

TI-Nspire™ CAS Learning Handheld Helps Algebra I Students Develop Deeper Understanding of Topics

Case Study 8

Teacher/Researcher – Sherri Mead, Santa Teresa High School, San Jose, CA



Your Passion. Our Technology. Student Success.™

TI-Nspire™ CAS Learning Handheld Helps Algebra I Students Develop Deeper Understanding of Topics

Case Study 8

Teacher/Researcher	Sherri Mead
Location	Anta Teresa High School, San Jose, CA
Course	Algebra I
Grade	9
Student Profile	20 students
Technology	TI-Nspire CAS technology with projector

“...the ability to see multiple representations at one time really enhanced my students’ understanding... students were able to actually draw several lines of best fit on the screen and call up the equation to see how they were slightly different.”

Setting: Located in the famed Silicon Valley area of California, Santa Teresa High School boasts a state API rating in the 70th percentile, well above the statewide rating of the 20th percentile for demographically similar schools. The student population comprises 47% Caucasian, 29% Hispanic, 15% Asian and 5% African-American. Of this population, 13% qualify for free or reduced lunch and 6% are ELL.

Curriculum & Teaching: Ms. Mead bases her curriculum on the 1998 McDougal Littell Algebra 1: Explorations and Applications textbook by Leiva and Brown. She supplements this textbook with the 1980 Holt, Rinehart and Winston Algebra 1 textbook by Nichols. Her class meets four days a week with a two-period block on Wednesdays and 55-minute periods on Thursdays and Fridays. She uses large-group instruction exclusively. She is able to cover all planned curriculum in this time.

For progress testing, Ms. Mead writes her own tests, which include 25 to 40 questions. The school district provides a common assessment at the end of each of the six units. Written by a district teacher, these tests include 30 to 40 questions.

In a typical week, students use TI-Nspire CAS technology daily to compare answers and to discuss problem-solving strategy. By the middle of the year, Ms. Mead observed students using the device occasionally to check answers and to generate examples of new concepts or to make predictions. She reports that in a typical mid-year school week, her questioning is a mix of instructions on operating the TI-Nspire CAS handheld, answer checking and discussion of reasons for different answers, which is rarely needed by the end of the year. In a mid-year week, the class often uses representations of equations, graphs, and tables, as well as multiple representations simultaneously. The week will often involve the use of TI-Nspire documents that Ms. Mead creates for class.

Results:

Ms. Mead observed that “the ability to see multiple representations at one time really enhanced my students’ understanding.” As an example, she described how she:

“... adapted the example in my textbook for Chapter 3.6 called Modeling Linear Data for TI-Nspire technology. The lesson went very well as students were able to actually draw several lines of best fit on the screen and call up the equation to see how they were slightly different. This enabled me to talk about the line of best fit itself and not so much about the procedure for writing the equation of a line. I feel we were able to go deeper than the original activity.”

Ms. Mead observed that it took her approximately four weeks to get to the same level of proficiency as when she used TI-84 Plus family graphing calculators. She did express a need to be able to access and incorporate any available lesson plans, given her lack of time during the school year.¹

Ms. Mead observed that her students reached the level of creating and saving their own TI-Nspire™ CAS documents within approximately a couple of weeks.

She concludes that her colleagues "...are always asking me what's new and different about the TI-Nspire CAS handheld. They need to see the new features and how they really are a departure from what is currently available."

June, 2007

¹ This was a pilot test of pre-production units; supporting materials were not yet available.