A Comparison of On-Campus and Distance Students Progress Through an Asynchronously Delivered Web-Based Course

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Abstract

The purpose of this study was to compare on-campus and distance students' progress through an asynchronously delivered Web-based course. Content analysis techniques were used to describe on-campus and distance student behavior in a graduate course delivered asynchronously over the Web. 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 on-campus students engaged earlier, remain engaged longer, and completed the course sooner than distance students. On-campus students and distance students' overall performance in the course as measured by accumulation of points on assignments was similar. Four major recommendations include: "firm" time-goals for courses delivered asynchronously; provide students the ability (within time-goals) to move through asynchronously delivered courses as fast or slow as *students* choose; evaluating the appropriateness and effectiveness of feedback provided by faculty on assignments; and continue to measure academic rigor of courses delivered using distance education methods.

Introduction

One of the touted benefits of distance learning is the opportunity for faculty to develop individualized instructional sequences for students based on students' unique competencies (Dooley, & Lindner, 2002). Such instruction affords students a greater opportunity to draw upon a variety of academic fields and knowledge bases to achieve personal and professional goals (Lindner, & Dooley, 2002). While academic rigor of courses delivered at a distance are similar to those offered on campus, distance students are less likely to constructively communicate with other students and teachers (Miller, & Pilcher, 2000a).

Since the technology was developed that enables students to learn from a distance, educators have been concerned about ways to maximize their learning (Lindner, Dooley, & Murphy, 2001). 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 was not shown to affect the outcome of learning or satisfaction with the course (Stokes, 2001). Lindner and Murphy (2001) showed that the use of Web-course tools could contribute to a student's ability to accomplish course objectives.

Yet 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). 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. A closer look at student behaviors in distance education has 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 directions from instructors (Merriam, 2002).

An explanation of why such qualities lead to non-completion of distance courses is offered by the theory of andragogy. According to Knowles, Holton, & Swanson (1998) adults start to learn again when circumstances in life require additional learning. Adult learning professionals are more effective when they recognize and understand the motivating factors behind adult learning needs. Knowles' version of andragogy presents the individual learner as one who is independent and development oriented (Merriam, 2002). With acceptance of this viewpoint, one could expect a higher rate of incomplete course work from those enrolled in distance education courses. Self-directed learning will, by definition, have students beginning, pausing, stopping or completing their required lessons at their own preferred rate.

Educators have tried a variety of strategies in an attempt to help distance learners overcome their unique challenges successfully. One of the touted benefits of distance learning is the opportunity for faculty to develop individualized instructional sequences for students based on students' unique competencies (Dooley & Lindner, 2002). Such instruction affords students a greater opportunity to draw upon a variety of academic fields and knowledge bases to achieve personal and professional goals (Lindner & Dooley, 2002). While the academic rigor of courses delivered at a distance is similar to those offered on campus, instructional direction requirements

can and should range from continuous input from instructors to leaving students to be self-directed.

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. An assumption underlying andragogy is that adults are motivated internally rather than externally (Merriam, 2001). With this in mind, it is necessary to retain in Web-based courses many of the same aptitudes, abilities, and dedication as is required in traditional classes, albeit sometimes in a different format.

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 factor in distance education that is important to study 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 learning material, discussions, written assignments, and grading results all taking place at a distance and over the Internet. In asynchronous courses, the course may have a definite start and completion date or it may have 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.

Theoretical Framework

In examining possible differences between on-campus student performance and distance student performance in an asynchronously delivered course four research areas of interest are described.

The first area of interest concerns whether the level of learning remains the same for on-campus and distance learners. Academic rigor has been perceived as being less for off-campus courses compared to the rigor of on-campus courses. This perception was not tied to involvement in either the faculty development programs of the distance education courses or to teaching experience in distance education (Miller, & Ching-Chun, 1999). Here the implication is that pedagogy rather than andragogy is the preferred philosophy of instruction for this group of professors.

A second area of interest is whether distance education students are as satisfied with the course as are the on-campus students. Murphy (2000) has found equal satisfaction among students for courses that were delivered at a distance when compared to the same course offered on campus. Williams' (2000) work shows students felt that online courses required extra work on their part, enabled teachers to shift a portion of the teachers work back to students, and transferred to students printing costs they felt belonged to the institution.

