Project: Learning Analytics for Students Majoring in Healthcare Management and Policy

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Abstract

Many students enrolled in SPEA’s Healthcare Management and Policy degree program (HMP) struggle in our quantitative courses in financial management and economics. SPEA has modified admissions criteria over the years in an effort to identify students who may have difficulty completing the degree, but the faculty is not satisfied that we have addressed this issue effectively. The opportunity to participate in the Student Learning Analytics Fellows Program is especially timely, as SPEA is revisiting the issue of appropriate admission criteria and how to address our students’ overall difficulty with quantitative courses. My research question is as follows:

*What is the profile of the student who is successful (grade of “C” or better) in healthcare finance and economics courses?*

The data examined would include demographic characteristics and prior coursework that may be predictive of success in our Healthcare Management and Policy quantitative courses. The ultimate goal is to use this information to identify students early on who may struggle in these courses and therefore offer early intervention options, such as appropriate prerequisite courses, a SPEA “math camp”, or online math “Modules” in conjunction with appropriate tutoring. The anticipated result is improved student performance in these challenging courses, as well as increased retention and graduation rates.

I am hopeful that successful completion of this research project will lead to an expanded agenda to other courses and majors within SPEA.
Project Description

Purpose of the investigation, research question, and data

SPEA’s degree in Healthcare Management and Policy (HMP) has experienced significant growth, more than tripling the number of majors in the program over the past ten years. Unfortunately, we have also seen an increase in the number of students who struggle in our quantitative courses: financial management and economics. SPEA has modified admissions criteria over the years in an effort to identify students who may have difficulty completing the degree, but the faculty is not satisfied that we have addressed this issue effectively. The opportunity to participate in the Student Learning Analytics Fellows Program is especially timely because SPEA is currently revisiting these issues, in terms of both admission criteria and possible interventions to assist struggling students with development of math and general analytical skills. It would be extremely valuable to create a profile of the successful student in our HMP quantitative courses and use this to identify students who are outside of these parameters. My research question is as follows:

What is the profile of the student who is successful (grade of “C” or better) in healthcare finance and economics courses?

The data would include demographic variables and prior coursework that may be predictive of success in our Healthcare Management and Policy quantitative courses. Specific data items could include students’ SAT scores, high school overall GPA, prior quantitative courses in mathematics, accounting, finance, economics, and statistics taken at IU, mathematics courses transferred in from other colleges and universities (such as Ivy Tech), as well as demographic information such as age, gender, and race. For prior coursework, we would want to examine students’ grades as well as the number of semesters the courses were taken before the SPEA quantitative courses (i.e. time lag).

Anticipated outcomes from the work and contribution to the success of student learning

We expect two important outcomes from this research. One, we believe that it can have a meaningful impact on student learning in our quantitative courses. Two, it could provide valuable information regarding curriculum mapping.

Philosophically, SPEA would prefer to assist every student in completing our coursework as successfully as possible, rather than imposing highly rigorous admission standards that discourage students from enrolling in our program. For some students, this has been a disappointing experience. They often delay taking the quantitative courses until late in the
program (senior year), partly because of dread or fear of the course material, and partly because of concern over poor grades that may affect their GPA. Having delayed these courses, they sometimes find themselves unable to graduate after three or more years in the program because they could not successfully complete these challenging courses.

The ultimate goal of this research is to use this information to identify students early on who may struggle in the following HMP quantitative courses: SPEA-H352-Healthcare Financial Management I, SPEA-H353-Healthcare Financial Management II, and SPEA-H354-Health Economics. At minimum, these courses assume requisite knowledge in high school algebra and introductory economics, as well as analytical reasoning skill. SPEA would like to develop and/or identify remedial interventions to assist students with deficiencies in these areas, well in advance of the students’ enrollment in the courses. Examples of interventions could include appropriate prerequisite courses, a SPEA “math camp”, or online Modules that a student could complete with the assistance of a tutoring staff.

If the research and the resulting program implementation strategies are successful, we believe that it would not only improve retention and graduation rates, but would also help to improve student learning and move our “D” students to grades of “C” or higher. This is a worthy goal for any student, but given the high demand for skilled professionals in the healthcare industry – we believe proficiency in this field is a significant contribution to our society.

