High–Tech

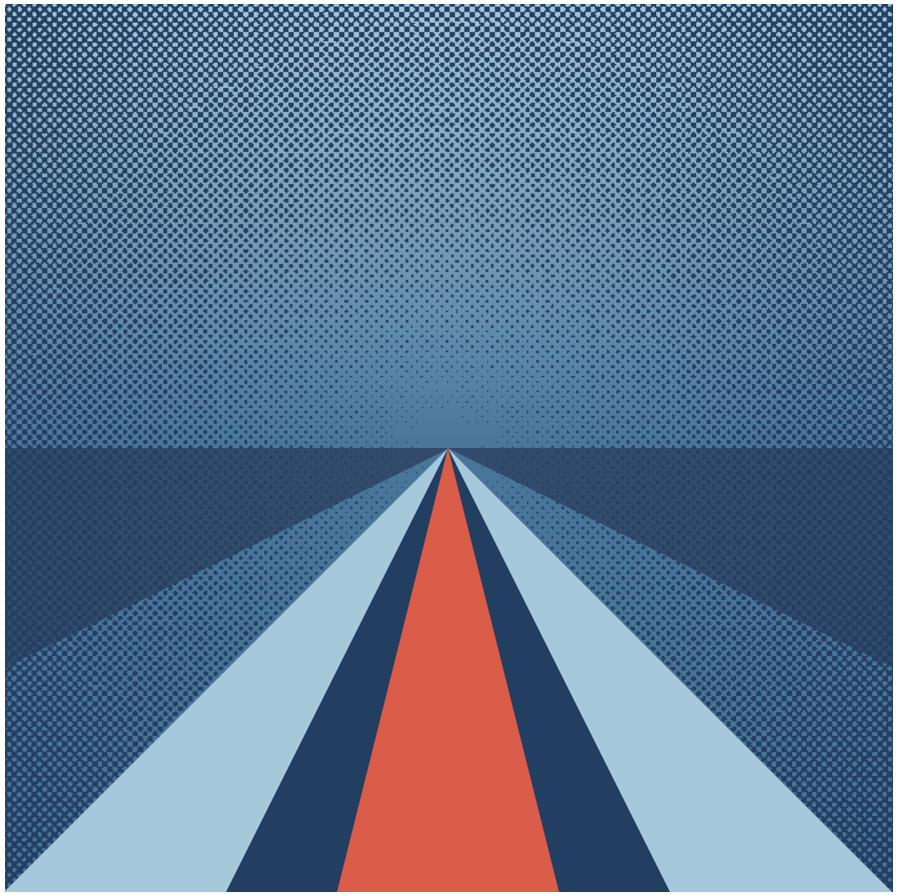
Serving Student Needs at Scale

Digital Learning Report and Workbook

2017 Edition
Produced by Intentional Futures

High–Touch

Foreword



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ABOUT INTENTIONAL FUTURES

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This work was funded by The Bill & Melinda Gates Foundation whose vision is "a U.S. higher education system that propels social mobility and economic development."

For more information on their Postsecondary initiatives, click here.

Waging War on DFW Rates

Institution
Austin Community College

Type
2-year public community college

Location
Austin, TX

Enrollment
40,000

Demographics
80% part-time
32% students of color
52% age 22+

Student-centered adaptive technology and a flipped classroom together support developmental math completion.

CHALLENGE

Austin Community College (ACC) needed to better prepare first-year students for college-level math. The institution found that newly accepted students who were able to pass or get an exemption from the state math test were unable to pass college algebra, which led to high drop, fail and withdrawal (DFW) rates. Given the broader range of math skill levels and the growing diversity of student demographics, they wanted to create an environment that made it easier for students to get the help they needed.

SOLUTION

In 2009, ACC created Developing Mathematical Thinking. This course emphasizes reasoning, problem solving and communicating math in everyday scenarios. Students who pass this course move on to a college-level quantitative literacy or statistics course. In 2014, the ACC math department adopted McGraw-Hill's ALEKS, an adaptive learning system that tailors instruction to the academic needs of each student. ALEKS provides the digital learning component of the course's flipped model. Students access course content online and then come to class to get one-on-one help with their coursework. To date, 4,788 different ACC students have worked in ALEKS. To provide additional student support, the institution rolled out an ACCelerator lab at their Highland Campus, a 32,000 square-foot tech-enabled learning lab with more than 600 computer stations for individualized learning and small group sessions. The ACCelerator is home to a support network of faculty members, counselors, advisors, tutors, librarians and other staff. So far, 6,000 students have been served by the ACCelerator.

