Personalized Learning

Scenario

Like many other freshmen, Kelly enters college with poor math skills and is told she will need to take a remedial math course in her first semester. This is especially concerning because the bachelor's degree in sociology that she hopes to earn requires two math courses *after* the remedial course, as well as one in statistics. Her advisor tells her about a personalized learning pilot program in the math department that uses adaptive learning software and newer teaching models. She signs up immediately.

The personalized learning system factors in her SAT scores and the results of her placement test and presents the first unit. The digital textbook for the course is a central part of the system, and it communicates with the LMS to provide the learning content, links to supplemental resources, assessments, and other tools. As Kelly works through the exercises, the system routinely quizzes her to gauge her progress and understanding of the concepts. She does much of this work outside class time, which is spent with TAs leading small groups of students who are at similar stages in the syllabus. With the information available from the personalized learning tools, the TAs provide focused help on the aspects students find most difficult.

Kelly discovers that she isn't bad at math—she simply didn't pay much attention to it in high school. She moves through the material at her own pace and covers a lot of ground in the first six weeks. When she begins to struggle with the advanced topics, the system slows the pace of the exercises and directs Kelly to online resources that present the content in video format. Combined with the help of her small group and her TA, the videos help Kelly understand the concepts and complete the exercises. Along the way, Kelly has options for how she completes assignments, allowing her to decide how to acquire and demonstrate the mastery needed to move to the next level. By the end of the term, Kelly has built a solid foundation for the math courses she will take. Because the personalized learning system is integrated with the advising services, Kelly and her sociology advisor discuss the options for meeting her math requirements and how those will fit in with the rest of her courses.

1 What is it?

Personalized learning is intended to provide a unique, highly focused learning path for each student. If a student receives individual attention from an instructor, the lessons, feedback, and assessments will necessarily be tailored to that student's strengths and weaknesses. Such attention does not scale in traditional educational environments, and proponents of personalized learning maintain that IT systems and tools, along with rich data sets and analytics programs, **can provide individualized learning pathways to large numbers of students**. Discussion in higher education has yet to settle on the relationship between—or even the precise definitions of—personalized learning and concepts including differentiated instruction, adaptive learning, and individualized learning. Regardless, the goal is to improve learning by ensuring that students receive the particular kinds of learning experiences and support they need, when they need those resources, and in a form well suited to each learner.

2 How does it work?

Personalized learning aims to build a "profile" of each student's strengths, weaknesses, and pace of learning—similar to how learning analytics monitors student performance, looking for patterns likely to predict how students will fare—and customize educational experiences and support accordingly. Some contend that dividing students into several predetermined, fixed learning paths according to ability constitutes a simple form of personalized learning. More sophisticated programs **tailor learning at the individual level and make continual adjustments to learning paths** based on student performance and data from digital courseware. One finding from early pilots is that student choice and agency can play an important role in personalized learning. Because personalized learning meters the pace of learning, it can be a natural complement to competency-based education and programs that use prior-learning assessment. In addition, personalized learning can show instructors how individual students are doing, allowing them to focus their teaching in the most effective ways, and it can include planning advising services to help students navigate program and degree requirements. Key to personalized learning is integrating the

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tools and systems with appropriate curriculum design, ensuring that the goals and the means of pursuing them are considered in tandem.

3 Who's doing it?

From community colleges to research universities, **many institutions are piloting various approaches to personalized learning**. To address low passing rates in remedial math, Austin Community College implemented an adaptive learning tool that matches content to student progress; early results indicate significant decreases in attrition. Penn State World Campus deployed personalized learning software that uses predictive analytics to target student needs and help faculty provide effective support. To address the problem of faculty trying to "teach to the middle" level of student ability, Essex County College uses adaptive learning technology in a lab-style classroom for remedial math courses. The University of Central Florida instituted a personalized model to increase student success and retention. The university selected an adaptive learning program that customizes content for each student, factoring in major field of study, preferences, and ongoing performance to determine when to accelerate the student's progress or recommend remediation. Additionally, many publishers, content providers, third-party assessment systems, and learning management systems are adding personalized learning tools and affordances to their existing systems.

4 Why is it significant?

Personalized learning has the potential to **extend the benefits of individualized learning pathways** to large numbers of students. Analytics combines large stores of data with statistical modeling to monitor student progress and predict likelihood of success. Digital courseware connects with learning systems to enable adaptive learning that conforms to individual learners. Tying these systems to planning and advising services allows further targeting of learning support. When these various systems work together, in combination with appropriate pedagogical design, large numbers of students can receive the resources and guidance that each one needs to have the best opportunity to succeed.

5 What are the downsides?

Because personalized learning models are new and evolving quickly, **a lack of independent research data on outcomes currently leaves many questions unanswered**. What, for example, happens to group dynamics or to social and collaborative dimensions? Personalized learning appears to be more effective in courses such as math, particularly at introductory or remedial levels, but what might be its role in, for instance, upper-level courses in English or history? Do personalized learning systems present privacy concerns, given that various systems might be exchanging student data? Some have questioned whether personalized systems might reduce metacognition and student agency, encouraging students to become dependent on the system rather than learning how to make adjustments to optimize their learning. Personalized learning alters the role of instructors, and such shifts will require training and support and will likely be difficult for some faculty, particularly those who see personalized learning as a threat to their autonomy. The costs to implement personalized learning can be significant, both for the technology tools and systems and for training and faculty development.

6 Where is it going?

As various models of personalized learning are piloted and evaluated, a growing body of knowledge and data will be available for colleges and universities to determine how and where such approaches make sense for each institution. Early course-level efforts are likely to grow to departmental and institutional programs. The emergence of new tools and changes in the expectations of students and faculty will require a rethinking of curriculum design. Personalized learning will increasingly act as a **system of discrete tools whose value exceeds the sum of the parts**. Sophisticated models will combine more data, from more sources, with increasingly powerful and interconnected systems, possibly creating a learning ecosystem that offers additional incentive for pedagogical models such as flipped classrooms. Students, faculty, advising staff, and other users of personalized learning models will become increasingly familiar and comfortable with such systems and might play a greater role in their development.

7 What are the implications for teaching and learning?

Most students are either ahead of or behind the average learning rate. Because personalized learning relieves instructors of some of the effort to tailor content to each student rather than teaching to the average, faculty time can be spent more effectively and efficiently on instruction. **Instructors could pay closer attention to individual students**, given the keener insight they would have into each student's performance and needs. New ways of structuring collaborations and social learning experiences for similarly abled learners might emerge, with smarter capacity to provide feedback to groups to empower them collectively to greater levels of learning.