Secondarily, the HMP faculty is working to develop a curriculum map for our major. Examining the sequence of courses taken by our most successful students in quantitative courses will provide information that will inform this project.

As we do expect this research to have a positive impact on our students and our HMP program, we would hope to continue and expand this type of study to other courses and majors within SPEA.

*Research methodology*


The second step would be to conduct regression analyses to estimate three models using the independent variables identified from the correlations and the grades in the three quantitative courses listed above as the dependent variables. Practically speaking, we are looking for key variables that we can screen when a student enters our program and then use this information to direct them to appropriate resources.
Measuring the success of the project

In the short-term, we would be able to measure students’ improvement in our “math camp” or online Modules via pre- and post-tests. In the longer term, we would hope to track students’ grades in the quantitative courses and compare those of students who participated in the intervention programs versus those who did not. We initially expect that the intervention programs would be recommended but not required. If the data reveal significant improvement in students’ performance in the quantitative courses, they may provide a basis for requiring completion of such programs going forward.
TERRI L. RENNER  
December 2016

EDUCATION
D.B.A. (candidate, ABD) Accounting, Anderson University  
M.B.A. Accounting and Management Information Systems, Indiana University-Bloomington, 1985  
B.A. French, Indiana University-Bloomington, 1983

PROFESSIONAL EXPERIENCE
ACADEMIC
Senior Lecturer, Indiana University-Bloomington, School of Public & Environmental Affairs. 2009-present  
(Lecturer 2002-2009). Chair, Teaching and Learning Faculty Group. August 2016-present.

Adjunct Faculty, Indiana University-Bloomington, School of Public & Environmental Affairs. 1989-2002.

Adjunct Faculty, Indiana University-Purdue University at Indianapolis, School of Public & Environmental Affairs. 1987-1989.

OTHER PROFESSIONAL
President, re:Member Data Services, Inc., Indianapolis, Indiana (now a subsidiary of Open Solutions, Inc.). Company offering both outsourced and in-house core data processing and other software solutions, including collections, ATM and Debit Card Processing, mortgage servicing, and disaster recovery, to approximately 100 financial institutions in the United States. 1998-2000. (Consultant, 1988-1998).


VOLUNTEER
Advisory Council, IU Health (formerly Bloomington Hospital & Healthcare System), Bloomington, Indiana. 1994-present.

TEACHING AWARDS
Golden Key International Honour Society – Honorary Member – 2003
Indiana University Trustees’ Teaching Award – 2012
SPEA Undergraduate Teaching Award – 2015

PROFESSIONAL CERTIFICATION
Certified Public Accountant (1986), Indiana

PROFESSIONAL AFFILIATIONS
American Institute of Certified Public Accountants
Indiana CPA Society
December 16, 2016

Student Learning Analytics Fellows Program, Indiana University

I am writing to strongly endorse and support Terri Renner’s proposal to the Student Learning Analytics Fellows Program, offered through the Indiana University, Bloomington, Center for Innovative Teaching and Learning. Professor Renner’s research or “learning” question deals directly with the success of the undergraduate student body at the School of Public and Environmental Affairs (SPEA). SPEA has found that a large number of students enroll in quantitative courses (e.g., Financial Management, Economics, Statistics.), but are not prepared to succeed in these courses. Professor Renner’s fellowship will answer one of the most impactful questions we can ask: “Are students prepared for their coursework and have they achieved the learning outcomes in their courses?” Although I hope that research such as what is proposed can be a standard component of SPEA’s overall curriculum mapping, Professor Renner will be looking specifically at the learning preparation and outcomes for students taking courses in our relatively new Healthcare Management and Policy (HMP) degree program.

The research proposed by Professor Renner will produce findings that will inform SPEA’s curriculum directly and quickly. The research also will be useful for all educational units on campus who desire to have students in their courses who are prepared and poised for success. What characteristics predict success in (SPEA’s) quantitative courses? How can schools like SPEA contribute to that preparation? And what pedagogical innovations must be explored to ensure greater success for students who take such courses? These are central questions that require data collection, modeling, and a “deep-dive” into student learning outcomes.

Such research requires funding and a fundamental knowledge of student learning and preparation. I am confident in Terri Renner’s ability to carry out the research and I strongly endorse this proposal.

Sincerely,

Michael McGuire
Executive Associate Dean for Bloomington
School of Public and Environmental Affairs
Indiana University