41(3), 125-149.
- Justice, E. M., and Dornan, T. M., (2001) Metacognitive differences between traditional-age and nontraditional-age college students. *Adult Education Quarterly*, 51, (3) 01. Retrieved September 11, 2002 from <http://www.ingenta.com/isis/browsing/AllIssues/ingenta?journal=pubinfobike://sage/j396&startyear=2000&WebLogic>
- Kearsley, G. & Shneiderman, B. (1999). Engagement theory: A framework for technology-based teaching and learning. Retrieved August 08, 2002 from <http://home.sprynet.com/~gkearsley/engage.htm>
- Kirkup, G. & von Prummer, C. (1990) The needs of women distance education students. *Journal of Distance Education*. Retrieved September 12, 2002 from http://cade.icaap.org/vol5.2/7_kirkup_and_von_lprummer.html

- Lindner, J.R., Hynes, J.W., Murphy, T.H., Dooley, K.E., & Buford, J.A., Jr. (In-press). A comparison of oncampus and distance students' progress through an asynchronously delivered web-based course. *Southern Journal of Agricultural Education*.
- Lindner, J.R., & Dooley, K.E. (2002). Agricultural education competencies and progress towards a doctoral degree. *Journal of Agricultural Education*, 43(1), 57-68.
- Lindner, J. R., & Murphy, T. H. (2001). Student perceptions of webct in a web supported instructional environment: Distance education technologies for the classroom. *Journal of Applied Communications*, 85(4), 36-47.
- May, S. (1994) Women's experiences as distance learners: access and technology. *Journal of Distance Education*. Retrieved August 30, 2002 from <http://cade.icaap.org/vol9.1/may.html>
- Merriam, S. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. In S. Merriam (Ed.), *New Directions for Adult and Continuing Education*, No. 89. San Francisco, CA: Jossey-Bass, 24-34
- Miller, G., & Pilcher, C.L. (2000a). Are off-campus courses as academically rigorous as on-campus courses? *Journal of Agricultural Education*, 41(2), 65-72.
- Pappas, G., Lederman, E., & Broadbent, B. (2001). Monitoring student performance in online courses: New game - new rules. *Journal of Distance Education*. Retrieved August 07, 2002 from <http://cade.icaap.org/voll6.2/pappasetal.html>
- Spronk, B (1990) Editorial. *Journal of Distance Education*. Retrieved August 30, 2002 from http://cade.athabascau.ca/vol5.2/5_editorial-english.html
- Stokes, S., P., (2001). Satisfaction of college students with the digital learning environment. Do learners' temperaments make a difference? *The Internet and Higher Education*, 4(1), 31-44.
- Taplin, M., Yum, J., C. K., Jegede, O., Rocky, Y.K. Fan. & May S.C. (2001). Help-seeking strategies used by high -achieving and low-achieving distance education students. *Journal of Distance Education*. Retrieved August 07, 2002 from <http://cade.athabascau.ca/vol16.1/taplin.html>
- WebCT. (2001). Retrieved November 7, 2001, from <http://www.webct.com/>
- Wickersham, L. E, & Dooley, K.E. (2001). Attrition rate in a swine continuing education course delivered asynchronously. Proceedings of the 28th Annual National Agricultural Education Research Conference, 48. Retrieved August 8, 2002 from <http://aaaeonline.ifas.ufl.edu/NAERC/2001/Papers/wickersh.pdf>
- Weinstein, C. E. (2002) Learner control: the upside and the downside of online learning. *NISOD Innovation Abstracts*, XXIV(25).