

Algebra 1—An Open Course: Pilot Profile and Case Study

New Resources for New Approaches

Algebra 1 – An Open Course is a flexible, comprehensive, learner-centered program that integrates a broad range of pedagogical approaches. It is designed to open the door to mathematical concepts for all students, and to give teachers new tools to address the challenges of math instruction. This case study is one in a series that highlight a number of the new approaches to mathematics education made possible with these resources.

Culver City Adult School

Culver City Unified School District, CA

BACKGROUND

Culver City Adult School is an alternative school that offers blended and online classes to adult learners. Culver City Unified School District is in Los Angeles County, and includes five elementary schools, one middle school, one high school, one continuation school, and the adult school. The Adult School serves over 4,000 students annually with GED, Adult Basic Education, ESL, Independent Learning, and other high school diploma classes, including English, math, science, history, and electives. Through its partnership with the Outreach Technical Assistance Network for Adult Educators (OTAN), it was able to utilize OTAN's membership in NROC to participate in the *Algebra 1 – An Open Course* pilot.

ALGEBRA CLASSES AT CULVER CITY ADULT SCHOOL

Culver City Adult School used NROC's *Algebra 1 – An Open Course* to serve a total of 25 students in two different class formats. In a blended class format, there were two lectures each week and students worked on the courseware either at the school's computer lab or at home. In Fall 2011, the accelerated math class used the *Algebra 1* courseware in a fully online format. The students could work in the school's lab to get one-on-one assistance.

STUDENT PROFILE

Culver City Adult School students must be over 18; they are often in their 20s or 30s, and the oldest graduate was 89. Many are working parents and have different levels of education and computer skills. All chose to come back to school to finish either their GED or high school degree. Although the students are supposed to have a high school reading level to be in the Adult School, some students struggle because they are English Language Learners.



DISTRICT STATISTICS:

- **District Enrollment:** 6,801
- **LMS and LOR:** Moodle
- <http://www.ccusd.org/adultschool>
- **Contact :** Leila Rosemberg, GED Coordinator and Math Teacher
- **NROC Member:** Through the Outreach Technical Assistance Network for Adult Educators (OTAN); member since 2010

PILOT DETAILS

- **Number of Students:** 25 in GED
- **Teachers:** One, with 21 years teaching experience, 3 years teaching online
- **Course type:** Blended class combined lectures with the courseware. Students in both the blended and online classes used the courseware in a school lab or at home.
- **Terms in Use:** Blended pilot spring 2011

INSTRUCTIONAL APPLICATIONS

Blended/Hybrid Learning
Alternative Education
Online Teacher-Led
Adult Education / GED
Individualization

FLEXIBLE COURSE DESIGN

The Culver City algebra teacher, Leila Rosemberg, was easily able to integrate the *Algebra 1* courseware into a Moodle class she had already created. The content follows a similar order of lessons as her current textbook. The students used a combination of the *Algebra 1* courseware, a textbook, other content in Moodle, and a wiki. The teacher used the Presentation, Worked Examples, Practice, and Review¹ sections of the *Algebra 1* courseware during class. During the lecture, she used an interactive whiteboard to pause, review, and explain the material, including animated problems and equations, videos and other real-world examples. Ms. Rosemberg added a pre-algebra section, an extra quiz on terminology that took advantage of *Algebra 1*'s Glossary and Topic Text features, and links to other presentations and math games.

"I like the Presentations because they show me how math is used in everyday life."

- Culver City Student

Ms. Rosemberg liked the courseware organization, especially the navigation and consistency. She said students appreciated that the *Algebra 1* courseware is very visual, making it more interesting than a text. She found her blended course students were much more connected than in her other traditional courses, communicating with each other outside the classroom. Ms. Rosemberg was so pleased with the *Algebra 1* courseware that she incorporated it into her fully online course in fall 2011. She commented, "I am glad I don't have to reinvent the wheel—I am not capable of creating such great online content!"

INDIVIDUALIZATION

One of the biggest challenges to overcome at the Adult School is the variability of students' computer and language skills. Ms. Rosemberg liked that the blended approach allowed students to access lessons after class and repeat them as needed. Also, students could use up to seven different approaches to learn and practice each topic, depending on the particular unit. If students get stuck, they can reach out to a teacher online or visit the computer lab. This is especially important for adults who need flexibility in their study hours.

"I am glad I don't have to reinvent the wheel – I am not capable of creating such great online content!"

- Leila Rosemberg
Culver City
Math Teacher

The students find algebra to be challenging but as adult students who have chosen to go back to school, they are motivated to do whatever it takes to graduate. Use *Algebra 1 – An Open Course*, most felt they were progressing and were proud of their accomplishments. "I like the opportunity to practice and get feedback until I get things right," said a Culver City Adult School student.

¹ To view samples of the Presentations, Worked Examples, Practice Problems, and other pedagogical features of *Algebra 1: An Open Course*, please visit <http://www.NROCmath.org>.

EARLY RESULTS

Culver City Adult School participated in an early research project designed to assess student success and improvement when using *Algebra 1 – An Open Course*. In the initial pilot class, five of the 13 students completed the class by the start of the summer. In the next semester, four of the students completed their GED or CAHSEE² math exams, six more took the exams, and one student dropped from the program. During that period, students reported that they liked math better since starting to work with NROC's *Algebra 1* course, and one-third of the students interviewed reported that they feel they are better at math than before the pilot. Overall, two-thirds of the students have either passed or progressed to scheduling the GED/ CAHSEE math test.

Students were positive about their experience with *Algebra 1 – An Open Course*. They noted that the program was easy to navigate and they liked having the opportunity to learn computer skills. Their attitudes toward math were varied before the course, but all of the students reported liking math more since taking using the courseware. Before the class, the students rated themselves poor or good at math. Since using the *Algebra 1* courseware, most students rated themselves good at math. Many of the students found the courseware to be engaging and motivating, especially because of the variety of approaches being used and the availability of clear, real-life examples of the applications of math. Students found the Worked Examples³ pedagogy the most useful component because it provided a step-by-step explanation of the logic of the math problems and how to solve them.

ABOUT NROC

The NROC Project is a community-guided, non-profit project focused on new models of digital content development, distribution, and use. NROC is funded by The William and Flora Hewlett Foundation, the Bill & Melinda Gates Foundation, and most importantly by NROC members across the country. We are education leaders from state and system institutions nationwide who believe in open and equal access to education and the power of media to personalize learning. We represent more than 6 million U.S. students from middle school to college. Learn more: <http://TheNROCProject.org>.

For additional information on *Algebra 1 – An Open Course*, please visit [http:// NROCmath.org](http://NROCmath.org), or email membership@theNROCproject.org.

² The California High School Exit Examination, retrieved January 23, 2012, <http://www.cde.ca.gov/ta/tg/hs/>

³ The Worked Examples in *Algebra 1: An Open Course* were created specifically for this course by Sal Khan of Khan Academy.