National Institute for
Learning Outcomes Assessment
Making Learning Outcomes Usable & Transparent

Assessment in Practice

Relationship between General Education Course Sequence and Student Success

Resche Hines, Assistant Vice President for Institutional Research and Effectiveness
Angela Henderson, Director of Institutional Research and Effectiveness
Stetson University

A primary focus of Institutional Research and Effectiveness is to understand how to disseminate data in more meaningful ways. At institutions grounded in liberal learning there is always a need to understand the relationship and impact of general education assessment on student success. There is a great deal of scholarly inquiry that speaks to the impact of student learning and assessment, as well as thousands of studies that seek to understand how institutions increase Fall to Fall retention and graduation outcomes. The goal of the current study was to provide a connection between course sequencing of general education courses, impacts on student learning outcomes, and to determine if there were any connections to increases in Fall to Fall retention. The study was not designed to determine causation between course sequencing and retention increases, but to understand empirically if relationships between the two aspects could be determined and used to make curricular progression more intentional to support increases in retention and graduation outcomes. The study highlights the need to understand connections between student learning, curricular planning, and student outcomes to close the assessment loop and support enhance of student learning assessment and learning outcomes.

To better illuminate previously difficult relationships, institutional research has recognized the need to find more scalable, user-friendly solutions that empower university faculty and staff to conduct their own data-driven investigations and engage students and alumni with the most up-to-date information. The advancement of statistical methods and enhancement in data dissemination through modern Business Intelligence software allows for better alignment of these once disparate goals. Seeking to leverage the general education course sequence data into analytics, Stetson University's Institutional Research (IR) office developed interactive reporting solutions to examine first-to-second year student retention in relation to general education course sequencing. With 80% of the retention loss for students at the institution happening in the first two terms the primary impetus of this project was to determine the impact of the term in which students enroll in specific general education courses on Fall to Fall retention and graduation, especially for high enrollment courses taken early in a student's academic career.

As visualization is a key component of successful analytics, IR elected to utilize BI software (Power BI) to illustrate relevant data patterns and trends. A "General Education Student Success" report was constructed in Power BI to illustrate retention and graduation patterns by course sequence. This allows users to quickly understand the role course timing plays in overall student success. By making the general education course sequence outcome data easy to use and access, administrators are able to explore factors which impact retention and graduation resulting

in the development of “intentional educational pathways within and across institutions,” a key principle of Association of American Colleges & Universities (AAC&U) General Education Maps and Markers (GEMS) (https://www.aacu.org/gems).

There are many different reasons to suspect that attempt or completion of general education courses may be associated with different probabilities of student success. Completion of a number of general education courses represents a level of commitment on the part of the student. That is, completion of these requirements brings the student closer to degree attainment. Goal commitment has been theorized to play an important role in student retention in Tinto’s (1975) landmark theory of integration.

General education courses also interact with an individual student’s perceptions of ability or inability to achieve in certain academic subjects. Marsh and Shavelson (1985) proposed a model for this construct, called academic self-concept. Due to the nature of general education, students may experience negative outcomes early in their academic careers in subjects outside of their perceived competencies. If this occurs, and the student attributes this deficiency to some aspect of the course itself, their ability to become academically integrated may be impaired (Bean & Eaton 2001). According to Tinto’s model of student persistence, this is a cause for attrition.

To answer the primary question of how course timing impacts student success, we used first-year course enrollment, retention, and graduation data from First Time in College (FTIC) students who enrolled in fall terms between 2011 and 2015. Course enrollment and success data were extracted from the student information system to create a course level data file, with a row for each general education course taken for each student.

