

ALEKS[®] PPL Case Study

PLACEMENT, PREPARATION AND LEARNING

Utah Valley University | Orem, UT

Introduction

Prior to using ALEKS, UVU placed students into math courses using a variety of measures, each with a two-year expiration: ACT math subscore, Accuplacer, and UVU prerequisite course grades. We faced several challenges in our curriculum and success rates based on this setup. We had a sequence of four developmental math courses that students took before reaching a course that counted for general education (gen ed) math requirements. General education math requirement can be fulfilled by MATH 1050/1055 College Algebra, STAT 1040/1045 Intro to Statistics, and MAT 1030/1035 Quantitative Reasoning. Thousands of students took two years or more of developmental math courses before reaching a course that counted for graduation. Failure rates in all developmental math courses and the general education math courses were around 35%, including withdrawals, failing grades, and D grades.

Also, the state of Utah has a high number of young people (aged 18-21) who leave for two years of religious service, and need to re-establish their placement in math courses upon return. These students were routinely placed into low-level developmental math courses by Accuplacer and ended up retaking multiple math courses before enrolling in a course that counted for general education math credit.

Additional challenges we faced were inconsistent Accuplacer results (a student could test on consecutive days and get vastly different placement results) and Accuplacer rarely placing a student into college algebra. Approximately 70% of incoming students were deemed not ready for college-level math based on Accuplacer results. Students were at widely different levels of preparation and readiness for the courses into which they were placed. The curriculum in the developmental courses contained significant overlap due to necessary review material to help less-prepared students become ready for the material being taught.

“ALEKS PPL has been a game changer for our campus. Students are now routinely placing directly into credit-bearing math courses after working in the prep and learning modules. Students don’t need to repeat entire courses when their math skills are rusty; they need a focused refresher to help them brush off their skills and move forward.”

– Tiffany Evans, Carolyn Hamilton



Implementation

Initial Pilot

From the summer of 2015 through the spring of 2016, UVU began using ALEKS for placement with two small pilot groups. (Pilot #1) During the summer of 2015, 50 students who had placed into intermediate algebra were invited to take a 3-week refresher course using ALEKS Prep for College Algebra. (Pilot #2) During Spring 2016, UVU contacted 35 students who had dropped out of the university with all credits toward graduation completed except a liberal arts gen ed math course. A six-week Math Completion night workshop was created with ALEKS PPL to help these students refresh their math skills and place into a gen ed math course to finish their degrees.

We used money reserved for Math Initiatives on our campus to pay for a few faculty to teach the pilot sections of ALEKS PPL math refreshers. Students paid the cost of their own ALEKS PPL access through a workshop fee. In May of 2016 we expanded ALEKS PPL use for multiple math boot camps throughout the summer.

In the 2016-2017 academic year, UVU began offering ALEKS PPL widely across campus, though Accuplacer was still available if students requested it by name. The university broadened its investment to cover the cost of ALEKS PPL for all incoming freshmen one time. Students could purchase additional access (to a student-paid cohort) at their own expense.

In the fall of 2017, ALEKS PPL replaced Accuplacer as the math placement tool for all of campus and the university expanded institution-paid access to ALEKS for all students – current, incoming, and transfer – having less than 45 UVU credit hours. Other students have access to a self-paid cohort. While Accuplacer is no longer available to UVU students, it is still used at the high schools for students taking concurrent enrollment math courses through UVU. However, there is a state-wide proposal to use ALEKS PPL in Utah high schools as well. We also still use ACT math subscores of 26 or higher for placement into courses beyond college algebra. We are waiting on a decision from the Utah System of Higher vEducation on using ACT math subscores for placement into common state-wide courses.

Cut Scores

After establishing the initial cut scores for ALEKS PPL, we realized we needed to adjust our course offerings and curriculum. First, the four developmental math courses (MAT 920, 950, 990, and 1000) quickly became two developmental courses when we saw that placement differed by only a few points in ALEKS. Those few points could be achieved by students in less than three weeks of guided review.

