Case Study

Portland State University (PSU)

Portland State UNIVERSITY

everylearner everywhere

Association of Public & Land-grant Universities

Contents

Citing this Resource:

To reference this work, please cite:

Webb, R. and O'Sullivan, P. (2020, November 18) Case Study: Portland State University [Case Study] Every Learner Everywhere. https://www.everylearnereverywhere.org/resources/case-study-portland-state-university/

About the Contributors

Authors

Rachel Webb, M.S.
Senior Instructor II and Course Coordinator at Portland State University

Patricia O'Sullivan, M.A.
Project Manager in Academic Innovation at the University of Mississippi

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

Adaptive courseware products have been instrumental in the design of PSU general education courses. Administration of the APLU grant is housed in PSU's Office of Academic Innovation (OAI) and is called the Active + Adaptive Initiative. OAI brings faculty together in regular forums and wider symposia to share lessons learned and advocate for the redesign of foundational courses.

Adaptive technologies are powerful but must be coupled with other critical course pedagogical changes. Substantial faculty training in how to effectively utilize adaptive analytics data is essential for meaningful success; and faculty are also encouraged to integrate active learning pedagogies into their curricula. Combining these approaches improves student pass rates.

Adaptive courseware can provide keen insights into student learning regardless of where that learning takes place. Online, blended, and face-to-face teaching and learning environments can all be enhanced through the adoption and implementation of adaptive technologies. Understanding the benefits of adaptive learning technologies is especially important today as online education modalities surge and increasingly become more widespread due to the COVID-19 pandemic.

Case Study: Portland State University (PSU)

By combining active learning with adaptive courseware, Portland State University sees a statistically significant reduction in grades of D, F, and Withdrawal (DFW) in foundational courses.

Key Takeways

- Implementation of adaptive courseware has been successful in courses that underwent a full redesign under the direction of the Office of Academic Innovation's Active + Adaptive Initiative.
- Active learning is an essential feature of course revision for adaptive courseware implementation.
- Students are learning as much from each other during class time as they are from formal instruction by the instructor and on their own with the courseware.

About the School and Grant

Portland State University (PSU) is a public urban research and teaching university with a 50-acre campus located in downtown Portland, Oregon. It enrolls more than 26,000 students and is the most diverse higher education institution in the state with 48% of students being white, 16% being Latinx, 9% being Asian, 6% being two or more races, 4% being Black, 1% being American Indian or Alaskan Native and 1% being Native Hawaiian or Pacific Islander. PSU's student population reflects the new majority of students as 37% are first-generation college students, and 45% are Pell-eligible and 25% have dependent children.

Portland 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

At PSU, Senior Instructor and Course Coordinator Rachel Webb and her team combined original Open Educational Resource (OER) materials and adaptive learning to take a new approach to introductory statistics. The team's goal was to decrease costs and increase passing and retention rates while providing a more dynamic and standardized mode of content delivery. Faculty also used the adaptive platform's analytics to catch at-risk students early and help them succeed.

Approach

The OAI team intentionally framed the implementation of adaptive courseware as part of course redesign that also included active learning.

Faculty preferred to incorporate adaptive modules with OER content while adding active learning to the classroom experience. These choices stand in contrast to adopting lecture-oriented supplemental homework systems based on publisher textbook content.

The OAI utilized the Courseware in Context framework to identify vendors who provide adaptive technologies without published content. After faculty choose a vendor, OAI assigned them an instructional designer to help build out the course, and a user experience specialist to provide technical assistance and assess student user interface issues.[1]

Relevant Findings

Senior Instructor Rachel Webb redesigned her Applied Statistics for Business courses, Stats 241 and 243. For her design and implementation of the Active + Adaptive framework in her courses, she received the Online Learning Consortium's Faculty Digital Innovation Award in 2018. She took a three-fold approach in her redesign:

Customizing an OER textbook for PSU students. OER is provided through a variety of sources including Rice University's Open Stax. OER textbooks are freely available online and are licensed so they can be retained, reused, revised, remixed, and redistributed.

Integrating the OER textbook into the Realizeit adaptive platform with embedded videos, files, and assessment questions on one content page so students never have to leave the system to access new material.

Transforming her lecture-based class into an active and adaptive student learning environment that now features 10 minutes of lecture time in a nearly two-hour class. "Once a class taught in a lecture-hall to 200 students with projections of Excel on a large screen, Statistics 241 is now a hive of forty students in a computer lab: engaging, questioning, and problem-solving."[2]

Webb has found peer instruction is one of the best ways for her students to solidify concepts. In a 2018 webinar, she shared that active learning:

- Improves students' ability to retain information.
- Provides students with opportunities to exercise critical and creative thinking.
- Enhances students' performance as they participate in the process.
- Encourages other learning styles (physical, visual, verbal, or social).
- Engages students with the material.

