Title of Study: An Inquiry into Student Purpose and Motivation as Catalysts for Retention

Principal Investigator: Dr. Molly Burke, Student Academic Center (OVPUE)

Co-investigators: Dr. Anthony Guest-Scott, Student Academic Center (OVPUE)
Dr. Andrew Koke, Student Academic Center (OVPUE)

Year/Semester Awarded: Spring 2015

Number of undergraduate students who were subjects of study: 6,000
Number of graduate students who were subjects of study: 0

Executive Summary:
Our study sought to assess the effectiveness of our class, EDUC-X158, in retaining and graduating University Division students placed on Academic Probation. We also sought to determine our students’ motivations for seeking a bachelor’s degree and whether those motivations were in any way correlated with their academic performance. Examining the GPAs and academic standing of the X158 students starting in the Fall 2008 semester, we found that those who took the class were approximately 20% more likely to persist and graduate. Surveying students enrolled in the class in the Spring 2015 semester with regard to their motivations for being in college and their understanding of the purpose of higher education in general, we found that students named finding a job/pursuing a career, earning a degree, a desire to learn and to improve themselves and their skills among their greatest reasons for seeking a bachelor’s degree. No single motivation was associated definitively with academic improvement in general. We did, however, find that there were some predictive correlations linking motivation and academic performance in the semester after taking X158 for students returning to Good Standing and those remaining on Academic Probation. These findings merit further investigation.

Narrative:
Initial Findings
With regard to the analysis of the GPA and academic standing of University Division (UD) students who both matriculated and fell into Academic Probation (cumulative GPA < 2.0) starting in Fall 2008, we found a positive correlation between enrollment in EDUC-X158 and persistence and graduation rates. The class is required of UD students on Academic Probation, but the mechanism for enforcing this requirement is somewhat ineffective. Additionally, it is not always possible to accommodate all students who are supposed to take the class, so some students find that they cannot enroll in it. Therefore, we are able to compare the retention and graduation rates of students who did, in fact, enroll in X158 as required (whom we refer to throughout our study as the “Takers”) and those who did not (the “Non Takers”). Looking at the five year graduation rate for students matriculating in Fall 2008, we see that 35% percent of the Takers graduated (n=97), while only 22% of the Non-Takers (n=31) did. For the cohort starting a year later, we found similar results: 40% of the Takers (n=102) graduated, while only 22% (n=49) of the Non Takers did.
Because five year graduation rates were available only for the cohorts starting in 2008 and 2009, we decided to examine retention rates for the later cohorts. We found that enrollment at IUB two semesters after the initial/probationary semester hovered around 70% for the Takers, and around 50% for the Non Takers. The chart below shows the retention rates two semesters after the Probation term for each cohort of students starting at IUB from Fall 2008-Fall 2013.

Predictably, enrollment at IUB four semesters after the initial/probationary semester was lower than what it had been just two semesters after that first semester, and the gap between the Takers and Non Takers narrowed slightly, with retention for the Takers hovering just above 50%, and that for the Non Takers hovering between 35-40%.
In addition to looking at retention and graduation rates overall, we examined the impact of the class with regard to particular types of students. To this end, we looked at the six year graduation rate for the cohort that matriculated in Fall 2008, breaking down the cohort according to various characteristics of that student population. The overall six year graduation rate for this cohort was 40.8% (n=113) for the Takers and 26.3% (n=36) for the Non Takers. When we broke down the student population by their First Generation status, that is, whether those students were the first in their families to attend college, we found very little difference between those who were First Generation and those who weren’t. The graduation rate for the First Generation Takers was 40.7% (n=37), and for the non-First Generation Takers, it was 40.9% (n=76). For the First Generation Non Takers, the graduation rate was 24.5% (n=13), while the non-First Generation Non-Takers had a graduation rate of 27.4% (n=23).

