The University of Toledo Case Study

Toledo, OH

Study Specifics

School Name
The University of Toledo

Educator
Claire Cohen-Fray

Course Name
General Chemistry I

ALEKS Implementation
Traditional lecture course; Placement into General Chemistry I

Average Enrollment
General Chemistry I Fall Semester (CHEM1230) = 900-1000

Introduction

For the General Chemistry I course, the University of Toledo had a very broad range of chemistry backgrounds coming into the classroom. Some students were bored repeating the same homework problems of concepts they already understood. Others were completely lost and had friends and tutors doing their homework for them. Additionally, there was no correlation between work in ARIS, the homework system, and exam grades. **Implementing ALEKS in the fall of 2012 helped the chemistry faculty differentiate instruction to a large, diverse group of students.**

With ALEKS, faculty can now start the course in Chapter 3 of the text skipping some review and prerequisite material. Students who are not strong in the prerequisite topics have the opportunity to review and still do well in the course if they are willing to put in the time to do so.

Faculty can also recognize students who are not ready to take General Chemistry I as they generally have a large number of ALEKS topics to learn following the Initial Assessment. These students can then switch to the prerequisite course (Elementary Chemistry).

Since the ALEKS experience in General Chemistry I was positive, the faculty decided to also use it as the placement exam for the course. ALEKS not only accurately assesses student knowledge, but it also gives students the opportunity to earn their way into General Chemistry I by learning and mastering the critical prerequisite topics.

ALEKS Experience

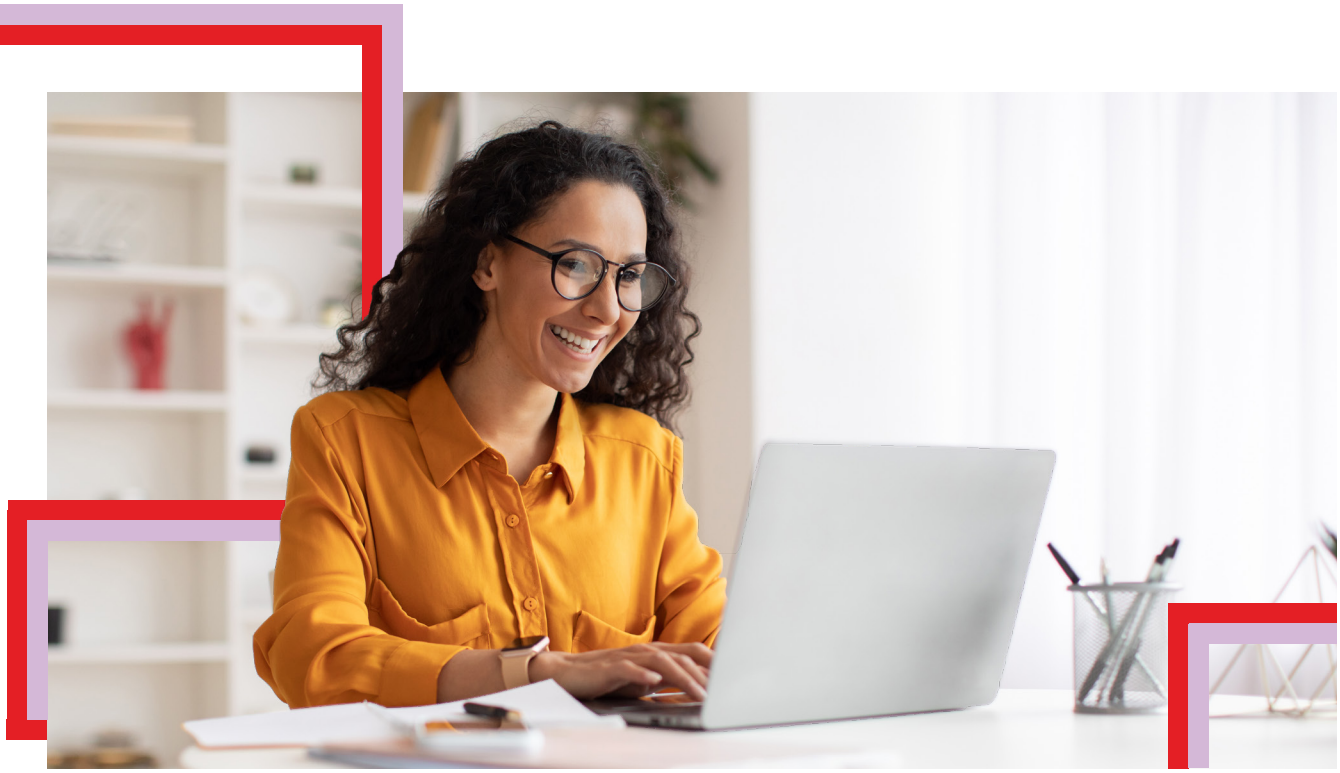
Professor Cohen, Associate Lecturer and Director of General Chemistry at the university, finds that **"ALEKS has been excellent for our General Chemistry I online homework as well as our placement assessment."** She also notes that "ALEKS has amazing customer support." After using more than 5 different online homework systems and clicker technology (WebAssign, ARIS, Connect, Learnsmart, Sapling, Mastering Chemistry, TurningPoint), she is "very impressed with how quickly issues are resolved." Lastly, Cohen believes that **"ALEKS is very user-friendly and makes it much easier to manage assignments than any of the other systems."**