It also became clear that students on the cusp of the cut score for gen ed classes did not need to take a four or five credit hour developmental course to become ready for college-level work; they only needed some targeted review. As a result, UVU implemented the corequisite courses of MAT 1035 (Quantitative Reasoning), STAT 1045 (Statistics), and MATH 1055 (College Algebra) that add additional credit hours onto the corresponding general education course, and use the extra credit hours for review. These three different pathways (quantitative reasoning, statistics, and college algebra) need different topics from intermediate algebra to be emphasized, hence the three corequisite offerings.

UVU Course	Initial Cut Score	Current Cut Score
MAT 920 Math Fundamentals	0-5	N/A
MAT 950 Foundations of Algebra	6-12	0-18
MAT 990 Introductory Algebra	13-18	N/A
MAT 1000 Integrated Beginning & Intermediate Algebra	19-29	19-29
MAT 1010 Intermediate Algebra*	30-45	30-45
MAT 1035 Quantitative Reasoning with Integrated Algebra	N/A	19
STAT 1045 Introduction to Statistics with Algebra	N/A	32
MATH 1055 College Algebra with Preliminaries	N/A	38
MATH 1030 Quantitative Reasoning	46	46
STAT 1040 Introduction to Statistics	46	46
MATH 1050 College Algebra	46	46
MATH 2010 Math for Elementary Teachers I	61	61
STAT 2040 Principles of Statistics	61	61
MATH 1060 Trigonometry	61	61
MATH 1100 Introduction to Calculus	61	61
MATH 1210 Calculus I	76	76

*Credit-bearing, but does not fulfill the gen ed math requirement

Current Setup

ALEKS PPL is now used to place all students who have not taken a math course for more than two years, have an ACT math subscore more than two years old, or who want to improve math placement.

Students are allowed five attempts at the ALEKS PPL assessment; only proctored assessments are considered official. The first three attempts can be taken un-proctored. The last two attempts must be proctored so that students don't unwittingly use all their attempts without establishing official placement.

Students are required to spend three hours in the ALEKS Prep & Learning Module between proctored assessments. If a student took an un-proctored assessment at home, they can take a proctored assessment for official placement without doing the three required hours in the Prep & Learning Module.

The key component of UVU's implementation of ALEKS PPL is the creation of a 1.0 credit hour course called MATH 100R Math Leap, which is a guided placement preparation course taught by full-time math faculty. The course is offered each block (7 ½ weeks) of every semester, including summer semesters. Class size is capped at 40 students per section. Advisors recommend students take MATH 100R during their first semester instead of attempting to take a regular math course.

On the first day of MATH 100R, students take a proctored ALEKS PPL assessment in class. The curriculum of the course is ALEKS PPL. Students must work for at least six hours per week in the Prep & Learning Module to receive credit for the course. The course is graded as credit/no credit.

During class, instructors help students with questions and guide them through general problem-solving activities that are not algebra dependent. The instructors also meet with students individually on a weekly basis to track their progress. Students are also advised regarding the math requirements for their major, the corresponding ALEKS score needed, and the amount of time it will require in ALEKS to achieve that score. On the last day of class, students take another proctored ALEKS PPL assessment and are advised about their math pathway to graduation.

Results

Of the 50 students in the Summer 2015 pilot, 24 (48%) placed into college algebra and of those, 80% passed their college algebra course with an average grade of B. For the Spring 2016 pilot, UVU contacted 35 students who had left the university years before and had all requirements completed except gen ed math. Of those students, 22 (63%) were placed into a gen ed math course after using ALEKS and graduated within six months.

For the Fall 2017 MATH 100R class, students worked an average of 30.1 hours in their Prep and Learning Modules and mastered approximately 105 topics. They also improved their placement scores by an average of 15 points, eliminating the need for least one course of four or five credit hours, on average. MATH 100R is now the standard for math placement on our campus.

