Case Study

Oregon State University (OSU)

Oregon State University

everylearner everywhere

Association of Public & Land-grant Universities

Contents

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About the Contributors

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About the Supporting Organizations

Every Learner Everywhere is a network of twelve partner organizations with expertise in evaluating, implementing, scaling, and measuring the efficacy of education technologies, curriculum and course design strategies, teaching practices, and support services that personalize instruction for students in blended and online learning environments. Our mission is to help institutions use new technology to innovate teaching and learning, with the ultimate goal of improving learning outcomes for Black, Latinx, and Indigenous students, poverty-affected students, and first-generation students. Our collaborative work aims to advance equity in higher education centers on the transformation of postsecondary teaching and learning. We build capacity in colleges and universities to improve student outcomes with digital learning through direct technical assistance, timely resources and toolkits, and ongoing analysis of institution practices and market trends. For more information about Every Learner Everywhere and its collaborative approach to equitize higher education through digital learning, visit www.everylearnereverywhere.org.

Association of Public and Land-grant Universities (APLU) is a research, policy, and advocacy organization dedicated to strengthening and advancing the work of public universities in the U.S., Canada, and Mexico. With a membership of 244 public research universities, land-grant institutions, state university systems, and affiliated organizations, APLU's agenda is built on the three pillars of increasing degree completion and academic success, advancing scientific research, and expanding engagement. Annually, member campuses enroll 5 million undergraduates and 1.3 million graduate students, award 1.3 million degrees, employ 1.3 million faculty and staff, and conduct $49.2 billion in university-based research.

Introduction

In line with a culture of innovation, and as part of its Undergraduate Student Success Initiative (USSI), Oregon State University (OSU) elected to implement adaptive courseware in “gateway” courses, that are foundational to student progress at the university. These courses tend to have high-enrollment and significant academic difficulty and attrition. They pose particular challenges for Black, Latinx, and Indigenous students, poverty-impacted students, and first-generation students. OSU aims to scale adaptive courseware implementation to over 25% of their undergraduate “gateway” general education curriculum.

Case Study: Oregon State University (OSU)

At Oregon State University, stakeholder engagement and close collaboration are shown to be important to the adaptive courseware implementation process.

Key Takeways

- **Engaging stakeholders forges an ecosystem that optimizes adaptive learning.**
- **The College Algebra course redesign increased overall pass rates from 65% to 86% in face-to-face classes and from 36% to 77% in online classes.**
- **The increased pass rate for College Algebra resulted in a savings of $1.3 million in tuition and living costs for students.**

About the School and Grant

Oregon State University (OSU) is a 4-year public research university located in Corvallis, Oregon. As the largest university in its state, OSU serves over 26,00 undergraduate students. The student population at Oregon State University is 62% white, 11% Latinx, 8% Asian, 7% two or more races, 1% Black, 0.5% American Indian or Alaska Native, and 0.3% Native Hawaiian or Other Pacific Islanders. Pell grants were distributed to 23% of the student population in 2018.

Oregon State University was awarded the Accelerating Adoption of Adaptive Courseware Grant in 2016 to scale the use of adaptive and other innovative technologies in order to improve student success in general education courses. The grant is administered by the Personalized Learning Consortium at the Association of Public and Land-grant Universities (APLU) and is generously funded by the Bill & Melinda Gates Foundation.

Goals of the Project

Beginning in 2015, OSU developed two primary USSI efforts geared toward raising retention rates and eliminating achievement gaps. These two initiatives include fundraising and a succession of academic interventions that support student success. OSU boasts a first-year retention rate of 83.8%. The goal under the USSI is to reach a rate of 90%. Likewise, OSU intends to increase the six-year graduation rate from 63.1% to 70% for all undergraduates and reduce achievement gaps for underserved, first-generation, and Pell-eligible students.

Approach

Implementing adaptive courseware in large-enrollment courses with multiple instructors was accomplished with careful course coordination. Faculty and instructors partnered with Ecampus, OSU's nationally-ranked unit for online education. Together, they developed campus-based adaptive learning classes that encompassed similarly robust elements of online classes to what Ecampus offered. OSU sustains a community of practice wherein stakeholders from across campus communicate and collaborate. With each stakeholder optimally engaged, the institution forges a learning ecosystem that supports adaptive learning.

Faculty members view implementation as an iterative process that may require multiple course redesigns. Data collection following these redesigns allows for further amendments that align with student needs, such as the ability to see their progress on learning goals and the availability of instant, useful feedback on tests and assignments. OSU faculty teams work together to develop a master course in all modalities that individual instructors later have the freedom to personalize.

Implementation strategy for scaling adaptive courseware started in Spring 2017 with two foundational gateway courses: College Algebra and General Psychology. Senior Mathematics Instructor, Sara Clark, led the way with her transformation of the developmental math program.

Before 2015, pre-college algebra courses had failure and withdrawal rates between 40-45%. As developmental math classes do not offer credits toward graduation, taking them can be costly for students. A cycle of failure or withdrawal in course prerequisites leads many students to desert their goals for attaining higher education. Because Black and Latinx students tend to be overrepresented in developmental courses at OSU, the high failure and withdrawal rates are an equity challenge as well as a student progression challenge.