Implementation

For General Chemistry I, students receive an email in advance of the first day of class outlining the ALEKS requirements. An ALEKS assignment, or Objective, is due each week. Periodic assessments follow each Objective. Students earn 100 points towards their grade with ALEKS. Half of the 100 points is earned by completing the ALEKS Objectives; the other half is based on how much of the ALEKS Pie is completed by the end of the course. The ACS exam is the final.

For the placement component of ALEKS, students get started via a link on the school's website. They must earn at least 50% on the ALEKS Assessment, which covers approximately 78 prerequisite topics, to enroll in General Chemistry I. If students score lower than 50%, they can work in ALEKS until they reach 50% or higher. These students must also take Peer Leading in General Chemisty.robust," says Hampton.

Seamless integration with Blackboard using deep link integration allows Hampton to design a "one-stop shopping" learning environment where students do not have to search in two separate systems to access their assignments and resources.



Results Achieved

Professor Cohen's colleague Kristi Mock did an analysis of about 100 students that compared the exam 1 scores from the fall of 2011, when students used ARIS as the homework system, to the exam 1 scores from the fall of 2012 when ALEKS was adopted. She also compared the scores to student performance in the two homework systems. The analysis showed a correlation between mastery in ALEKS and performance on the first exam, as opposed to ARIS. **(see Figure 1)**. The same analysis was done comparing Mastering Chemistry and ALEKS in the fall of 2012 **(see Figure 2)**. This second analysis also saw a similar correlation between ALEKS mastery and performance on the first exam.

Figure 1: Exam 1 Results Correlated to ARIS Scores and ALEKS Mastery

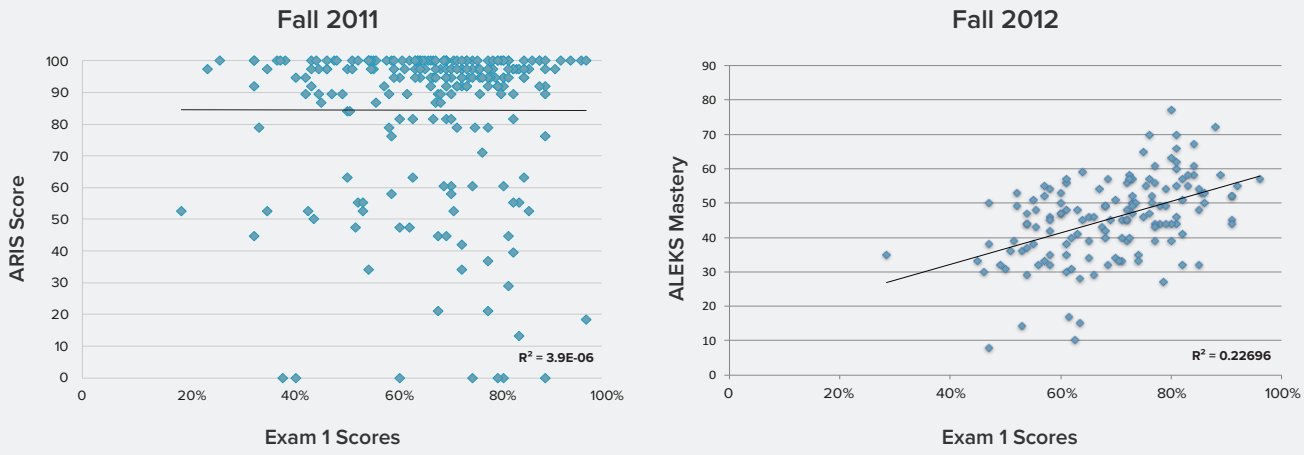
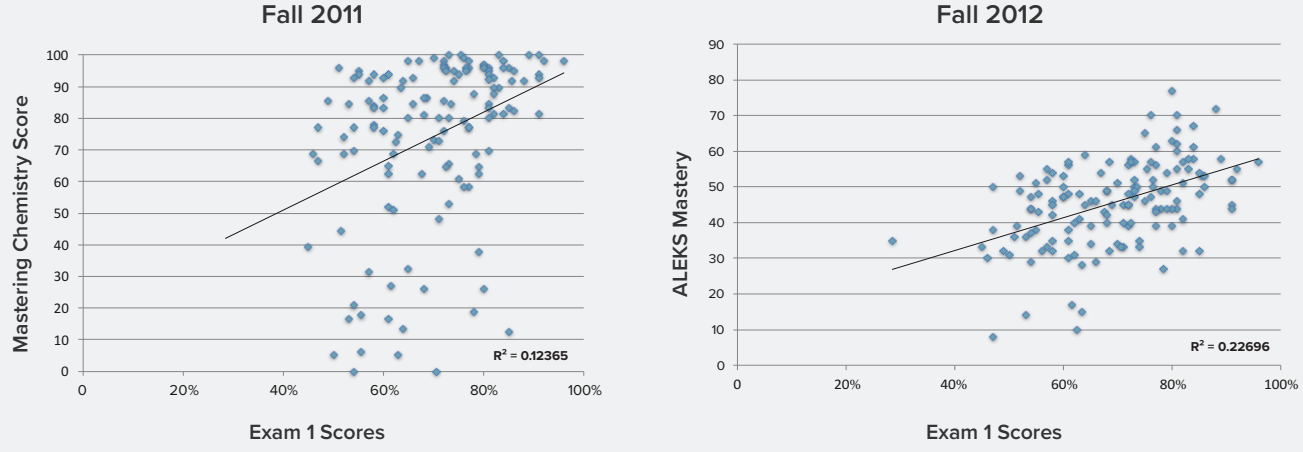