Academic Term	MATH 100 Enrollment	MATH 100 No. of Sections
Fall 2016	156	11
Spring 2017	281	13
Summer 2017	103	4
Fall 2017	965	28
Spring 2018	886	32

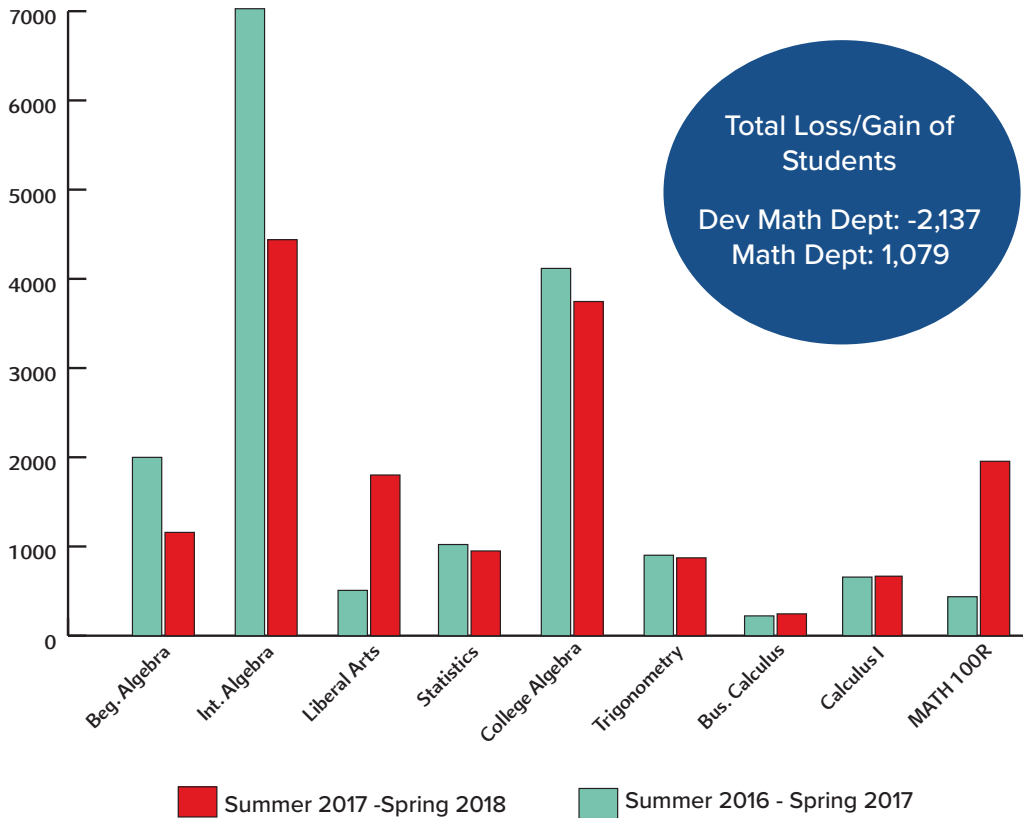


Institution Profile

Utah Valley University is a public university located in Orem, Utah that serves approximately 37,000 students annually. Founded in 1941, it is the largest public university in the state of Utah and offers numerous certificate and diploma programs, as well as associate degrees, bachelor's degrees, and master's degrees. Throughout its history, UVU has responded to its service region's (Utah, Wasatch, and Summit counties) population changes and business/industry needs, which is evidenced in its mission, program offering, degree level, and enrollment changes.

Results (Cont.)

Enrollment Shifts for Academic Year 2016-2017 vs. 2017-2018



Using ALEKS PPL has saved students approximately \$992,073 in tuition by helping them to skip math courses that would otherwise have impeded their academic track; we continue to evaluate the financial impact overall. UVU has seen enrollment shifts from developmental math courses to general education math courses. Total math instruction for the 2017-18 academic year is 8,000 student credit hours less than for the same period in 2016-17.

Knowing that college completion is affected by time spent in developmental math courses, we expect our students to persist to graduation at higher rates now that the path to general education math courses is shorter, and students start at a (higher) level appropriate to their abilities. We will continue to monitor student retention.

Instructor Profiles

Tiffany Evans is the Director of Program Completion in the Division of Academic Affairs at Utah Valley University. She has 25 years of experience in higher education administration including 15 years at Utah State University as Executive Director of Student Involvement and Leadership. She is passionate about programs that will help students achieve their goals in higher education at open-admissions institutions.

Carolyn Hamilton, Associate Professor, has taught mathematics at UVU for 25 years, including chairing the Math Department for several years. Her deep concern for student success led to the implementation of innovative refresher workshops for re-entry students and a program for mass advising for math courses. She is currently the business calculus coordinator in the Department of Strategic Management and Operations. She received her M.S. in Mathematics from University of California Riverside, specializing in Complex Analysis.