Personalized and Adaptive Learning: Successful Implementation Models

Technological advancements in learning applications plus the recognized value-add of individualized instruction is providing instructors with exciting new ways to address one of higher education’s most pressing issues: the low success rates and high cost of developmental education.

By combining technology, assessment, and content, personalized and adaptive learning models enable individualized instruction to scale at the classroom level, providing instructors with new ways to accelerate the learning process and engage students via the continuous process of computer-guided learning and assessment.

Although the terms are often used interchangeably, adaptive learning is not the same as personalized learning. Personalized learning substantially moves away from the one-size-fits-all approach to learning by “[drawing from] observation to inform tailored student educational interventions designed to increase the likelihood of learner success.” This can be achieved via a variety of means, from very basic (e.g., extra reading for high-achieving students) to more sophisticated (e.g., highly-interactive study plans). Adaptive learning relies on a complex set of computer analytics to take a “sophisticated, data-driven, and in some cases, nonlinear approach to instruction and remediation, adjusting to a learner’s interactions and demonstrated performance level and subsequently anticipating what types of content and resources learners need at a specific point in time to make progress.”

The following MyMathLab capabilities leverage both of these models and have been documented to increase student learning and decrease institutional costs.

MyMathLab Study Plan

A recent analysis of MyMathLab Study Plan engagement found that students who are more engaged in MyMathLab/MathXL Study Plans obtain higher scores. The results of the study suggest that the Study Plan is especially beneficial for students with homework and test mastery lower than 70 percent.

A similar study from Northeastern Illinois University supports these findings. In this study, for each module, students completed MyMathLab homework and then had unlimited attempts to complete a MyMathLab practice test. Students were required to score at least 70 percent on the practice test in order to progress to the Study Plan, where they could complete questions based on what they missed in the practice test until they achieved mastery, as indicated by a score of 100 percent. Students who took the
practice test and then remediated via the Study Plan performed an average of 12.5 percentage points higher on the module exam than those who proceeded from the homework directly to the exam.

MyMathLab Personalized Homework
MyMathLab’s Personalized Homework feature is another way to integrate personalization into a course. Once the feature is attached to a particular assessment, it analyzes the student’s results and provides personalized assignments on precisely those topics the student has yet to demonstrably master. For example, Liberty University students are required to complete personalized homework assignments if they score less than 70 percent on MyMathLab exams. Once a student has completed the assignment with at least 70 percent mastery, he or she may retake the exam for a higher score. Wayne State University employs personalized homework at the quiz level and requires students to complete personalized homework in order to earn a second quiz attempt. Both strategies promote filling in knowledge gaps prior to reattempting assessments and result in quantifiable performance increases on second attempts.

MyMathLab Adaptive Study Plan, Powered by Knewton
By making highly targeted, high-quality instruction scalable, adaptive learning enables instructors to provide a higher-quality learning experience (as measured by student engagement, persistence, and outcomes) at reduced cost to both students and institutions. Instructors seeking to implement adaptive learning turn to—and turn on—MyMathLab’s Adaptive Study Plan, powered by Knewton. Once activated, it assesses students’ work continuously and in real time, using data and analytics to target strengths and weaknesses at the concept level and updating remediation recommendations throughout the duration of the course.

At Reading Area Community College, MyMathLab’s Adaptive Study Plan, powered by Knewton, is assigned as a prerequisite to tests. The study plan guides students through concepts they’ve yet to master and alerts them when they are prepared to take the next test. Data indicate a significant rise in student outcomes since the plan’s implementation: exam scores have increased from 66.4 percent in fall 2012 to 78.0 percent in fall 2013. (See page 20.)

At Arizona State University, MyMathLab’s Adaptive Study Plan, powered by Knewton, is employed in a flipped classroom redesigned in an Emporium model—in lieu of lectures, work takes place on MyMathLab in a computer lab where instructors provide one-on-one and small group tutoring. Students either test out of a lesson by achieving at least 85 percent on a diagnostic or complete a study plan that has been adapted according to work done in MyMathLab.

Positioning Your Pilot for Success
In order for these innovative features to deliver truly meaningful improvements in learning outcomes, content, assessment, and analytics must be integrated in a thoughtful manner. Strategically implemented pilot initiatives can provide critical data and enable support for larger-scale investments. Consider the following questions before setting up your pilot:

• What are your institution’s core pedagogical values and do they align with the pedagogical values of your technology provider?
• What kinds of assessment and evaluation will map to those pedagogical values (e.g., competency testing, lab work)?
• How far is your institution willing to go in reimagining instructional roles and the function of class time in pursuit of its objectives?
• What delivery methods offer the best opportunity for deployment and evaluation (e.g., classroom, online, or hybrid; class-paced or self-paced)?
• How will success be measured?
• What professional development will be required to educate key contributors and facilitate collaboration?

The transformative potential for personalized and adaptive learning both in developmental math and across the spectrum of higher education is powerful. More studies are in process and the increased amount of data will help key players further deliver optimum ways to achieve greater student success. Meanwhile, buy-in at the top levels is emerging—in a recent poll of college and university presidents, 66 percent of the survey’s respondents reported that they believe adaptive learning can make a “positive impact on higher education.”

If you are using one of MyMathLab’s targeted learning features, consider helping Pearson learn more about what worked for your students. To share your results, contact Traci Simons at traci.simons@pearson.com.