MRSEC Participation in
Project Fulcrum: A Partnership in Middle School Education

Diandra Leslie-Pelecky
David Schmitter
Gayle Buck
Luis Rosa
Gayle Buck

Department of Physics and Astronomy
Department of Teaching, Learning and Teacher Education
Department of Physics and Astronomy
Department of Physics

Funded by NSF and UNL
What is Project Fulcrum?

• NSF funded outreach program that places science, math and engineering graduate students in elementary and middle schools

• Graduate students are Resident Scientists in a school and act as school-wide resources for teaching math, science and technology
Why?

- Enhance students’ opportunities to learn science by increasing access to inquiry-driven experiences
- Improve student attitudes towards science
- Provide students with diverse role models
- Promote long-term cooperation between scientists, teachers, and teacher educators
- Improve communication and teamwork skills of Resident Scientists
Participants From

• Biometry
• Biology
• Mathematics
• Computer Science
• Chemistry
• Physics
• Materials Science
Students started with common stereotypes about scientists

The scientists in the classroom did not fit these stereotypes

Not only did the students not change their stereotypes, they rejected the visitors as scientists because they didn’t fit the stereotypes

Comments from Resident Scientists

“Class participation in the math problem of the day has increased dramatically since I added a math challenge problem. The kids are motivated to solve the challenge problem and this gives them more confidence in solving the problem of the day because it is easier than the challenge problem.”
Comments from Resident Scientists

“My eighth-grade class did an experiment and gathered the data. Each student made his or her own graph of the results. Then they compared their graph with that of their classmates’. Suddenly the kids were excited about their own information. It was no longer simply measurements they had been required to find and put on paper. They now became interested in sharing and comparing their findings (just like real scientists!).”
Introduction of Resident Scientists to Classroom

- Videotapes of Resident Scientists in their ‘natural habitats’ are played before Resident Scientists make contact with students
  - Emphasize the type of science and tools used
  - Include some personal information

- Scientists visit each others’ classes and show their own videotapes to provide diverse role models
What Do the Resident Scientists Do?

• Help with inquiry-based experiments
• Role-models project
• Organize science-related events for students and parents
  • Beattie Science Night
  • Museum Field Trip
  • Guest Speakers (Prof. Ducharme – MRSEC IRG2)
Role-Models Project

Designed in response to last year’s study, which showed that students didn’t always perceive graduate students as scientists!

Scientists from different fields and backgrounds talked to students about their paths into a science or math career.
Kickoff Speaker

Kickoff speakers introduce Project Fulcrum to the entire university community and the general public.

Carl Wieman and Lead Teacher Linda Splichal (below). Lawrence Krauss poses with several Project Fulcrum members (right).