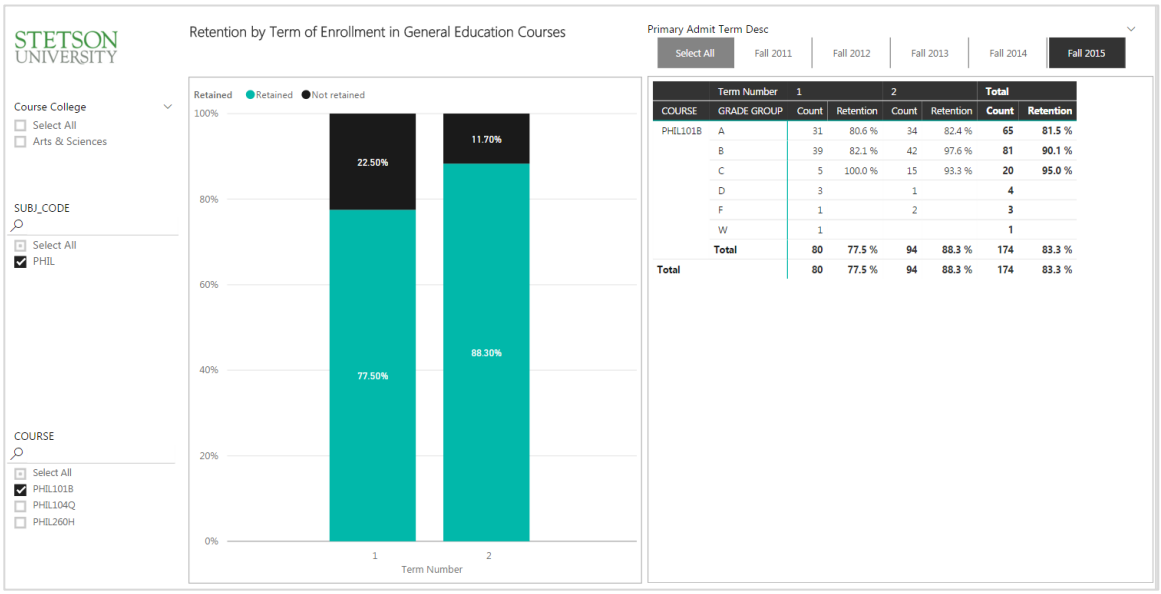

Figure 1. Impact of timing of enrollment in Philosophy 101 on retention.

Figure 1 displays the impact of term sequence of enrollment in Philosophy 101 (Introduction to Philosophy) on retention of FTIC students who entered the institution in Fall 2015. Philosophy 101 is an important course to assess, as nearly 20% of the FTIC class took the course. The first column shows that of the 80 students who took the course during their first term, 77.5% were retained. Students who took the course during their second term (the second column) were retained at a higher percentage, with 88.3% retained. This finding highlights for faculty in the Philosophy department that there could be a relationship between student success and FTIC

students enrolling in this course their first term.

Also included in the view for additional context is the grade distribution of students who completed the course. Although there was nearly a 10% difference in retention of students who took Philosophy 101 in the fall vs spring terms, for those students who took the course in their first term and were not retained, there was not a relationship between poor grades and retention. Many of the 22.5% of the students not retained in the Fall term received good grades in the course in their first term.

The impact of term sequence of the same course (Philosophy 101) on graduation (Figure 2) supports the idea that students who take the course in their second term have better outcomes, with 76.8% graduating, compared to 57.9% of students taking the course within the first term.

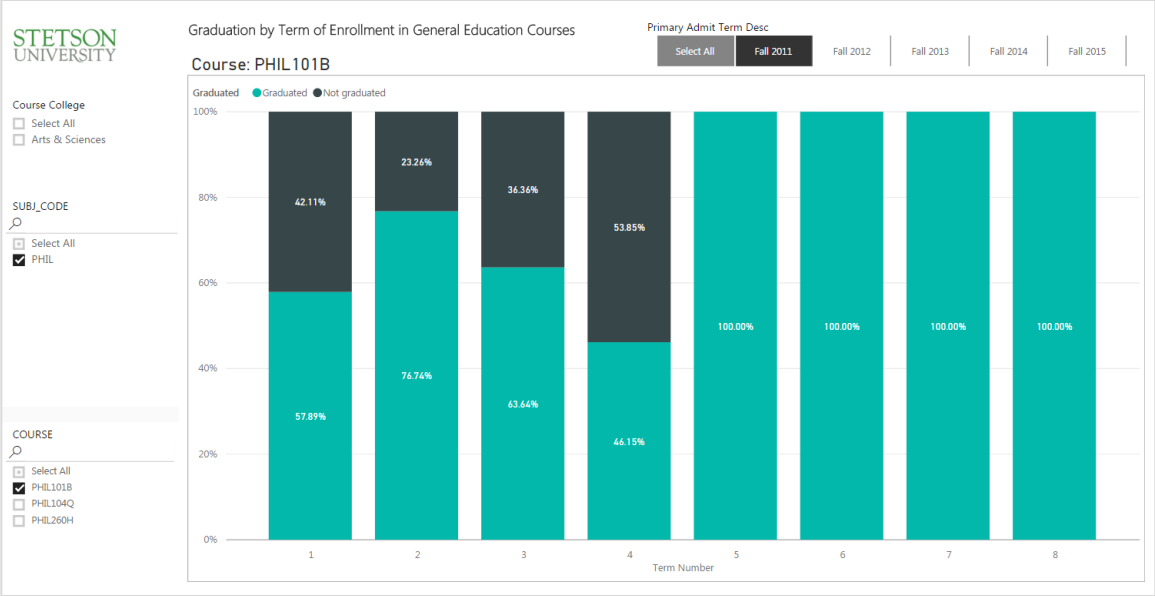

Figure 2. Impact of timing of enrollment in Philosophy 101 on graduation.

