Pharmacy Adaptive Learning

The Challenge:
The University of Texas Doctor of Pharmacy program is unusual in comparison with traditional doctoral programs in that students can apply to the program with as little as 60 hours of undergraduate credit addressing much targeted prerequisite content. Realistically, applicants come with a broad range of backgrounds – many with undergraduate degrees and others with the minimum requirements acquired through pre-pharmacy programs. Such diversity of preparation leads to a noticeable variance in the entry-level knowledge of incoming students as they engage in demanding first semester courses in biochemistry, anatomy, and biopharmaceutics, among others. Instructors of these "P1" courses have long lamented the seemingly inevitable need to spend the first month of their classes in remediation before moving forward with a consistently prepared cohort of students.

The Solution:
This project prepared adaptive reviews in four different content areas – biology, chemistry, mathematics, and information literacy – in an attempt to narrow the variance in the entry level knowledge of the incoming cohort. The reviews were deployed within Brightspace’s LeaP adaptive learning engine, making it possible for students to confirm that they are well prepared for the coming work or to engage with content targeted to specifically identified areas of deficiency. LeaP was integrated with our Canvas learning management system via LTI so that students would experience the reviews within the same environment that would host their coursework once matriculating into their program officially.

Learning Impact Outcomes:
A comprehensive program of research was put in place to evaluate the effectiveness of the LeaP tool, learning gains, and the program overall. In addition to learning gains, the potential influence of a range of non-cognitive factors – among them mindset and math anxiety – were examined as well. Because this was a pilot offered to incoming students before they were officially enrolled at the university, participation in the program was voluntary. Analysis found statistically significant learning gains in those who engaged with content reviews in the areas of chemistry, biology, and information literacy. Mindset had no significant impact on learning gains. And, perhaps not surprisingly, those with math anxiety were less likely to engage in the mathematics review.

Return on Investment:
Improving the preparation of students entering this rigorous, cohort-based doctoral program is expected to improve student persistence, leading to the reduction or elimination of student attrition and the significant associated costs. In addition, narrowing the variance in entry level knowledge across the cohort will lead to a more productive first semester learning experience, reducing what has been a source of student frustration and also leading to better preparation moving forward, again increasing the likelihood of student persistence.