Figure 2: Fall 2012 Exam 1 Results Correlated to Mastering Chemistry Scores and ALEKS Mastery

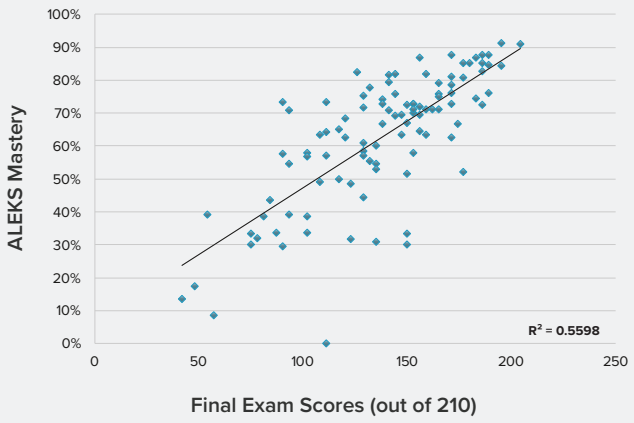


Results Achieved (Cont.)

Lastly, Mock's analysis showed a correlation between ALEKS mastery and final exam scores for the fall of 2012 (see Figure 3). She determined that mastery in ALEKS was a reliable predictor of student performance on exams in the General Chemistry course.

ARIS and Mastering Chemistry are no longer used in General Chemistry I. **Overall, the majority of students and instructors have had a very positive experience with ALEKS in General Chemistry I.** Using ALEKS for placement has also been a major positive change. Students can now do the placement online and do not have to visit the campus to complete the test. **Students report that ALEKS has helped them immensely by forcing them to really learn the material.** The ALEKS reports available are also very helpful in identifying students who are not ready to take General Chemistry, as well as pinpointing the knowledge gaps that struggling students should focus on.

Figure 3: Fall 2012 Final Exam Correlated to ALEKS Mastery



Analysis showed a correlation between ALEKS Mastery and final exam scores, and was a reliable predictor of student performance on exams.

> **"ALEKS is helping more students be successful by improving retention of material as they move on to General Chemistry II. So many are "forced" to do the work, as well as the prerequisite work if necessary. This is very beneficial."**
>
> **– Claire Cohen-Fray**

Institution Profile

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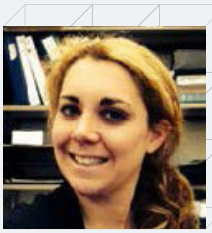

Instructor Profile

Claire Cohen-Fray is an Associate Lecturer and Director of General Chemistry at the University of Toledo. She earned a bachelor's degree in Chemistry from the University of Massachusetts-Amherst and a doctorate from Cornell University.