We also broke down the six year graduation rates by gender, using categories of Male and Female. We found that the class has a greater impact on female students. 47.6% (n=50) of our female Takers graduated, and 29.7% (n=11) of our female Non Takers graduated while only 36.6% (n=63) of our male Takers and 25% (n=25) of our male Non Takers did. The gap between the graduation rates of the female Takers and Non Takers (around 18%) is greater than the gap between the graduation rates of the male Takers and Non Takers (around 12%), thus suggesting that the class makes more of a difference when it comes to female students. It should also be noted here that while there were more male students placed on Academic Probation (272 male vs. 142 female), female students were more likely to take the class (74% of those women complied with the requirement to take it, while only 63% of the men did).

With regard to ethnicity, it is difficult to determine whom the class impacts most due to the small numbers of various ethnicities in our population. Of the 414 students in this cohort, 328 identified as white. While 41.9% (n=95) of these white Takers graduated, only 25.7% (n=26) of the white Non Takers did. The next most populous category, black/African American, included
21 Takers and 17 Non Takers. 23.8% (n=5) of these black/African American takers graduated, and 17.6% (n=3) of the black/African American Non Takers did. With regard to our 20 Hispanic/Latino students, 42.9% (n=6) of Takers graduated, with 33.3% (n=2) of the Non Takers graduating as well. The number of Non-Resident Alien students in our population was very small: three Takers and four Non Takers. Two of the three Takers graduated, giving us a 66.7% graduation rate, while only one of the four Non Takers did, leaving their graduation rate at 25%.

To get a closer look at how our class affects students of different ethnicities, we reviewed the retention rate two semesters after the probationary semester for the cohort entering in Fall 2013:

The overall retention two semesters post-probationary term in this cohort was 67.4% (n=217) for the Takers and 49.6% (n=112) for the Non Takers. Again, the small number of students makes comparing retention rates complicated, but the data suggests a slightly greater impact for particular students. African American students were retained at a rate of 65.4% (n=17) if they took the class and 44.4% (n=12) if they did not. Hispanic/Latino students seemed to be less impacted by the class. 68.2% (n=15) of the Hispanic/Latino Takers were retained, and 58.3% (n=7) of the Non Takers were retained. The group most impacted by the class is our international students. 74.3% (n=26) of those who took the class were retained, while only 43.3% (n=13) of those who did not take it were.
We also used our quantitative data to analyze the timing of when students fell into probation and when they took EDUC-X158. Not surprisingly, we found that students put on probation in their first semester at IUB have the best chance of correcting their situation and graduating. We also found, however, that when a student takes X158 matters. Most students who take the class do so during the expected semester (following their probationary semester), but those who take it later on are less likely to be retained and graduate. Compared to the 35% and 40% graduation rates that we saw for the cohorts described above, the “Later Takers,” as we called them, graduated only at a rate of about 20%.

In addition to analyzing graduation and retention rates, we conducted some qualitative research in which we surveyed 212 students who were enrolled in EDUC-X158 at the end of Spring 2015 about their motivations for attending college and their understanding of the purpose of a college education. Using an online survey tool, Qualtrics, students responded to a variety of open-ended questions about what they hoped to accomplish while at IU, what they hoped college would do for their lives and what, generally, the purpose of college education is. We then coded these responses, placing them into a number of categories and looking for correlations with higher GPAs and better academic outcomes. Our analysis focused on responses to three of these questions in particular:

Q17. What do you hope to accomplish while you are here at IUB?

Q18. What do you hope college will do for your life?

Q19. What is the general purpose of a college education?

Examining responses across all three questions in the aggregate does not offer conclusive suggestions about what motivations are most closely linked to better academic performance. What is most informative from this aggregate view is simply the full list of which, out of 25 possible types of motivational factors, were most popular and which barely registered for these students. The following categories were represented most frequently overall:

- Job/Career (67%, n=141)
- Degree (65%, n=138)
- Education/Learning (59%, n=126)
- Improve self/Life/Skills (58%, n=124)
- Prepare for Real Life/Adulthood/Successful Future (48%, n=102)

And equally, or perhaps even more illuminating, those appearing least frequently:

- Fame (0.04%, n=1)
- Benefit the Campus (0.04%, n=1)
- Parent/Family Expectations (0.04%, 1)
- Specific Career (2%, n=5)
- Having a Good Time (3%, n=8)
Some useful correlations between motivation and academic performance emerged, however, when we looked at our three questions individually. Question 17, “What do you hope to accomplish while at IUB?,” was the most predictive of outcomes. We suspect that this was because of its focus on the students’ immediate circumstances rather than an abstract and distant future. When we looked at students who did return to Good Standing, their most common response to this question was “Education/Learning.” For students remaining on Academic Probation, the most common response to this question was “Degree.” For those students who were dismissed and for those moving from Critical Probation to Good Standing (and thus experiencing the greatest amount of change), there was no single motivational factor present in a significant quantity generating a strong correlation.

We also examined combinations of responses to various questions. For those students who returned to Good Standing and who answered “Education/Learning” in response to Question 17, their responses to other questions tended to include another reference to “Education/Learning” as well as a reference to “Preparation for Real Life/Adulthood/Succesful Future.” For those students who stayed on Probation and who responded “Degree,” their responses to the other questions about the purpose of a college education tended to focus on “Job/Career.” To a certain extent, these findings confirm our suspicion that a strictly utilitarian view of education—that its purpose is simply to gain a credential and prepare students to do a job—tends to be associated with poorer performance. That the students who got back into Good Standing focused more on “Education/Learning” itself and preparation for real life might suggest that students who can describe their education with an emphasis on learning and broader preparation for life are better positioned to succeed academically. We did, however, suspect to see a stronger link between students’ understandings of the broad purposes of higher education and academic improvement and conversely between the utilitarian view and continued academic difficulty.

The results of our quantitative research were generally what we had anticipated. Preliminary research conducted by BAR in 2012 suggested the significant impact that EDUC-X158 has on retention rates. We had never conducted a study that followed students all the way through to graduation, however, so it was important to understand the impact of the class on graduation rates. The graduation rates for both the Takers and Non Takers were slightly lower than expected. The preliminary research showed that two semesters out, the cohort that we looked at (those starting in fall 2010) were retained at a rate of 50% for Takers and 33% for Non Takers. We should have assumed that the five or six year graduation rate would not be as high as these rates, and it was not.

Potential gaps in our findings with regard to our qualitative research include the lack of a “before” survey that would have helped to track changes in student opinions about the purposes of higher education over the course of the semester. While we had initially conceived of a project in which we would survey students at the beginning, middle and end of the semester, we were unable to execute that plan in the short amount of time that we had to design the survey instrument. Tracking changes over time may have given us more insight into how the curriculum of the class impacted students’ attitudes.
With regard to our quantitative data, the primary gaps that we see are simply related to the passage of time. Because we were able to track graduation rates only for a couple of the cohorts we studied, we don’t yet have a sense of whether the graduation rates have improved or worsened over time. In terms of comparing the Takers and Non Takers, there are a few complications. While the course is required, many students do not enroll. So in a sense, the students in the class are a self-selected group. And while we have separated our students into Takers and Non Takers of EDUC-X158, we have not included a consideration of other Student Academic Center courses that students were likely taking. Especially since we cannot always accommodate all who need to take the class, there are some students in the Non Taker group who nonetheless enrolled in another SAC class, likely EDUC-X150 or EDUC-X156. Further research could delve into characteristics of the Takers vs. the Non Takers and account for the impact of other SAC courses. Our current data set does allow us to examine the Takers vs. Non Takers in terms of GPA and other characteristics, so a closer look at this data should bring some of these issues to light.

Reflection about the Process
Our Learning Analytics project has introduced to us a number of new strategies, tools, and theories, and has been a remarkably beneficial experience.

We began by acquiring an IRB approval, which was an insightful process in itself. The IRB system has changed since we had used it previously, and it now requires mandatory self-study through an online video delivery system. While much of the IRB training content did not apply directly to our project, it was nevertheless helpful to think about the ethical and privacy issues surrounding student data.

