Arizona State University

Case Study

ALEKS Math Increases Student Success by 11% at Arizona State University-Precalculus

Study Specifics

School Name:
Arizona State University

Course Name:
Precalculus Online MAT 170 – Course is 7.5 weeks long and entirely online

Program:
Precalculus by Julie Miller and Donna Gerken, 1st edition and ALEKS 360

Educator:
Michael Little-Crow, Lecturer

Enrollement:
140 students/section
3000 annual enrollment (university total)

Timeframe:
Pilot in Summer 2021
Full Implementation began Fall 2021

Integration:
ALEKS 360 Math with Canvas Integration

Setting

Arizona State University (ASU) Online is ranked by the *U.S. News & World Report* as the #1 institution for online undergraduate and graduate programs in the U.S. for seven consecutive years (2016-2022). The National Science Foundation, an organization that tracks higher education research and development interests, ranks ASU as #1 for transdisciplinary science research expenditures. ASU Online ranks high for best online bachelor's programs in Business and Psychology and online master's programs for Education and Business.

Implementation

Prior to using ALEKS Math, ASU Online used MyMathLab for Precalculus courses and had run into issues with testing. Because ALEKS Math was working so well in the College Algebra courses (a prerequisite course for Precalculus at ASU Online) the decision was made to pilot ALEKS Math in Precalculus to reduce the learning curve on faculty and students at ASU.

The course is structured so that all students must complete the first 25 topics as a review of select College Algebra topics. Instructor Michael Little-Crow said, "This topic check has allowed students to get off to a quick start, which is especially important due to the short duration of the course."

Students' grades consist of: 10% ALEKS Modules (Sun Points), 10% ALEKS Pie Goal, 6% Two Guided Instruction Activities, 4% Exam Wrappers, and 70% Two Exams. Both the Sun Points and the Pie Goal in ALEKS are tied to learning the topics and account for 20% of the overall course grade.

Each week, students take a Knowledge Check that does not affect their grades, but this check does determine which topics students know well and which topics will be recycled in ALEKS Math for further study. Little-Crow believes ALEKS Math helps his students succeed by being consistent and motivating the students with continual review and formative assessments accomplished via the knowledge checks.

Overall, the course has 181 topics that fulfill five modules. Weekly due dates help drive the completion of topics. ALEKS Math allows Little-Crow to group content into modules and choose the topics' sequence. He says, "I use modules to group the topics into daily units with about 4 to 5 units per week. ALEKS modules have a Friday due date, followed by a two-day grace period with all topics due by Sunday night."

ALEKS Math reports empower instructors to stay on top of the student progress. Little-Crow uses Progress and Time reports to track students' potential for success and other data to review student pacing. Little-Crow adds, "It's important to show compassion and stay connected with your students."

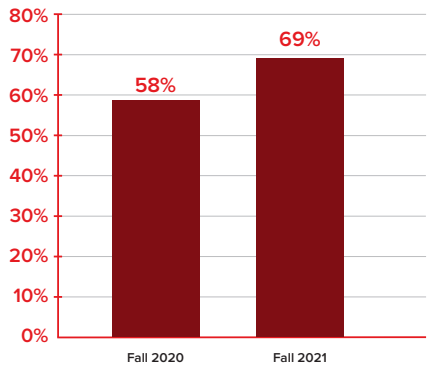




Results Achieved

After the first full implementation of ALEKS Math in three sections in Fall 2021, ASU Online experienced an 11% increase in student success as measured by those students who received a C or better in the course when compared to the previous fall semester. Little-Crow says, “We went from 58% success rate to 69%” (Figure 1).

Figure 1:
Student Success Rate Using ALEKS Math



When asked how ASU Online was able to improve student success from one term to the next, Little-Crow responded with a list of best practices for using ALEKS Math:

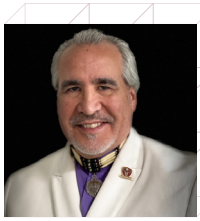
- **Flexibility:** Although a course coordinator may structure the course a specific way, the system allows for pedagogical flexibility for other instructors and allows instructors to manage their course and connect with their students in a more meaningful way.
- **Knowledge Checks:** To discourage guessing, students have to learn and master the topic via Knowledge Checks.
- **Implementation Manager & Ongoing Training:** Each ALEKS adopter is assigned an Implementation Manager who provides consultation, guidance, and advice on how to accomplish their respective course goals using the ALEKS platform. Subsequent faculty training is also offered throughout the term to ensure a successful implementation experience.
- **Stable Platform: ALEKS Math is easy to use** and boasts a greater than 99% uptime. ASU has experienced no major issues with integration, downtime, or ALEKS-dedicated Technical Support.
- **Repetition Leads to Mastery:** Students have to show they have learned a topic by answering a similar question two or three times.
- **Consistency in Platform:** Students and faculty use ALEKS in prerequisite courses to familiarize everyone with the program.

Conclusion

ALEKS Math improves students' success rates in an online class by providing students the opportunity to (1) repeat similar questions that mimic the pencil-to-paper experience until they learn the topic, (2) check their knowledge to make sure they can master the topic, and (3) use a stable platform where there are few consistency or technical issues. With ALEKS Math, online students can better manage their work and build confidence in their math skills as they proceed through the course.

Class Description

Students will be able to solve and graph various types of algebraic functions (including polynomial, rational, exponential, and logarithmic) as well as apply this knowledge to more complex problems. Students will also be able to use the six basic trigonometric functions and their inverses to solve problems, both applied and theoretical.



Instructor Bio

Little-Crow is an Indigenous math educator from the Turtle Mountain Anishinaabe-Cree people. He works with the education agencies of several tribal nations, including the Pascua Yaqui, Salt River Pima-Maricopa Indian Community, Gila River Indian Community, and several of the Chippewa nations in North Dakota and Wisconsin, to provide professional development in Mathematics. He co-founded OPEN Global Village (Original Peoples Education Network) with Dr. Uraipanyawan Pinthong to support two education abroad projects to Thailand and one sabbatical teaching Mathematics through robotics in Kazakhstan.



> **ALEKS Math provides feedback to the student, and the student has the ability to practice again and again before exams. Repetition helps students learn deeply.**
>
> – Michael Little-Crow, Math Lecturer
> Arizona State University Online

About McGraw Hill ALEKS®

McGraw Hill ALEKS is a course assistant that helps Math and Chemistry instructors forge Constructive Learning Paths for their students – blending personalized modules with instructor-driven assignments to ensure every student always has another block to build on their knowledge base. ALEKS gives instructors the flexibility to assign homework, share curated content such as videos, review student progress and provide student support anytime, anywhere. Instructors can identify what their students know and don't know, and from there, ALEKS will deliver customized practice until they truly get it. In other words, with ALEKS by your side, learning more is a given.

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