The Impact of Distance Learning on Graduation Rates for Information Systems Students

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INTRODUCTION

The use of distance learning methods to deliver post-secondary education has grown in the last decade. The number of students desiring this format, the increase in distance learning course offerings, and the number of institutions offering distance learning formats to deliver their curricula raise questions concerning the effect of distance learning on graduation rates, such as whether these courses prepare students as well as traditional on-campus courses for graduation. Student retention and success in succeeding courses and persistence to graduation are significant measures for assessing programs. One of the most common measures of the relative success of a curriculum is the graduation rate of students following that course of study. While a number of measures for course efficacy may be used, the actual measure of the degree program is the number of students persisting to graduation. Using distance learning to deliver courses may impact that graduation rate and ultimately contribute to the success or failure of a curriculum.

RESEARCH PROJECT

The research in progress investigates whether information systems students taking thirty percent or more of college-level courses in a distance learning mode are more or less successful in persisting to graduation. These students are compared to students who take courses principally on-campus, with both sets of students following the same general curriculum.

The study examines a ten-year history of students majoring in Information Systems at a Midwestern public university. The major was selected not only for reasons of availability of data and consistency in curriculum, but also because using a set of students who are generally familiar with technology therefore minimizing any impact that might arise from those who are "technology-challenged". The study compares those who have taken few or no distance learning courses with those who have taken at least thirty percent of their courses via distance learning. The research compares six-year graduation rates, as that is the current standard for measuring graduation success, given that not all students progress to graduation within four years.

RESEARCH METHODOLOGY

The purpose of this research is to determine the effect of distance learning courses on graduation rates for information systems majors in a baccalaureate degree program. The research consists of first seeking to answer the question if students taking thirty percent or more distance learning courses are they more or less successful than the student population in general. The second component will be to identify other variables related to distance learning and persistence to graduation.

All data on students is mined from a student information database maintained by the university. Students are selected by major and courses are examined to differentiate students who have taken thirty percent or more of their classes via distance learning courses. The thirty percent

number was chosen by the authors as a significant number of distance learning classes. This population of students is then compared to the remaining population of students in the same time frame for graduation rates. The ten year history was chosen as it represents the time frame that the university first started to offer distance learning courses to the present.

The student information database for this institution is an Oracle database with the SCT Banner system. The subset of data for the information systems majors was imported to a MS Access database for the purpose of this research.

The data originally obtained for this analysis was an un-normalized single table of registration records by student for each term attended within the requested time frame. Each registration record included the term, subject, course, and grade, reported as pass, fail, withdrawn, or incomplete. Pseudo identification numbers were used to group records by student in order to maintain confidentiality. The records contained additional requested information such as gender, ethnicity, admit term, graduation term, age range, and student major. These records were transformed into the four tables as depicted in figure 1. Table Student contains one record per unique student id, while StudentStatus contains one record per student per term, and Registration has one record for each enrolled course for each student by term. The Term table simply holds a description for each possible term code.

A Java program was created that queried that database for all registration records for each student, accumulating totals by student on course type (distance learning courses versus non-distance learning courses) and grade for each course type (as described above), as well as major (using the last major for those who changed major) and whether the major was IS or non-IS. From this, percentages of DL and non-DL courses were computed, as well as a ratio of DL to total courses, on an individual student basis.

Figure 1.
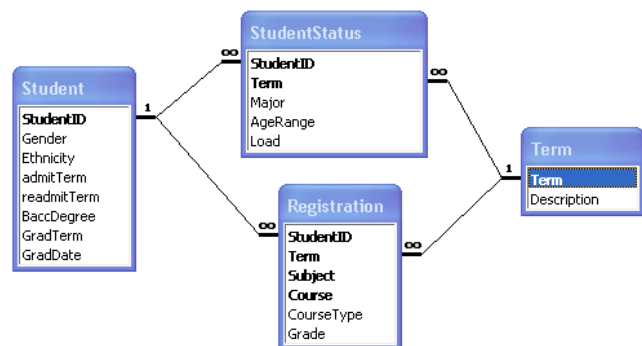
Time of matriculation for a student was calculated as the difference between the admit term and the graduation term, if graduated, or if not graduated, the last term for which there was a registration record. Terms were reported as a code, indicating the term (0 for summer, 1 for autumn, 2 for spring) and the school year (e.g., 1998-1999, 1999-2000, etc.). Because the school utilized a rolling admissions, a student could begin in any of the three terms (summer, autumn, or spring) and officially graduate in any of the three.

From this data, two Excel spreadsheets were created. The first containing the per-student data described above, and the second with totals on a term basis. In the second, totals were created for all graduates, all non-graduates, and for counts of less than the thirty percent DL rate, and counts equal to or greater than thirty percent, for all students ordered by admit term and for all IS majors. Additionally, counts for IS graduates, and counts below and equal to or above the thirty percent DL rate for IS graduates are listed by graduation term.

The programs and database queries described in the preceding paragraphs were used to acquire the basic data to answer the research question. Further research with additional variables of gender and age will be conducted.

ANALYSIS OF RESEARCH
The basic research question looks at two variables. The first variable is students who have taken thirty percent or more of their coursework via distance learning. The second variable is successful graduation. The initial analysis seeks to identify the number of students with thirty percent or more distance learning courses that successfully graduated and compare that number to the graduation rate of the remaining student population.

The next part of the research has not yet been completed at the time of the submission of this paper. The second part of the research includes investigating other factors in relation to successful students who graduated taking some of their classes via distance learning. The variables include percentage of distance learning courses taken, gender, and age ranges and their relationship to persistence to graduation.

Statistical trends of students persisting to graduation and those who do not graduate of both the distance learning and the traditional students will be identified based on the number of distance learning courses taken toward graduation. Further trends of demographic information including age and gender will be identified in the both populations.

The first distance learning courses for information systems students were taught in 1995/1996 academic year. There were only a few courses taught in the early years. There were not a consistent number of courses offered distance learning every semester. These factors must be considered when interpreting the initial results.

RESULTS
The result of the first part of the research shows an increase in the number of information systems students graduating while taking 30% or more of their courses distance learning. Because distance learning courses did not begin until the fall semester of 1995, the first six year graduates are noted in the 2001/2002 academic year. In the group graduating in 2001/2002 academic year, 4% had taken 30% or more of their courses in distance learning. The next year 2002/2003 showed a marked increase to 10% of the students taking 30% or more of their courses distance learning. That number was sustained in the 2003/2004 school year with 10% of the graduating information systems major meeting the 30% or more distance learning mark.

CONCLUSION
While this initial data analysis does not provide a great deal of detail, the basic numbers indicate that students choosing distance learning courses do persist to graduation in a four year undergraduate curriculum. Further tracking of data and monitoring the success rates of students choosing distance learning classes is warranted.

This research provides a ten year period of analysis and the results may prove valuable in future curricula and delivery decisions for academic institutions. The results of the second part of the research may also assist in identifying profiles of successful distance learning students.

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