

# Case Study

Northern Arizona  
University (NAU)



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## Citing this Resource

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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](http://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.

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# Introduction

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At Northern Arizona University, 46% of freshmen are first-generation college students. Foundational first-year and introductory classes are vital to student success. NAU realized that helping first-generation students succeed would require improving first-year course experiences. As a result, nearly a decade ago they created the First-Year Learning Initiative (FYLI) with the goal of fostering success amongst first-year students. The faculty-driven initiative requires course coordinators who follow a set of principles in coordinating all sections of the 75 courses in the program. These courses have been designed to focus on three critical areas for student success: establishing necessary skills and behaviors; incorporating support features such as frequent feedback and formative assessment; and ensuring consistency across sections and semesters. The university's student body consists of a 61% female, 23% Hispanic, and 4% Native American population. Combined with the significant number of first-generation students, this inspired NAU to pursue methods and tools to increase success and retention of its underserved student population.

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# Case Study: Northern Arizona University (NAU)

This case study from Northern Arizona University demonstrates the increase in student success, as measured through pass rates, that can result from the implementation of adaptive courseware across all sections of selected first- and second-year courses.

## Key Takeaways

The implementation of adaptive courseware at Northern Arizona University (NAU) resulted in an increase in pass rates in affected courses from 84% to 88% between the Fall of 2017 and the Spring of 2019.

NAU's approach was to redesign courses and implement adaptive courseware similarly across all sections of a course. In an effort to set and communicate high standards of learning in lower-division coursework consistently across sections, all but two of the adaptive courses discussed in this study shared the following:

- **Team of course coordinators**  
.....
- **Master syllabus**  
.....
- **Course purpose**  
.....
- **Learning outcomes**  
.....
- **Assessment philosophy, if not specific assessments content, although not necessarily identical readings and learning materials.**  
.....

## About the School and Grant

### About the School

Northern Arizona University (NAU) is a public university with a main campus in Flagstaff, Arizona. It serves over 31,000 students, including nearly 2,000 on community campuses statewide and nearly 6,000 online. NAU is a member institution of the Association of Public and Land-grant Universities (APLU).

### About the Grant

NAU also received funding under the APLU's 2016 Accelerating the Adoption of Adaptive Learning Grant. This grant aims not only to facilitate the implementation of adaptive courseware in public universities but also to improve outcomes for underserved student populations.

### Goal

The use of Active and Adaptive Learning at NAU was intended to continue to support the FYLI. Due to its successful FYLI work, faculty and departments were primed to continue to improve student success by leveraging adaptive courseware and course redesign. **NAU's goal was to effectively implement adaptive courseware for 28 of its introductory Liberal Studies (general education) courses in 48 months.** They aspired to transfer lessons learned and faculty expertise to transform their blended and online programs. In doing so, NAU sought to understand individual student learning. Their primary objective was to design the courses to maximize student success, which included figuring out key concepts and content, then building in opportunities to personalize learning such that students could spend the time they needed on areas with the most room for improvement.

### Approach

Along with managing different aspects of the project, program managers play the pivotal role of building and maintaining relationships with instructors and departments involved in the project. In establishing a collaborative process, program managers are able to create a sense of ownership for faculty and other stakeholders who feel they are working as a team to meet implementation goals. NAU benefitted from this effective leadership model, which fostered vital communication and coordination between departments and stakeholders.

NAU is at the forefront of making use of course coordinators. Course coordinators use their expertise to organize instructional materials, assessments, and make courseware implementation decisions that will best suit the student body. The success of NAU's foundational business course, Introduction to Computer Information Systems, was due to a strong faculty team led by a knowledgeable and engaged course coordinator. Together, the team developed a course design reflective of student needs and course learning goals. Geological Disasters was another highly supported course that quickly became a favorite amongst students. Courses with the most support have garnered enthusiastic reviews.

A student enrolled in Geological Disasters said:

***The before and after class assignments are helping me know and reflect on material we are learning.***

Some degree of faculty and leadership turnover is expected during projects of this magnitude. Fortunately, maintaining momentum and active support in this initiative was relatively uncomplicated due to the strong relationships established across the various institutional participants and departments. **By focusing on a course-by-course model, NAU thoughtfully engaged core faculty, course coordinators and department chairs. This approach served to embed the FYLI and adaptive courseware improvements into the culture, ensuring sustainability even in the midst of leadership change.**

## Case Study – Northern Arizona University

The university also utilized Instructional Designers (IDs) for direct teaching and mentoring support for faculty in the process of courseware adoption. Since the start of the grant, two of NAU's primary IDs retired. In their absence, the university has adapted alternative support activities that emphasize and encourage excellent teaching practices. These include having as many faculty members as possible complete the Association of College and University Educators (ACUE) teaching program. NAU has found these alternative options effective and recognizes that adaptive courseware technology simply amplifies the underlying quality of instruction.

Faculty engagement was essential in each stage of the Adaptive Program. NAU has conducted a series of activities to promote a campus culture receptive to adaptive learning. It began with a 2-½ day kick-off event in August 2016. This workshop-styled event included a vendor showcase and 30 faculty representing 14 of their target courses. In subsequent years, the university has used conferences, orientations and learning communities organized around adaptive learning.

Learning communities allowed faculty to share their experiences, creating beneficial conversations across disciplines and universities. These learning communities are part of NAU's collaborative process to create teams of invested faculty and instructional designers. There are as many as eight faculty teaching different sections of courses. During implementation these faculty would meet and discuss ideas for further course development, underscoring the need for working with others to reach optimal outcomes.