In the fall of 2015, Clark upended the traditional model of lecture-style math courses by implementing Assessment and Learning in Knowledge Spaces (ALEKS) in developmental math. ALEKS tests students on the knowledge they already have and provides modules that customize and adapt learning experiences to the results, making each student's path unique. Failure and withdrawal rates fell to 14% with the first cohort of students using ALEKS. With iterative changes to the original model, the rate has dropped to 13% on average and has been as low as 9%.

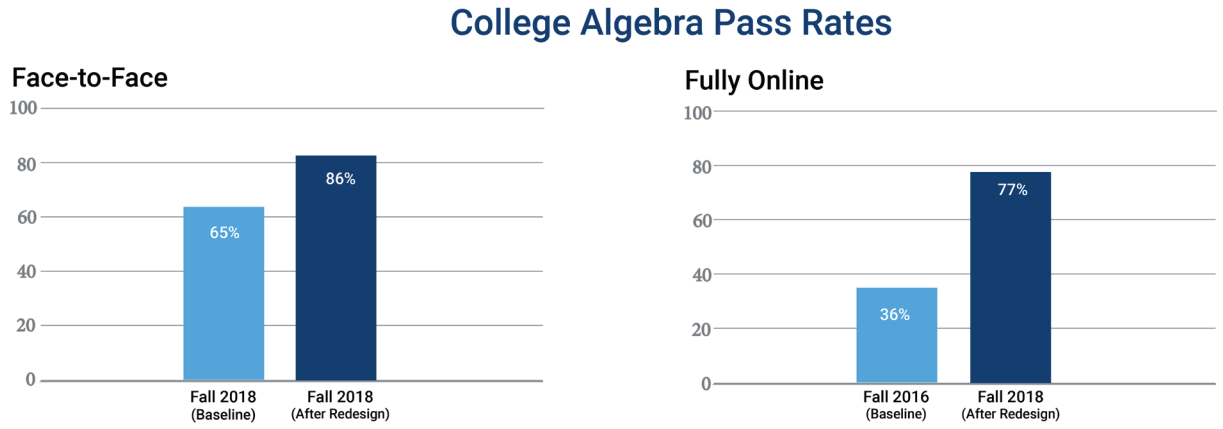
The College Algebra course redesign included input from seven math instructors, an instructional designer, and Center for Teaching and Learning faculty. It started with a day-long workshop, in which faculty discussed best practices, built trust, and learned from instructors across campus who had improved student learning through teaching innovations. The course redesign team spent four months

developing the curriculum and learning how to use ALEKS. A one-term pilot of the revised course in a handful of sections allowed the team to fine-tune before scaling revisions to all sections of the course.

Following its redesign, College Algebra became a highly coordinated course. Instructors and course designers engage in trouble shooting and continuous improvement in weekly meetings. They also developed a digital folder to record and share their active learning activities.

Relevant Findings

In the first year of the redesigned College Algebra course, OSU saw an increase of 547 students passing the course. This represented double-digit growth of the pass rate. Before the course redesign, the face-to-face sections of College Algebra had a pass rate of 65%. By Fall 2018, following the implementation of adaptive learning, the pass rate had risen to 86%. In the same course offered fully online, the baseline pass rate was 36%. After the adaptive redesign, this course saw pass rates soar to 77%. As a testament to the efficacy of adaptive courseware, withdrawal rates for courses using adaptive learning have diminished by half.



Over the three years of teaching the revised version of College Algebra, Sara Clark has seen the pass rate settle into an average of 79%. One of the statistics her team is most proud of is how much they have lowered their withdrawal rate. Before the redesign, on average, 11% of students withdrew from the course during the term. That withdrawal rate now averages 4%.

These improvements generate savings for students. In the first year of the initiative, adaptive courseware redesigns produced about $1.3 million in tuition and living cost savings for students. Educational resources are available at a reduced cost with adaptive courseware, with cost savings ranging from $25 for courses such as College Algebra and Economics to $126 for courses such as General Chemistry and Statistics. With a decreased cost burden, students can focus on getting the most from their education.

With adaptive course redesigns, OSU has been able to reduce section variability and cultivate foundational skills. During the Fall semester in 2014, OSU had one section of College Algebra with a DFW rate (the percentage of students earning grades of D or F, or withdrawing from the course) of around 70% and another with a rate

of less than 20%. This meant that the type of instruction varied greatly and, as a result, student learning experiences and outcomes did, too. With the use of ALEKS, DFW rates now range between 19% and 27%. College Algebra instructors have also noted a shift in student confidence, ownership of the material, and ability to understand themes beyond rote memorization.

Future Directions

Future priorities include assessing faculty experience and developing an early alert mechanism using courseware analytics. Most importantly, OSU wishes to sustain the momentum of its successful implementations. Having redesigned 11 of the 28 gateway courses offered at the institution, their goal is to expand to the other high-difficulty, high-attrition courses, ensuring these courses are not obstacles to student matriculation.

Helpful Links

If you wish to learn more about OSU's revision of College Algebra, you can view students and instructors sharing their insights in these two videos: College Algebra Redesign with Adaptive Courseware: A Blended, Active, and Adaptive Course and College Algebra Redesign with Adaptive Courseware: The Course Redesign Experience.