The melding of course content with the learning of the technology to deliver it via the Web has been ascribed as beneficial to students (Daugherty, & Funke, 1998). In this study Daugherty and Funke's students pointed to the convenience, current worldwide information, and stronger motivation to work as being benefits of web learning.

The third area of interest is the quality of education and whether it is the same at distance learning endeavors as the quality of education on-campus. At Iowa State University, the Agriculture faculty perceptions of the quality of off-campus courses were perceived to be lower than on-campus courses (Miller & Ching-Chun, 1999). Students "felt" off-campus courses to be of lower quality than on-campus courses (Miller & Pilcher, 2000b).

Miller and Pilcher (2001) found that instructors reached only some of the desired levels of cognitive learning in distance education compared to the levels reached on campus in the same course. The instructors exceeded their expectations in the "remembering" and "processing" cognitive outcomes. The "creating" and "evaluation" cognitive outcomes were below the desired results (Miller, & Pilcher, 2001).

A final area of interest is the effect of asynchronous delivery. As Agricultural Education and other disciplines move more to distributed models of teaching and learning, more information is needed about asynchronous delivery of course content. In particular, it is important to determine whether there is a difference between on-campus student progress and performance and distance student progress and performance in an asynchronously delivered course. While the principles of andragogy seem to point to the superiority of such a course design for adult learners, the impact on student success and completion rate has yet to be mapped. For instance, there may be differences in student success rates between entirely asynchronous and partially asynchronous courses. Students might begin and end their engagement in asynchronous courses in a unique pattern, compared to students in synchronous courses. It has not yet been determined what impact their schedule of engagement might have on their successful performance in the course.

The present study examined on-campus and distance students' progress and performance through an asynchronously delivered Web-based graduate course in Agricultural Education. The results of this analysis may have implications for both distance instructor behaviors and for program design.

Purpose

The purpose of this study was to compare on-campus and distance 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 students begin and end engagement in the course?
2. How long will students remain engaged in the course?
3. How will the students 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 on-campus and distance 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. Member checks were conducted by providing respondents with a summary of the data to correct any misinterpretations. 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. Regardless of the location of the student, no synchronous interaction was planned or conducted. There were 24 students enrolled in the course (17 distance students and 7 on-campus students). WebCT is a commercial software set of Web course-development tools for creating instructional environments at a distance (WebCT, 2001).

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. Students were provided the following written instructions.

> Welcome to AGED 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 led 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 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 on-campus and distance learners were interviewed via telephone to help the researchers gain a thicker description of why students engaged and performed as they did. These students represented those on-campus (OCE) and distance students (DE) that engaged early and those on-campus (OCL) and distance students (DL) that completed the course 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.

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 (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 quarter of the students began submitting materials online within eight days of the start of the course. The second quarter of students began submitting materials online between 12 and 21 days. The third quarter of students began submitting materials online between 25 and 83 days. The fourth quarter of students began submitting materials online between 83 and 113 days.

As shown in Figure 1, on average, on-campus students (M=20.9 days to engage; SD 9.3) tended to engage in the asynchronously delivered course over 30 days sooner than distance students (M=43.6 days to engage; SD=43.6).

When asked why did they begin the course when they did, students noted several reasons. One on-campus student who submitted the first assignment early noted they did so in order, "To finish it. It was the first day I could get on." (OCE) A distance student that submitted early stated that they "had intentions to use every Wednesday and so the first Wednesday that came up after classes began I got in there and did it." (DE)

One on-campus student who submitted the first assignment late noted "I wanted to submit my assignments as soon as my officemate did. So when she submitted hers, I submitted mine." (OCL) A distance student that submitted late stated that "when I had mentally gone through what I needed to do to complete the first assignment and had it prepared. I logged on and sent it in." (DL)

Student achievement on the first assignment was similar for on-campus and distance students regardless of when a student initially engage in the course. The average score for all students on the first assignment was 92.4%. On-campus students averaged 94.2% and distance students averaged 91.6% on the first assignment.