To further understand the interaction of general education courses taken within the first term of enrollment on retention, a hierarchical visual was created to allow users to drill down to see which course combinations were most successful. Users can examine retention by number of general education courses taken in the first term and the combination of courses. As shown in Figure 3, students taking both Biology 141 and Philosophy 101 in the first term retain at a lower rate (54.5%) than those taking Biology 141 and Political Science 101 (86.7%).

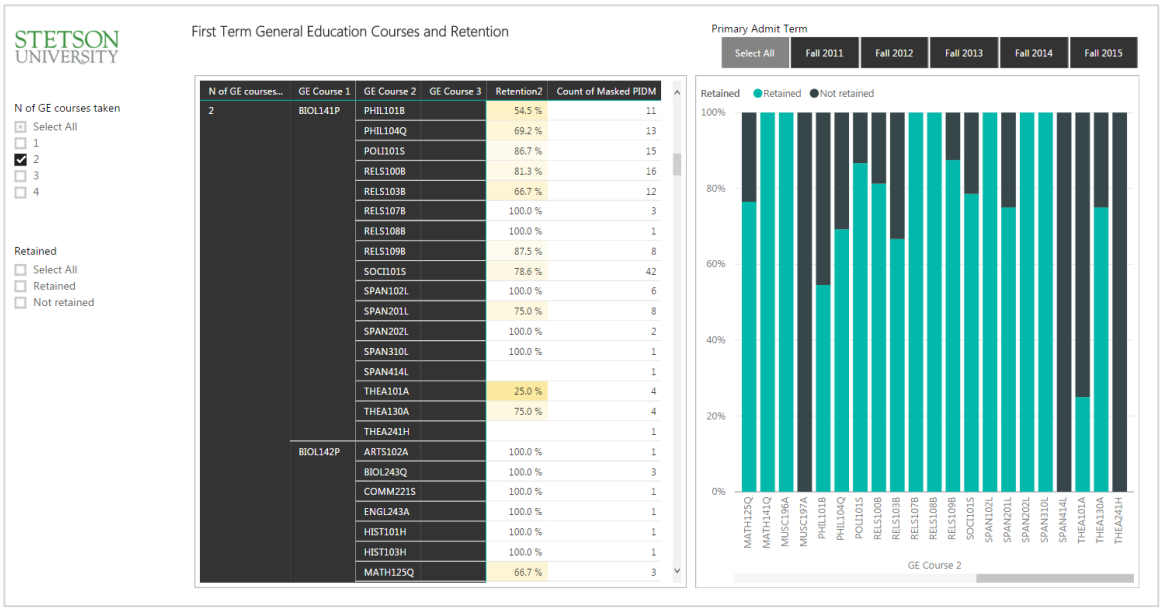

Figure 3. Impact of course interactions in the first term on retention.

Through the use of visualization, patterns to improve the likelihood of student success are easy to identify. This information can help advisors guide students to create first term schedules which maximize the potential for success. Students and advisors now have the ability to align courses with aligned learning outcomes. Data are now accessible and can be leveraged to develop the best learning sequence for the students.

Identification of patterns also helps identify broader concerns within the configuration of the curriculum. The courses often negatively associated with retention included those tasked with developing students' quantitative reasoning ability and their knowledge of physical science and history. As such, enrollment in these courses during the first term may hinder successful student outcomes. This becomes a critical piece of information to be incorporated into the first year advising process.

Overall, successful completion of a general education course in the first year is linked with positive student outcomes. Retention rates were significantly higher for students who successfully completed general education courses at any point in their first year. These effects did not seem to be cumulative; students who passed one of these courses in the second semester obtained a 12.4-to-23.1 percent increase in retention, while students who passed one in both the first and second semesters obtained only a 6.9-to-14.8 percent increase in retention.

Students tend to succeed not just when they complete degree requirements, but when their environment is one that allows them to succeed. The transition into college is a drastic one in many cases. Some courses seem to ease this transition by equipping students with the awareness and knowledge to understand some of the changes that take place in a university environment. Such courses may give positive benefits to the students who take them. For example, Fall 2015 students taking Political Science 101 in the first term retained at a much higher rate (85.5%) than those taking the same course in their second term (70.8%). Incorporating such first term courses found to positively impact retention into a curriculum pathway may not only ease the transition into the university environment but also promote student success goals.

This study highlighted some of the general education courses linked to positive student success outcomes at a small, private liberal arts university. While the study is limited to this type of institution, the examples provided support the need for new ways of thinking about and exploring general education courses and curriculum. The study highlights the need to understand connections between student learning, curricular planning, and student outcomes to close the assessment loop and support enhance of student learning assessment and learning outcomes. General education courses may present barriers to the academic integration of some students, which leads to negative success outcomes. Visualizing general education data helps campus constituents understand the impact of general education courses on student success.

References

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