Hawkes Learning Partners with University of Louisville on an Emporium Approach to Intervention Courses in Algebra

Challenge

The University of Louisville (UofL) in Louisville, Kentucky, needed courses for its students who were not yet college-ready in mathematics. Not enough students were succeeding in their entry-level math courses, and not all students needed to take college algebra based on their majors and career goals. Faculty and staff wanted to offer classes that would give students the support and resources they needed without slowing down their paths to graduation.

Solution

Beginning in fall 2013, the UofL replaced all traditional sections of Intermediate Algebra with two new emporium-style intervention courses in algebra (which are taught through REACH, the academic support unit of the University). These new courses are GEN 103: Special Topics in College Mathematics for Non-STEM Majors and GEN 104: Special Topics for STEM Majors. In these courses, instead of whole-class lecturing, students meet in a computer-lab setting and work through their lessons with the assistance of Hawkes Learning courseware, peer tutors, and a course instructor (who serves as a facilitator/guide).

The UofL chose Hawkes Learning's *Introductory and Intermediate Algebra* course materials after piloting the materials in summer 2016 for several reasons. Hawkes provides affordable, high-quality materials. Students have lifetime access to the course materials, so they can always review lesson content in subsequent math courses. The student courseware has an easy-to-use interface so students spend less time figuring out how to use the system and more time learning math. The content itself is flexible and comprehensive enough to be taught in both GEN 103 and 104.

The courseware is designed for self-directed learning, ideal for emporium-style courses. It includes an eBook, examples, concepts, and definitions to introduce the lesson content to students. The Practice mode offers questions with learning aids, including a step-by-step Tutor feature that breaks the question down into manageable pieces for students to learn, as well as the Explain Error feature, which utilizes powerful artificial intelligence to identify common math errors and provide specific feedback for students when they make those mistakes. Students then demonstrate they have mastered the lesson in the Certify mode, which does not include learning aids and asks students to answer a set percentage of questions correctly to receive credit. This mastery-based approach correlates to higher test results and deeper knowledge of the material.

Learning Impact Outcomes

Since Hawkes was implemented in this new course structure in the summer of 2016, student success has increased: in fall 2016, 72.5% of students passed, compared to 54.2% of students who passed using another system in fall 2015 and 51.5% in fall 2014. Approximately 70% of students who pass GEN 103 and GEN 104 go on to earn a passing grade in their first MATH course in the Mathematics Department. More than half earn a C or better in this entry-level MATH course.

Return on Investment

Students enjoy using Hawkes and overall feel the courseware is beneficial to their learning. One student said, "I really enjoy how the program as a whole is set up. I like how the learn shows multiple kinds of examples, the practice allows you to work on problems and also recieve [sic] assistance before the quiz if you need it, and the certify allows you a few missed questions and also allows retakes." Another UofL student wrote, "Honestly, this is probably the best website that I've ever used…"

Students receive reliable access to their Hawkes online platform; in the academic year 2015–2016, Hawkes Learning's uptime was 99.97%. Students feel confident in their knowledge gained from the lesson content and prepared for subsequent college courses. The courseware provides individualized learning for each student so they can learn at their own pace and receive adaptive, customized instruction.