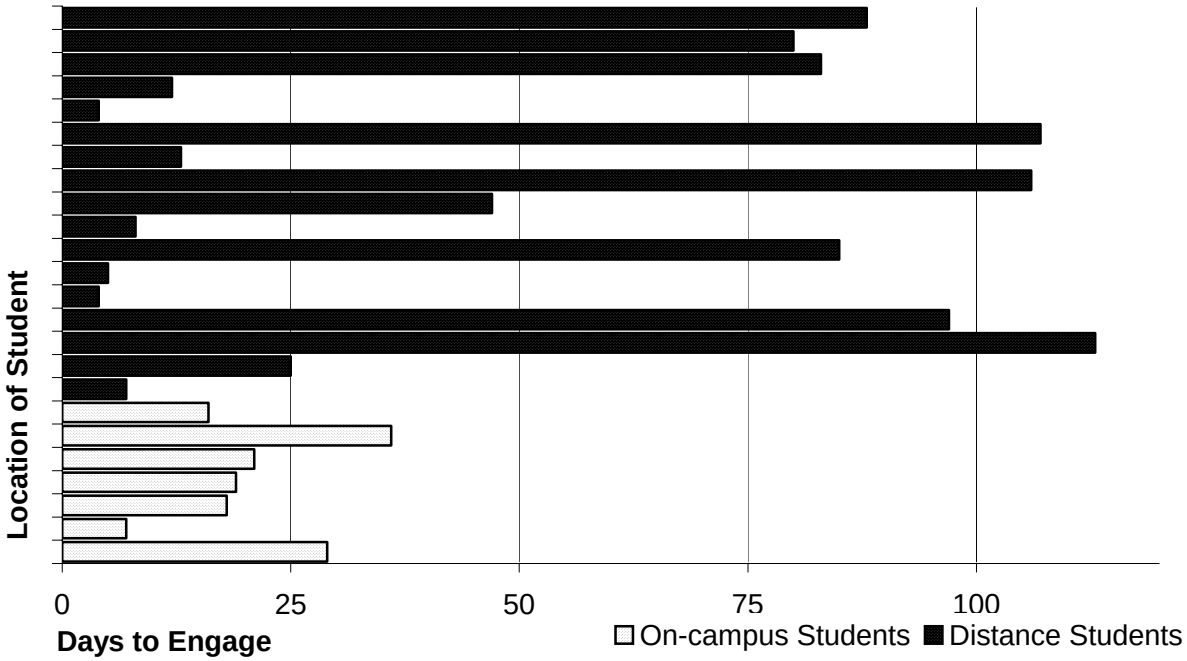

Figure 1. Initial engagement in course by location of student.

Continuous Engagement

Overall students' continuous engagement in the course varied (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.

As shown in Figure 2, on average, on-campus students (M=74.2 days engaged; SD 12.1) tended to engage in the asynchronously delivered course over 23 days longer than distance students (M=51.2 days engaged; SD=35.6).

The following are representative responses to why students spent as much time on the course website as they did and whether they spent more time "engaged" in the course while off-line or while on-line. Most students spent more time engaged off-line as represented by the following comments. "I spent more time engaged in the course off-line. I read the book and other publications I could find – I spent a lot of time online engaged in research for the class – but not in the course webpage. I have a dial-up connection." (DL) "I spent more time engaged off-line. I read the comments on-line, but would think about and draft replies off-line." (DE) "I spent more time engaged off-line. Reading assignments and taking notes from the book. I printed out all the notes from the website and looked them over off-line." (OCL)

One student who spent more time on-line noted, "I enjoyed the online course. I probably spent more time online. I loved the comments from the other students—reading what other people wrote. I was answering chat room and discussion questions even after I had finished the course. I enjoyed the give and take." (OCE)