APPROACH

Implementing ALEKS allowed ACC to move to a master course model, where all course sections are the same regardless of instructor, with readiness diagnostics, varied content and targeted practice to support student learning.

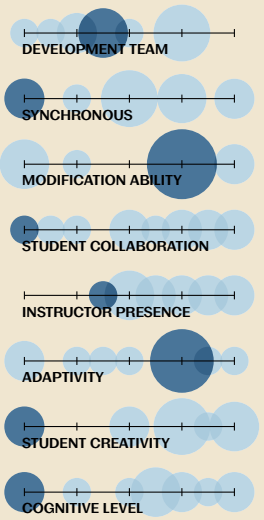
Course Development

ALEKS handles much of the course development process by providing instructional content and assessments tailored to each student's knowledge level. A

Course Modality
Mixed: Flipped

ACC Developmental Math Spectrum Responses

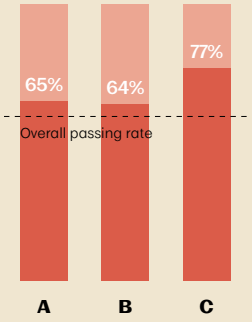
A completely asynchronous course (1) makes it hard to have designed student collaboration (1). Targeted support comes from the new instructor role and the adaptive software.



College Algebra Success Rates

Students who took one semester of developmental math before enrolling in College Algebra (group C) passed at a higher rate than those in traditional intermediate algebra (group A) and those who spent 1-3 semesters in ACCelerator Math (group B). before taking College Algebra.

(Data collected from Fall 2014-Summer 2016)



small team at ACC worked with McGraw-Hill to select content, learn about implementations at other institutions and develop an approach that would work well for ACC. The resulting flipped-model course combined three developmental math courses into a single curriculum sequence that allows students to move ahead at their own pace.

Faculty Training and Support

Implementing the ALEKS program's flipped model meant that faculty had to shift from delivering content via lecture to working one-on-one with students in the classroom. This new approach initially met some resistance but faculty soon discovered that the flipped model allowed them to devote their time and expertise to helping students grasp more difficult aspects of the course material. Training helped smooth this transition. All faculty who teach ALEKS courses go through a 4-hour software orientation and training on relevant ACC policies. Faculty have other opportunities for professional development as well, including a required workshop each semester. Using ALEKS has also inspired instructors to share experiences and collaborate more than they had previously.

Student Support

ALEKS provides an instructional path for each student based on initial placement assessments and students' ongoing interactions with the program. Faculty find that this approach allows them to get to know their students more than in a traditional course. Faculty often take on an advising role as well, providing moral support and helping students develop the skills and mindset they'll need to succeed. Students also receive support from an academic advisor who meets with them at the start, middle and end of each semester. The ACCelerator, where many of the developmental courses are taught, is open seven days a week and has 15 study rooms and three classrooms.

Data and Performance Measurement

ACC found that the withdrawal rate for ALEKS developmental math has been far lower than expected, with black and Latino male students in particular having greater success than they do in traditional

Austin Community College Initiative Profile

The withdrawal rate for a traditional 3-course STEM developmental sequence at ACC hovers near 27%. By contrast, in spring 2016, developmental math courses taught with ALEKS saw a 19.9% withdrawal rate for new students and 16.5% for returning students.

Modality
- Flipped

Characteristics
- Adaptive
- One-on-one instruction
- Asynchronous
- Self-paced
- Data-driven decision making

Tools/Software
- ALEKS

courses. The self-paced nature of the ALEKS course, paired with one-on-one faculty help contribute to these stronger outcomes. In addition, data on student progress indicate that those who move through ALEKS more quickly are more likely to succeed in the courses that follow.

Faculty find that this approach allows them to get to know their students more than in a traditional course.

LESSONS LEARNED

Flipped models make time for teaching.

ALEKS lets faculty devote their time to what they do best: sharing their expertise and helping students grapple with difficult concepts. Although it took time to dispel faculty concerns about being replaced a computer, the ALEKS approach soon earned support from instructors as student outcomes improved.

Individualized faculty support makes a difference.

The flipped approach promotes retention and student success by giving faculty regular opportunities to forge strong connections with their students. One-on-one interactions with faculty can be especially important for first-generation college students, who often lack sufficient support systems and mentors. ACC's high-touch approach to support keeps developmental math students from feeling isolated or lost and encourages persistence and resilience.

Flipped and Focused

Institution
Cedar Valley College

Type
2-year public community college

Location
Lancaster, TX

Enrollment
6,700 students

Demographics
77% part-time
80% students of color
45% age 24+

Combined adaptive instruction with one-to-one faculty support results in higher success rates for developmental math students.

