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7. Title: ***"Assessing student academic indicators between traditional and distance education course offerings"***

8. Project Dates: May 2005 – April 2006

9. Accomplishments:
   a. Presented Findings at IUPUI Symposium on *"Highlighting the Research of Faculty, Staff, and Students of Color"* March 2006.
   b. Submitted findings via a proposal to present at MWERA in the Fall of 2006.
   c. Submitted findings to Dean Evenbeck (IUPUI) for his review as statistically significant findings regarding freshman and first-year students were evident in our study.
   d. Currently readying manuscript for submission to a journal related to technology and education.

Purpose of the Project

Like many academic units across the country, the division we teach in has seen an increase in the number of courses offered as distance education. This increase is from either converting already existing courses to the distance education format or from creating newly developed content areas into a distance education format.

The initial responses to these transformations have been favorable to the department. For instance, due to higher than expected enrollments in the distance education offering, the number of sections offered from one semester to the next has increased. Similarly, there has been an increase in the maximum student enrollment per section for the distance education course. However, while these enrollment benefits for the department and university are well documented, any changes in student academic indicators due to the course transformations have not been fully studied.

The purpose of this project was to investigate whether differences in student academic indicators exist as a result of taking a course traditionally (face to face) or taking a course via distance education. More specifically, the indicators used were (a) course grades (b) D, F, W rates and (c) end of semester course evaluations.

Perspective

According to Waits and Lewis (2003), 90% of two-year and four-year public institutions of higher education offer distance education. This percentage is even more striking given that Lucas (1998) just five years earlier reported that about one-half of all higher education institutes offered distance education. The university for which we work and our academic unit in

particular, is mirroring this national trend of rapidly increasing course and program offerings via distance education.

Distance education research, while in existence, has not been as scholarly as originally believed (Phipps and Merisotis, 1999). Phipps and Merisotis (1999) note that most of the articles published deal with opinion and the "how-to" of delivering distance education, absent subjects or experimental design. Clearly, since Phipps and Merisotis (1999) first published those words the amount of research on distance education has increased and improved; this is evidenced by the newly formed and peer reviewed journals of distance education and the establishment of university sponsored national websites on the practices of distance education, among other scholarly activities. However, there has also been a vast increase in the definitions and delivery forms of distance education, the technologies used to offer these various formats of distance education, and the associated research on the demographics and attitudes of the students who take distance education. In essence, it is difficult for the scholarship of distance education to keep pace with the rapid developments in offering distance education.

This research gap can be seen explicitly when focusing on student outcomes and distance education. It was assumed, as the early research indicated unequivocally, that distance education had a favorable impact on student outcomes as compared to traditional or face to face course work. Yet upon closer review, the 'research' according to Phipps and Merisotis (1999), lacked in a few areas. First, many of the studies published did not provide the proper controls needed in the experimental design. In addition, some of the studies grouped the students who took courses as distance education as one 'type' with out taking into account gender or age and their possible interactions on distance education. In fact, the comments from Phipps and Merisotis (1999) on distance education versus face to face delivery and the impact on student outcomes served as the

genesis of our project and provided solid support to our research question, “Is there a difference in student academic indicators between taking a course face to face or taking a course as distance education?”.

Methods

Setting

The course used in this project was historically offered as a traditional or face to face course. However, with the emergence of distance education it underwent a transformation a few years ago to be delivered as distance education and face to face, concomitantly. The course to be assessed is offered at the 300 level and is required for majors in the department in which it is offered. Additionally, the course can be taken by any academic major of the university with no pre-requisite for enrollment. Course content, course instructor, textbook adopted, course reading schedule, lecture schedule, and assessments (as much as possible) were held constant between the two course delivery formats.

Subjects

The data set, with prior approval from the university Institutional Review Board, was generated from undergraduate students at a local mid-western urban university. More specifically, the data set used in this study was comprised of 269 students enrolled in the distance education section and 116 enrolled in the face to face section for an $N = 385$.

Data Collection

The basic assessment method involved the compilation of aggregate data found on final grade reports, electronic or hard copy grade books, and the absolute reporting rates of semester-end student course evaluations. In addition, individual student records were retrieved to collect the pertinent demographic data of the students enrolled in the courses (class standing at time of enrollment, gender, ethnicity, age at time of enrollment, major or non-major, etc). Collection methods were identical for both the face to face course and the distance education sections. Grade point averages for each group will be computed by converting the letter grade earned by each student to the equivalent numeric quality point.