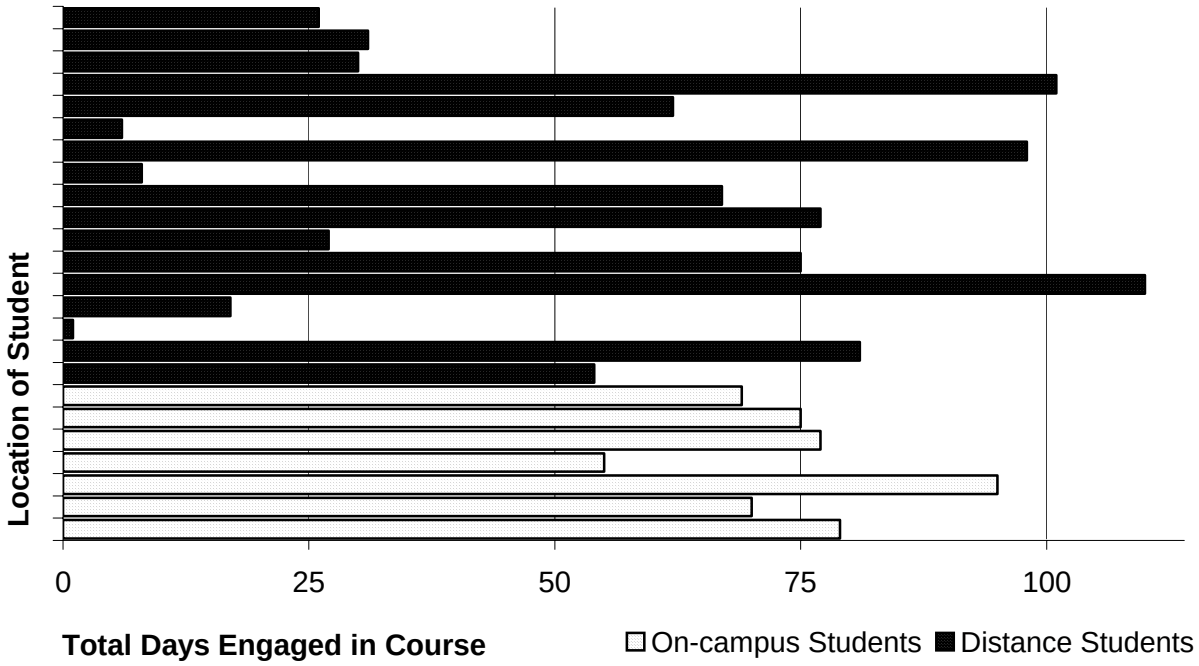

Figure 2. Total days engaged in course by location of student.

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 for between the 85th and 105th day. The third quartile for between the 111th and 112th day. The fourth quartile on the last day (114th day). No on-campus students waited until the last day to complete the course. Over 35% of distance students waited until the last day to complete the course.

As shown in Figure 3, on average, on-campus students (M=95.1 end date; SD 16.4) tended to complete the asynchronously delivered course almost eight days sooner than distance students (M=103.2 end date; SD=18.1).

Student comments varied when asked why they completed the course when they did and what influenced their completion date. "I had done everything. It was the day I got to the last item to do finished." (OCE) "The only thing that influenced my completion date was the final completion date—I would've taken more time to complete if more had been available. This was a self-paced system within parameters…" (DL) "I was nearing the deadline. I had jumped to another class to meet the deadlines in the middle of that course." (DE) "Toward the end of the semester I was setting up my trip to Mexico for data collection and writing my Thesis. So I finished early to free up time for those activities." (OCL)