Our qualitative data were acquired by use of the Qualtrics software program. Initially we had considered using a quick online survey tool such as SurveyMonkey to acquire student reflections on our new curriculum in EDUC-X158. However after meeting with the IUB Center for Survey Research, we were advised to use Qualtrics, a far more versatile and robust online survey tool. This was excellent advice. Although we had never used Qualtrics, and so had a learning curve, the tool was profoundly intuitive, sophisticated and useful. Our current familiarity with this program allows us to continue to use the very best technology going forward.

The use of Qualtrics, however, was not without problems. While we followed the advice from the Center for Survey Research, we nevertheless introduced some weaknesses into our qualitative results. The phrasing of our survey questions was not as clear to our responders as we thought. Further, we may have been too familiar with the project to code the results of the survey as objectively as possible. As a result, our qualitative data may be less insightful than would otherwise be possible. While we can see some patterns of student responses, we have to be careful with our claims based on this data alone. However, the process was excellent and has allowed us to learn from the strengths and weaknesses of the project. In the future we will be far more careful in our wording of survey questions as well as in coding.

Our quantitative data proved to be far more illuminative. We partnered with Bloomington Assessment and Research (BAR) in order to manage 13 semesters and more than 5900 individual
student records. BAR introduced us to the Tableau software, which allowed us to focus on particular groups within the total. We met with BAR on several occasions to refine our Tableau viewer, and worked with them to create new analytical tools including various charts and graphs. The result was highly informative and is the basis of most of our analysis.

We also learned that Tableau can be a bit unstable because of its sophistication; changes made to how some data is presented can unintentionally alter how other data is presented. The result is that we had to become experts on our data in order to see when a revision in the system changed various parts. One simply could not trust that the data was presented accurately, but had to become so familiar with it that one could tell when the tool was reporting erroneously. Having spent many hours with the data, we were able to do this increasing our confidence in the accuracy of the tool, the analyses derived from it, and the findings.

At the conclusion of our study, we determined that our particular data set had some limitations. First, since most students on Academic Probation take five years or more to graduate, only students who had matriculated in 2008 and 2009 were finished with their degrees. But one of our early questions regarded how our change in curriculum in the fall 2014 semester impacted student retention. While we were able to see the impact of our class on retention from 2008 and 2009, our data was really not able to address this particular question because the curriculum change was too current. Second, our qualitative examination of student motivation for higher education cannot be a one-semester study. To really examine the impact of student motivation on retention among probationary students, we would need to do a similar qualitative study for many semesters and be more precise with our survey questions.

The Learning Analytics grant proved incredibly valuable to us. It gave us motivation and confidence to learn new tools for understanding our students. It helped us form partnerships with various departments across campus, who in turn introduced us to new techniques and theory. We have continued to use these new concepts in other areas of our current programming. For example, we are applying for a new grant that will allow us to examine our Peer-Led Team Learning tutoring program, an examination that will utilize both Qualtrics and Tableau. In short, the Learning Analytics grant helped us take the first steps to using data to analyze the impact of our programming.

One final note: For those with our disciplinary backgrounds and, we suspect, others who would not typically conduct research and analysis with quantitative data, education and training in basic statistical terminology and practice would offer an enormous benefit. There is a steep learning curve that may drive away researchers in some fields that would be interested in exploring learning analytics research.

**Connections to the Field and Disseminating the Findings**

We will continue our recent transition to a greater focus in EDUC-X158 on envisioning and planning for ways for students to use their education to prepare themselves to do meaningful work in the world. Wherever possible, we will urge students away from an understanding that the goal of their time at IU is simply to obtain a degree. Our emphasis on helping students to
envision and prepare themselves for a career will focus not on the external rewards that a job provides and the necessity thereof, but on opportunities for students to engage with topics and questions that interest them and to continue to learn and grow after graduation.