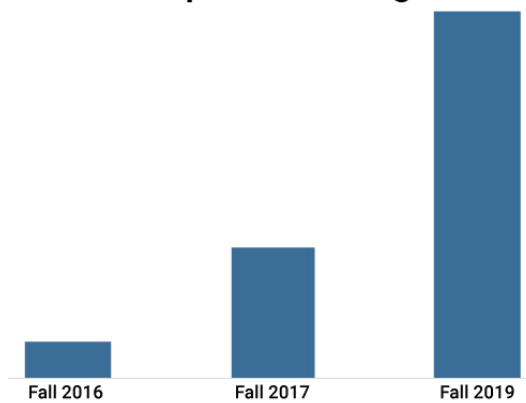
The university established the necessity for academic leadership to have regular reports and ongoing orientation. Additionally, their program manager offered incentives to maintain faculty buy-in. NAU strived to keep stakeholders at all levels informed and invested in achieving adaptive courseware goals.

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## Relevant Findings

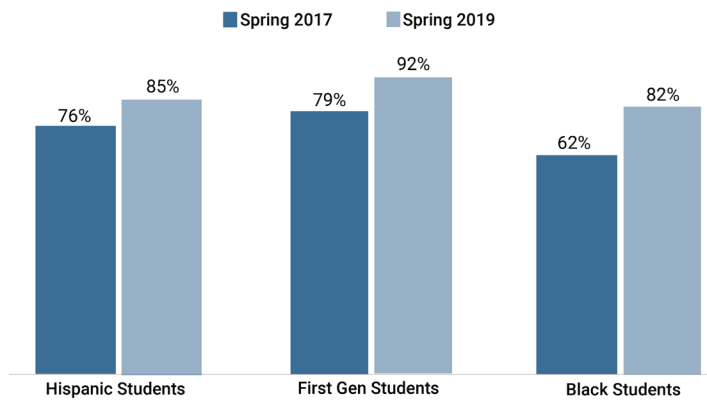
In Fall 2016, NAU began implementation with two courses, with a combined 11 sections, employing adaptive courseware. By the following Fall 2017 they had tripled the number of courses offering adaptive learning, climbing to six courses – a total of 43 sections. As of Fall 2019, the numbers have reached 26 courses with 211 corresponding sections. As part of the adaptive learning grant that funded this work, NAU was tasked with scaling to 15% of their general education enrollments within three years. **NAU has achieved scale overall, with almost 25% of their enrollments in introductory general education classes using adaptive courseware.** In 18 of the 26 courses, all sections are adaptive and are consequently at scale at the course level. Of the 228 total sections offered, 211 of them are adaptive.

### Number of courses offering adaptive learning



With careful design and effective integration of adaptive activities into the curriculum of a course, NAU found that student experiences and outcomes greatly improved. Geologic Disasters demonstrates the benefits of one such successful course. **From Spring 2017 to Spring 2019 the overall pass rate increased from 84% to 88%.** Broken down by demographics, adaptive courseware implementation increased pass rates from 76% to 85% for Hispanic students, 79% to 92% for first-generation students, and an incredible 62% to 82% for Black students.

### Pass rate for Geological Disasters



In conjunction with improved student experiences, faculty also found well-designed adaptive learning courses to be useful for teaching and pedagogy. Faculty enjoyed the data and reporting, as it allowed them to identify problematic content and struggling students, with a necessary distinction made between the two. They were then able to pinpoint a proper intervention in each case. Overall, when students understood their role and the role of adaptive courseware, faculty were surprised and happy to find that more students were coming to class prepared.



## Case Study – Northern Arizona University

Don Carter, ASU's Director of Academic & Research Technology Services, said:

**[Adaptive courseware] takes some of the remedial and mundane work that students simply have to do outside of the class so that when they do meet with other students and faculty, they have higher value interactions.**

Results for Spring 2019 show cumulatively across all adaptive courses a pass rate increase of 5.2% for highly supported courses since implementing active and adaptive pedagogy. Pass rates are defined as achieving an A, B or C in the course. In the 2018-2019 school year, adaptive redesigns helped over 700 students pass courses they otherwise would not have passed without use of these redesigns. As an added success of NAU's adaptive learning strategies, passing these classes means that students are able to save time and money and continue progressing through their degree programs.

Course	Percent Increase Since Adaptive	Change in # Passing Post-Adaptive
Unity of Life I: Cell Metabolism	6%	140
Personal Finance in a Global Economy	9%	15
Geologic Disasters	4%	80
World History I	3%	9
Introduction to Computer Information Systems	5%	90
Mathematics Pathway	30%	135
Introduction to Nutrition and Foods	7%	65
Introduction to Psychology	3%	95
Developmental Psychology	7%	75
Introduction to Sociology	2%	20

### Future Directions

NAU has a multi-pronged plan for moving forward with expansion and scaling. Their approach consists of four components. First, they have set out to write course specific teachers' guides designed to help new faculty assigned to teach redesigned courses. The intention is to keep the momentum they have established. They will also continue focusing on the core features of good teaching to improve the current crop of courses. Next, they will support expansion to upper level and online courses, especially their competency program known as NAU Personalized Learning Program. Finally, a new development is to work on an alternative credentialing effort (digital badging) for continuing education and a noncredit skills-based curriculum for workforce development.

NAU's results show a promising future for the implementation of adaptive learning courseware. A vital component of their success has been the culture of shared curriculum, for which the FYLI laid the foundation.