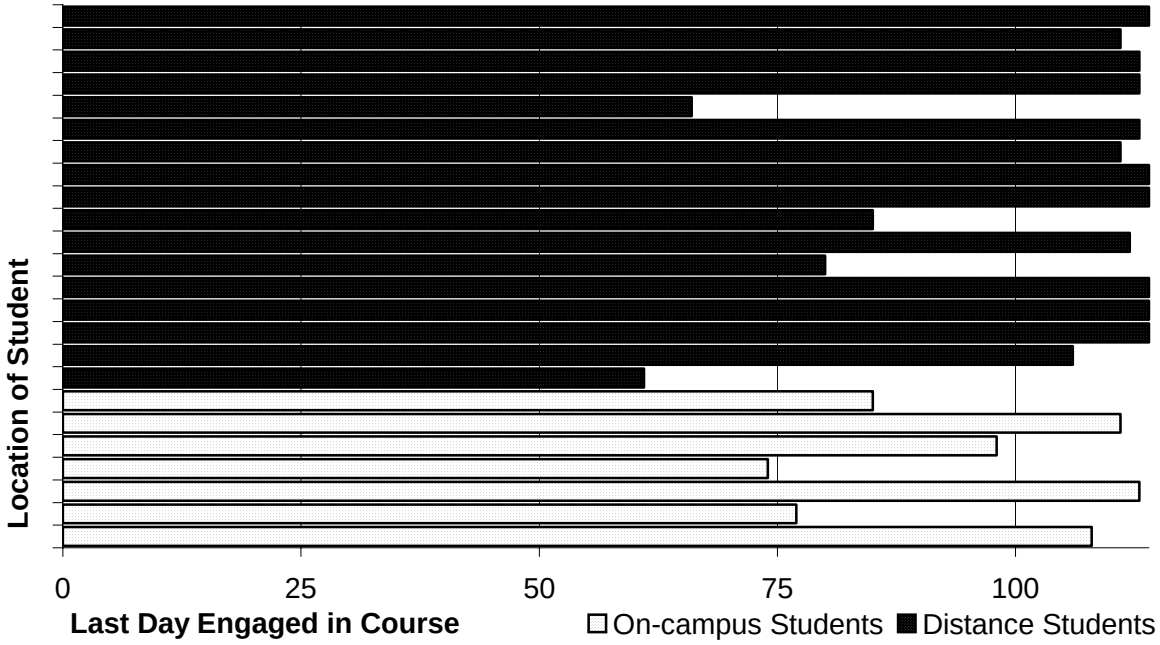

Figure 3. Last day student was engaged in course by location of student.

Performance in Course

Overall student achievement for on-campus and distance students was similar. The average overall score for all students was 92.8%. On-campus students averaged 93.0% and distance students averaged 92.7% overall in the course.

When asked did they think that completing assignments on the course website was an indication of their mastery of the concepts in the course, students that engaged early were more likely to say yes than students that engaged late. One student that engaged early noted, "Yes. The assignments covered a variety of different types of topics—he gave us so many ways to become engaged that I cannot image someone would be unable to demonstrate what they did know about the subject." (OCE) Another student stated, "if we consider all the assignments as including the discussions – YES. I was able to demonstrate my learning as well as any other means of demonstrating it." (DE)

One student that engaged late stated "No. Much of my learning isn't reflected in the assignments. Only some of the results of my learning are included in the assignments. Completing the assignments forced me do more research and that research allowed me to reflect on the content. I chased rabbits and delved into much more of the minutia of the course content." (DL) Another noted "to an extent. I learned a lot about self-directed learning – from the experience of being in the course -- that I didn't share in the course assignments." (OCL)