Our research examines the success of our course for increasing retention and graduation rates for students on Academic Probation, while unearthing productive correlations between the course’s focus on varying types of motivation and purpose and academic performance. In doing so, our research joins a national conversation about undergraduate retention launched by Vincent Tinto’s 1975 landmark student integration model. While that model posits that students who are more socially integrated into their campus demonstrate an increased commitment to their institution and are more likely to graduate, in its more recent versions this model has added variables of motivation such as goal commitment (Demetriou and Schmitz-Sciborski 2011: 300-301).

In fact, since about 2000, motivational theories from an array of disciplines ranging from managerial sciences to educational and social psychology have been applied to the study and practice of undergraduate retention. Some of the most notable include attribution theory, expectancy and expectancy-value theory, goal setting theory, self-efficacy beliefs, academic self-concept, motivational orientations, and optimism (a focus of the positive psychology movement). Of this complex, our research project most closely aligns with the perspective taken by motivational orientations, or the interrelationship of intrinsic and extrinsic motivation (from Deci and Ryan 1985), as examined by Baker (2004) and Lin and McKeachie (1999). Much of this literature is usefully surveyed in Demetriou and Schmitz-Sciborski 2011.

Our research extends this literature in a number of useful directions for further exploration. Most prominently, though the framing of our hypothesis was guided in terms of motivational orientations, we broaden our analysis to theoretical (and temporal) levels both more macro and micro and attempt to connect them. At the macro level, our inquiry seeks to examine motivation, purpose, and belief regarding a college education in present terms (right now), for the individual students’ life in general, and for society in general. At the micro level, the motivational sources we identified were built from the actual array of student responses within the specific group we were questioning, rather than framing questions and results according to pre-determined typologies and language. This qualitative and ethnographic specificity allows us to probe subtle interrelationships between specific reasoning, the course itself, and academic performance that would be overlooked using other approaches.

Molly Burke plans to use the reporting and visualization tools developed in the course of this research to continue to collect longitudinal data surrounding retention and graduation rates for students on Academic Probation taking the UD-required EDUC-X158 course that she coordinates. As a unit, the Student Academic Center will apply for the 2015 grant cycle of the Learning Analytics Fellows Program to build on the methods from this pilot and examine the impact of two of our other high-enrollment courses, both coordinated by Anthony Guest-Scott: EDUC-X150: “Becoming the Best Student” and EDUC-X159: You@IU. Both courses offer opportunities to extend our analysis to other curricula addressing student academic support and to expand our demographic purview beyond students on Academic Probation.
Additionally, we plan to share the results of our research across the IU Bloomington campus as well as more broadly with the various facets of the higher education research community through conference presentations and journal publications. We are particularly interested in connecting with others involved in learning analytics research through such channels as the Society for Learning Analytics Research, their Learning Analytics and Knowledge Conference, and their official publication, the *Journal of Learning Analytics*. We also hope to enhance engagement with these issues and methods in the undergraduate retention and academic support communities through presentations at such conferences as The National Symposium on Student Retention, NACADA (National Academic Advising Association), and various conferences sponsored by the University of South Carolina’s National Resource Center for First Year Experience and Students in Transition.

**Special Thanks:**
We would like to thank the Center for Innovative Teaching and Learning for the opportunity to be included in the Learning Analytics Fellows program. We are also grateful to the Center for Survey Research for consultation regarding our qualitative research.

We also extend a hearty thank you to Bloomington Assessment & Research for the incredible work that they did in extracting, organizing and presenting our quantitative data (and guiding us through the use of Tableau!). Particular thanks go to Mike Sauer, Dawit Gelan and Stefano Fiorini for creating a brilliant and extremely useful tool for us in Tableau!

**References:**


An Inquiry into Student Purpose and Motivation as Catalysts for Retention

The Student Academic Center, OVPUE

Molly Burke, Ph.D.
Anthony Guest-Scott, Ph.D.
Andrew M. Koke, Ph.D.

Population Studied: UD students on Academic Probation, 2008-2013 cohorts
Takers: Students who took the required EDUC-X158 course
Non Takers: Students who did not take the required EDUC-X158 course