Statistical Analyses

Difference between groups (face to face and distance education) and between various student demographics (gender, age, ethnicity, etc) was determined using factorial ANOVA. Crosstabs were used to generate appropriate descriptive statistics. Statistical analyses was performed using SPSS (Statistical Package for the Social Sciences) with an alpha level of $p = .05$ for all tests.

Results and Conclusions

D,F,W rates

Students enrolled in the distance education section had statistically significant higher DFW rates than their peers who took the face to face section (40% vs. 21%). In fact, withdrawal rates in particular were cited in Phipps and Merisotis (1999) as being knowingly higher in distance education courses and our results support this early observation.

Overall academic performance

The students enrolled in the face to face section earned, overall, a 3.16/4.00 and the students who took the distance education section earned a 2.28 overall. Again, the increase in DFW rates for distance education helps to bring this grade point average down as a grade of D earns very little quality points (1.0) that can contribute to grade point average. More importantly, grades earned as F earn zero quality points toward grade point average, thus contributing to a partial explanation in the statistically significant difference between group means of taking the class face to face or taking the class as distance education. While grades earned as a W were not factored into the computation. A more thorough analysis is needed to fully explain the statistically significant difference in grades earned between the students in the face to face section and those in the distance education section.

Freshman academic performance

Freshman-level students underperformed compared to every other class level in grouped means for grades earned in both the face to face section and the distance education section. This finding was not a surprise. Somewhat surprising was the DFW rates between the face to face and the distance education sections for 'freshman' in particular.

The class composition of freshman was essentially the same with *20.7%* and *20.1%* being freshman in the face to face and distance education sections, respectively. However, when looking at the grade of 'F' only, *20%* of the face to face section freshman earned an 'F' versus *28%* of the distance education section. When combining the grades of 'D' and 'F', *22%* of the face to face section freshman earned a 'D/F' and *30%* of distance education

section freshman earned a 'D/ F'. Finally, when combined, the 'D, F, W rate' was *35%* for the face to face section freshman versus *65%* for the distance education section freshman. This finding is significant and should serve as the impetus for policy changes.

Major vs. Non-major academic performance

Students categorized as a 'major' of the department (that offered the course) and those classified as 'non majors' both earned lower grades in the distance education section than those in the face to face section.

Effect of ethnicity/gender/ age

There was only one ethnic interaction of statistical significance and that was that black students underperformed white students in both the face to face section and the distance education section. There were no statistically significant gender interactions on the face to face or distance education sections. Finally, there was a statistically significant difference between the average ages of the face to face section student (24 years old) and the distance education student (27 years old).

Course evaluations

The return rate for semester ending course evaluations for the face to face section was *95%* and the return rate for the distance education section was less than *5%*. This is in line with the findings from Norris and Conn (2005) who reported that over 200 distance education courses (of about 1000 analyzed) recently reported a *zero* return rate for semester ending course evaluations.

Educational importance

We believe the results of this study are noteworthy for the several reasons. First, our results provide an alternate and antithetical view to the unequivocal findings reported by Phipps and Merisotis (1999) regarding the positive impact of distance education on student outcomes. Our study suggests that converting a class to distance education has statistically significant impact on some academic indicators for students. More specifically, we found that students, when enrolled in a distance education course, do not perform as well as if they were in a face to face course; as the earlier studies suggested. More importantly, we attempted to establish controls between the sections; such as: instructor, textbook, course content, reading schedule, 'lecture' schedule, and assessment techniques that were not evident in earlier reports.

Next, we feel strongly that the results of our study can be used to shape policy regarding admissions into distance education course work. Notably, students classified as freshmen earn a disproportionate rate of D, F, W's when taking the class as distance education than their freshmen peers who take the class as a face to face course (i.e. 65% vs. 35%). It seems prudent that first year students or those classified as 'freshman' should be advised to take course work face to face as opposed to distance education.

Considering the attention 'retention rate' and 'first-year experience' has garnered with in Higher Education over the last decade, the 'freshman' results of this project are worthy of note. Findings that suggest course delivery format can impact academic success for freshman or the first year student should be factored into the deliberations when expanding course offerings in distance education. The results of this project may also allow retention councils or directors of the first year experience on college and university campuses to have fully informed conversations when drafting policies that set freshmen up for academic success, as opposed to

un-needed challenges. Also, ideally, the results of this project will serve as an impetus for future study on distance education and its impact on indicators of student academic success.