CHALLENGE

In an effort to minimize the levels of developmental math at community colleges across the state, Texas implemented the Texas Success Initiative in 2015. This initiative replaced the previous college math placement exam and made it easier for incoming students to place into college-level math. The math department at Cedar Valley College (CVC) found that students were coming in at varying levels of math proficiency and overall were less prepared for college-level math. They needed a solution that would help them serve all students in developmental math while accounting for their range of proficiencies.

SOLUTION

CVC implemented an adaptive ALEKS master course for developmental math paired with classroom-based one-on-one instructor support in order to help students move through math courses more efficiently and effectively. They also flipped the course and used a modified emporium approach so that students could get help from faculty and other students while working at their own pace. About 1,000 students take the personalized math courses each semester.

APPROACH

CVC paired its online ALEKS course with seat time in a classroom staffed by both an instructor and a tutor. This approach created a personalized high-touch learning environment that led to greater student success.

Course Development

The ALEKS program gave CVC's mathematics coordinator a clear process for developing the course. Based on topics selected by the course coordinator, ALEKS generated a list of prerequisites necessary for student success. Once the coordinator reviews and revises the list as needed, the ALEKS program constructs an adaptive master course, complete with instructional content and assessments.

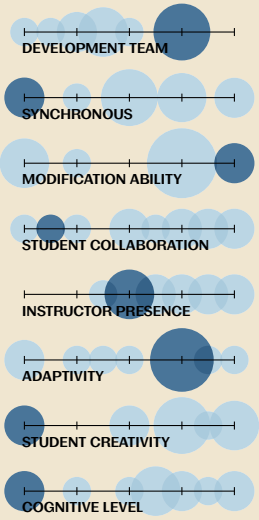
Faculty Training and Support

The adaptive nature of the ALEKS course allows students to move through content as they gain mastery. Because students progress at different speeds, the instructor must be prepared to help students with any element of the curriculum at any time. CVC's mathe-

Course Modality
Mixed: Flipped

CVC Developmental Math Spectrum Responses

At CVC, developmental math courses are self-paced (1) and heavily lean on adaptive tools (4) to remediate knowledge. This is feasible because of the department's master course model (5).



Cedar Valley College
Initiative Profile

The on-campus developmental math and college algebra courses at CVC follow a modified emporium model that offers mini-lectures based on students' mastery level. This model shifts the role of the instructor from delivering information to serving as content expert and learning facilitator.

Modality
- Flipped

Characteristics
- Asynchronous
- Modified emporium
- Vendor-supported in-house developed content

Tools/Software
- ALEKS
- Blackboard (LMS)

matics coordinator screens instructors and tutors to ensure they have the required expertise before they enter the classroom.

Student Support

Students begin the course with an initial assessment so that ALEKS knows what content each student needs to learn. Students can skip sections of the curriculum that they have already mastered. ALEKS guides them through the remaining course objectives, adapting as the student progresses. Because content is delivered online, instructors can focus on working with students in the classroom.

During each class session, an instructor and a tutor are available to help students with their coursework. The instructor typically talks to each student at least once per course period. As a result, students and faculty develop a strong rapport over the course of the term.

Instructors also communicate with students outside the classroom. For example, one faculty member sends a weekly class email as well as regular progress report emails specific to each student. This high-touch approach creates opportunities for proactive outreach when students seem to be struggling in class.

Data and Performance Measurement

CVC found that ALEKS made a difference in its developmental math courses. They saw sizable increases in success rates in the two years following implementation of ALEKS — 12% for elementary algebra, 15.3% for intermediate algebra, and 6.9% for college algebra. These increases affirmed the value of the new platform and the one-on-one support that students receive during the term.

LESSONS LEARNED

Wholesale adoption can ease implementation.

When CVC decided to move its developmental math program to the ALEKS platform, it made an ALEKS master course for each developmental math class that all sections are required to use. Eliminating competing course models and implementing ALEKS across the board affirmed the math department's faith in this platform and its potential value to students. Adopting ALEKS in this fashion also helped ensure a consistent learning experience for all students enrolled in developmental math.

Courseware is not one-size-fits-all.

CVC found that some of their students don't do well with the ALEKS courseware because they lack the proper study skills and mindset to complete the course. ALEKS is great for most students because they can move at their own pace, spending more time on trickier subject matter and receiving credit for what they already know. A subset of students, however, lack the persistence and resilience required to keep working in this environment. An initial pre-test to gauge student readiness for online learning can help address this challenge by sorting out which students will likely need additional support.