

Connected Math Pre-Algebra and Algebra Grade 8 Students Show Gains with Graphing Calculators

Case Study 4

Teacher/Researcher – Vivian Birdsall, New Canaan, CT



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Teacher/Researcher	Vivian Birdsall
Location	New Canaan, CT
Course	Pre-Algebra and Algebra 1
Grade	8
Student Profile	48 Pre-Algebra, 40 Honors Algebra 1 students. All working on grade level.
Technology	TI-84 Plus family graphing calculators, TI-Navigator™ system, interactive whiteboard

“Calculators belong in the math classroom...The students are excited about them and enjoy any activities presented that allow them not only to use the calculators but to learn more about the possibilities surrounding them.”

Setting: Vivian Birdsall’s classroom is a relaxed, very casual environment, where the students feel comfortable expressing their opinions about the task at hand to each other, as well as to the instructor. Students choose their own seats, but Ms. Birdsall likes to mix them up for frequent work in groups or pairs for projects and discussions, and they switch to rows or pairs to take quizzes and tests. Calculators are prominent on student desks every day. “Plusman” comics, student projects and posters (never graded papers), calculator posters and motivating slogans (“Math – it’s everywhere”) are on the walls, conveying the fun and the challenge of math. Ms. Birdsall has been teaching this grade level for 13 years, including 11 years teaching these courses. She has had graphing calculator technology for 3 years. The classes meet for five periods of 45 minutes each week. She reports no security or discipline problems in her classes.

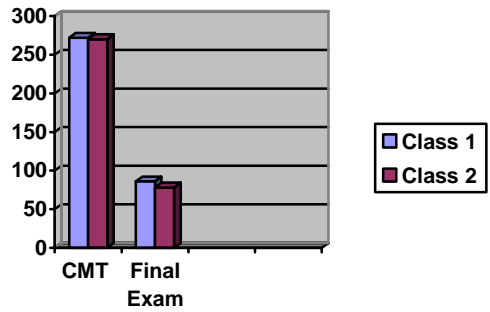
Curriculum & Teaching: The New Canaan school district defines the curriculum and time line very closely, so the four teachers at each grade level are never more than a few days out of synch with each other. All use identical mid-terms and final exams, which they write together. Regular quizzes are also used. For math through grade 8, including pre-algebra, the district uses the 1998 edition of *Connected Math Project*. They have moved to the 2006 edition for the 2006-2007 school year. For the honors Algebra I class, the *McDougal Littell Algebra I*, 2001 edition is the text. Ms. Birdsall supplements the texts with her own materials to fit specific needs of each class. Within each grade, there are several levels of classes. At the beginning of the year, the teachers meet to examine the standardized test scores of their incoming students, and use that information to modify the curriculum to meet the needs of each student.

After three years of experience with graphing calculators (including one year with the TI-Navigator system and an interactive whiteboard), Ms. Birdsall is strongly committed to teaching with graphing calculators. “Calculators belong in the math classroom,” she says. “The students are excited about them and enjoy any activities presented that allow them not only to use the calculators but to learn more about the possibilities surrounding them... I would never think of running a class in the 8th grade without the technology that includes the graphing calculators.”

She points out that graphing calculators are for all students: “I had a fully ‘included’ student with severe special needs in one of my classes. This student benefited tremendously by using

the calculator. She has gone on to high school and is fully included in Algebra where she frequently is the student selected to operate the overhead calculator, because of the proficiency she demonstrated to the teacher. That would not have happened for that student if I did not make an effort in 8th grade to use the calculators every day.”

Results: The results for 2005-2006 are impressive. On the Generation 4 Connecticut Mastery Test (CMT), class averages for the two classes studied were 270 and 272. Mastery is set at 144, and the maximum possible is 400. Mastery is required in each of 23 strands. On the District’s final exam, average scores for the two classes were 78 and 86, respectively.



Ms. Birdsall’s excellent work has been recognized by her district’s leadership. “The calculators I received as a grant made it possible to show the administration and the BOE that I was serious about the level of technology I was willing to use in my classroom. The BOE took my initiative as a signal that it was time to seriously invest in the math department technology in the middle school. No other teacher at any level was using the technology.” This year, Ms. Birdsall has been assigned full-time as Instructional Leader and technology integrator for the middle school math program.

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