In addition to active learning, Webb built out the course practice activities and assessments on the Realizeit Learning adaptive platform. As part of the course revision and customization in Realizeit, Webb worked with instructional designers in the OAI to map out the course objectives in a prerequisite network to ensure students gained in early modules the foundational knowledge they needed to move on to more complex material covered in later modules. Webb uses learning analytics data to continuously improve the course and finds that the platform has proven beneficial for students as well, providing them opportunities to reinforce their knowledge, multiple opportunities to get back on track when they fall behind, and the flexibility to move through her course at their own pace.

The course revision has shown promising preliminary results. In a blog for Realizeit Learning, Webb reports, "In PSU's first session using Realizeit for Stats 241 in spring 2018, students' final exam grades were 12% higher on average – and every student who took the final passed."[3]

Here is a table comparing baseline data with that of outcomes from the revised course:

Statistics 241	Baseline Data (Spring 2016 - Spring 2018			Revised Course (Fall 2018)		
Race/Ethnicity	**Enrollment**	**DFW#**	**DFW%**	**Enrollment**	**DFW#**	**DFW%**
American Indian/Alaskan Native	3	0	0.00%	0	0	0.00%
Asian	221	33	14.93%	24	3	12.50%
Black or African American	60	11	18.33%	4	0	0.00%
Hispanic or Latinx	104	15	14.42%	15	1	6.67%
Native Hawaiian/ Pacific Islander	7	1	14.29%	0	0	0.00%
Two or more races	240	40	16.67%	30	2	6.67%
White	863	130	15.06%	83	11	13.25%
Not reported	233	30	12.88%	34	3	8.82%
TOTAL	**1731**	**260**	**15.02%**	**190**	**20**	**10.53%**

The Stats 243 class also showed improvement over time after the implementation of adaptive courseware, OER content, and active learning teaching strategies as seen in the table below:

Fall 2015 (baseline data before course revision)	Winter 2016 (preliminary data in the early stages of the course revision)	Spring 2018 (course data after 5 semesters of teaching the revised version of the course)
Avg. Final exam score: 70%	Avg. Final exam score: 77%	Avg. Final exam score: 82%
Class format: Lecture	Class format: Lecture	Class format: Active + Adaptive
Adaptive platform: ALEKS	Adaptive platform: ALEKS	Adaptive platform: Realizeit
Passing rate: 61%	Passing rate: 69%	Passing rate: 77%

Figures 3 compares baseline statistics to Fall 2018 outcomes for Statistics 243:

Statistics 241	Baseline Data (Spring 2016 - Spring 2018			Revised Course (Fall 2018)		
Race/Ethnicity	**Enrollment**	**DFW#**	**DFW%**	**Enrollment**	**DFW#**	**DFW%**
American Indian/Alaskan Native	22	9	40.91%	1	1	100.00%
Asian	320	39	12.19%	10	0	0.00%
Black or African American	132	38	28.79%	1	1	100.00%
Hispanic or Latinx	211	44	20.85%	5	0	0.00%
Native Hawaiian/ Pacific Islander	22	2	9.09%	1	1	100.00%
Two or more races	491	108	22.00%	19	0	0.00%
White	1831	305	16.66%	35	5	14.29%
Not reported	195	36	18.46%	6	0	0.00%
TOTAL	**3224**	**581**	**18.02%**	**78**	**8**	**10.26%**

Future Directions

Webb is continuing to improve upon her statistics courses with the help of Realizeit Learning's analytics and the support of the OAI team at PSU.

For more in-depth information about PSU's overall progress and strategy for adopting and implementation adaptive courseware, see the OAI's Active and Adaptive website.

Notes

De Gruyter, Johannes and Berg, Kevin. (2020) "Adaptive Courseware at Portland State University:A Question of Scale," EDUCAUSE review, March 25, 2020. Available at https://er.educause.edu/articles/2020/3/adaptive-courseware-at-portland-state-university-a-question-of-scale [1]

PSU Office of Academic Innovation. (2018) "Inside A Newly Adaptive Classroom: Senior Instructor Rachel Webb Pioneers Adaptive Learning in PSU Statistics Course," April 26, 2018. Available at https://www.pdx.edu/academic-innovation/news/inside-newly-adaptive-classroom [2]

Mortland, A. (2018) "Going Active and Adaptive to Help Business Students Master Statistics," Realizeit Blog, June 11, 2018. Available at http://blog.realizeitlearning.com/blog/adaptive-to-help-business-students-master-statistics [3]

References

Webb, R. (2019) "How I Created an Active and Adaptive Statistics Course," PSU Winter Symposium, February 28, 2019. Available at https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1022&context=winter_symposium

Webb, R. (2020) "Full Course Design: Stat 243", Portland State University Office of Academic Innovation Active + Adaptive Initiative. Available at https://www.pdx.edu/academic-innovation/innovation-initiatives/active-adaptive/full-course-design