

G-TEAMS: Perspectives on Elementary Mathematics

Department of Mathematics, University of Arizona, Tucson, Arizona

Megan Alexander, PhD student in Biomedical Engineering
Maggie Hackett and **Kelley Brooks**, 4th Grade Teachers



Megan's Research Interests:
Biomechanics of the Recurrent Laryngeal Nerve

School: Elvira Elementary School, Tucson, AZ

G-Teams Goals: Our goals for this year included developing better knowledge of mathematical fundamentals. We planned to broaden the students understanding of math by incorporating it into other subjects throughout each day. We worked to show students how important math is in all aspects of their life with hands-on activities and real-life examples.

What Megan Learned	What Maggie Learned	What Kelley Learned
•Many students lack important background knowledge to make connections between class examples and their own lives. I have learned that it is important to work at building these student's knowledge and to connect with the students to determine what is most important to them.	•It's awesome having a person in the class that has real-life uses of the math standards readily available. From being in the classroom most of the time, it's difficult to sometimes come up with reasons "why" we are teaching something.	• I have learned new ways of teaching certain concepts as well as related strategies. Without Megan's expertise or presence in the classroom, this would not have happened and who knows where the instruction would have taken students! I appreciate the opportunity to learn from her every time she's in the classroom!



Kevin Powell, PhD Student in Mathematics
Karen Rakowitz and **Lourdes Oros**, 2nd Grade Teachers



Kevin's Research Interest :
Analytic Number Theory and Group Theory

School: Nash Elementary School, Tucson, AZ

G-Teams Goals: Our goal is to enable children to develop better critical thinking skills through mathematics and to realize that math can be fun.

What Kevin Learned	What Karen Learned	What Lourdes Learned
•My experiences have taught me how to better balance classroom activities between instruction and practice.	•I have learned that the possibilities for higher level thinking are endless and that children are able to think at levels far beyond what we can imagine – we just need to give them the opportunities to soar!	•I have learned that making connections through mathematics deepens students' understanding of how math works in the world around them.

Mathematical research can even be accessible to second graders. Two years ago, Kevin studied the asymptotic formula for counting the number of integers that are cube, fourth and fifth power free. This year at Nash, he taught the students how to detect square-free numbers geometrically by trying to fill rectangular arrays with squares.

Victor Piercey, PhD Student in Mathematics,
Cassidy Larkin and **Jen McCloud**, 5th Grade Teachers



Victor's Research Interests: Algebraic Geometry

School: McCartney Ranch Elementary School, Casa Grande, AZ

G-Teams Goals: (i) Convincing students of the value of math in the real world, (ii) helping students see the mathematical ideas behind symbolic manipulations, and (iii) identifying the sources of common misconceptions.

What Victor Learned	What Cassidy Learned	What Jen Learned
•Quality teaching combines auditory, visual, and kinesthetic learning strategies. • Short and to-the-point statements yield effective communication. • Engagement strategies can be used in teaching any level of mathematics. • Young students can understand very complicated concepts when presented from first principles and properly motivated. • Using actual data from the real world engages students. •"I do, we do, you do."	•Challenging students to become tomorrow's real problem solvers and thinkers. •Analyze quality instruction to support Fellow's progress. •Real world scenarios offer students a variety of opportunities to practice multiple objectives. •Having a professional scientist motivated students to connect to math. •Writing and explaining the mathematics processes are key to promoting higher level thinking skills. Pronouns create vague explanations.	•The importance of supporting mathematical instruction with meaning. Understanding the why, not just the how. •Supplying the students with a strong mathematical foundation by using cross-curricular integration. •Bringing in real world scenarios to extend the learning offers opportunities for all. •Manipulatives make the math tangible and concrete. •Effective co-teaching strategies.