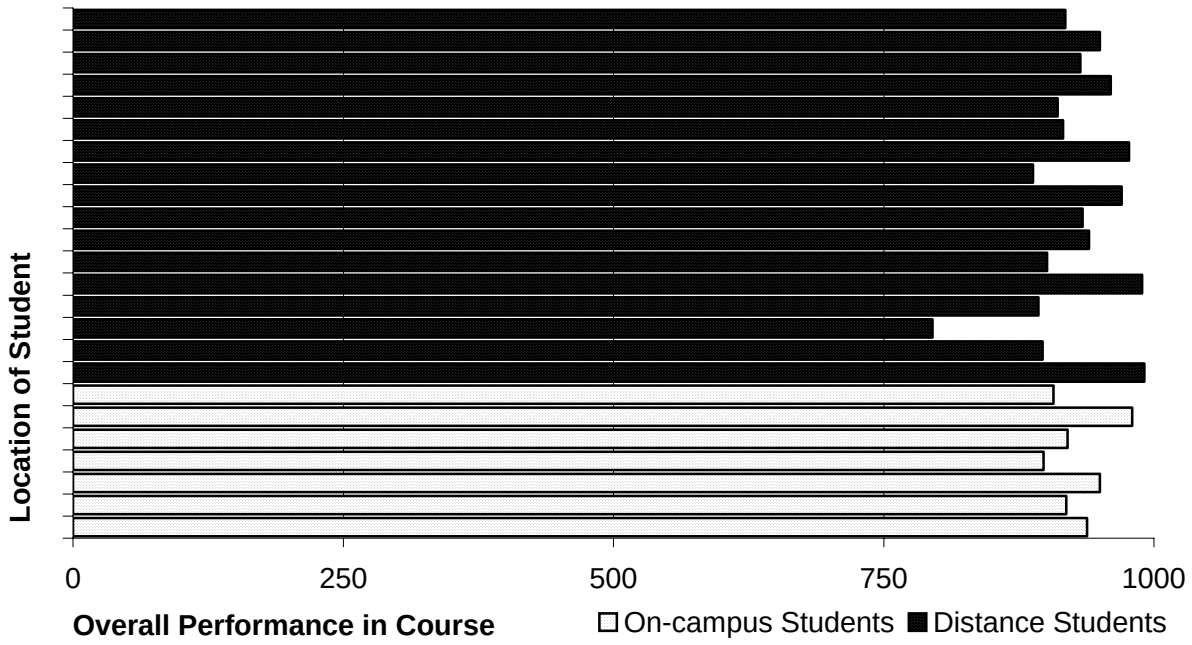

Figure 4. Overall student performance in course by location of student.

Discussion, Conclusions, and Implications

As methods of delivering courses at a distance and on-campus using asynchronous strategies are implemented and tested, the findings from this study may provide useful

information to those teachers delivering such courses. For example, we found that those students who engaged early tended to continuously engage for a longer period of time than those that engaged later. An implication exists that by not structuring an early engagement activity, students may engage less in the course. Given that we are bureaucratically constrained to teach our courses within the timeframe of a semester, we recommend more structure and "firm" time-goals for courses delivered asynchronously. We are, for example, now requiring the first assignment to be submitted within one-week of the beginning of the course. Additional "firm" maximum time goals have been established at the 25, 50, 75, and 100-day mark.

Students' continuous engagement in the course varied dramatically. Most students spent more time engaged off-line that on-line. A limitation of this study is that no attempts were made to measure off-line engagement; future research should do so. Those students that were continuously engaged in the course for less than 25 days were the *last* students to engage in the course. An implication exists that when given few time constraints, students *learn* at dramatically different "speeds." That is if we accurately measure learning. The course instructor's ego was "bruised" a little by the fact that many of the students could complete the course in such a short period of time with little input from the instructor. It is recommended, notwithstanding the instructors ego, that students are allowed to move through asynchronously delivered courses as fast or slow (within time-goals) as *students* choose. To do otherwise would merely punish those faster learning students or those students willing and capable of completing the instructional objectives of the course ahead of the end of the semester. This is, as Dooley and Lindner (2002) noted, one of the benefits of distance learning and affords students and teachers the opportunity to implement individualized instructional sequences.

Although a majority of students waited until near the 114th day to complete their engagement in the course, a quarter of the students were able to complete the course by the 80th day. While all the students were able to complete the course in 114 days, many choose to "back-load" submission of assignments. This resulted in the instructor have a burgeoning amount of assignments to score before grades were due. Instructor feedback, further, on some assignments was not possible and was not essential for students to perform as well as those that received constant feedback…another bruise to the instructor's ego. For students turning in multiple assignments at the end of the course, feedback would not have helped anyway. An implication exists that in asynchronously delivered courses, an instructors traditional role of providing feedback is less important than other roles such as motivator, coach, or delegator (Grow, 1992).

Additional research is needed to describe how an instructor's role shifts when moving from the traditional classroom to a "virtual classroom." In addition to maximum "time-goals," instructors may wish to consider focusing on ways to help students draw upon their unique experiences and competencies in completing assignments (Lindner, & Dooley, 2002).

Although on-campus and distance learners performed equally well on assignments, students that engaged early were more likely to indicate that completing the assignments was an indication of their learning than those that engaged late. An implication exists that prolonged engagement in a course is necessary for students to master concepts, but not necessary to get a "good" grade. Additional research is needed to determine if student mastery of course concepts is related to prolonged engagement.

It is recommended that we continue to measure academic rigor of courses delivered using distance education methods (Miller, & Pilcher, 2000a). Are we measuring success and rigor correctly? Should we attempt to measure success through authentic assessments of students' competencies? Are completing assignments and/or taking tests and receiving a good grade an indication of learning? These are questions we will continue to explore and welcome those willing to work with us. To paraphrase one of our distance students who logged on the last day and turned all of the assignments in at once, until we truly measure learning "we are just *chasing rabbits*." [Emphasis Added]

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