

# MRSEC Outreach: Research Experience for Teachers

J. Blume, Division of Engineering, Brown University, supported by NSF DMR-0520651

Secondary or Primary school teachers spend 2 summers working with Brown Faculty and Students. 4-8 teachers per year are accommodated. John Shilko of Pawtucket Middle School facilitates the program. Teachers work with faculty to develop classroom modules for their use. The modules are also used in other outreach programs. Teachers are given weekly tours and demonstrations of science research labs throughout the campus. 18 Teachers have participated since 2001.

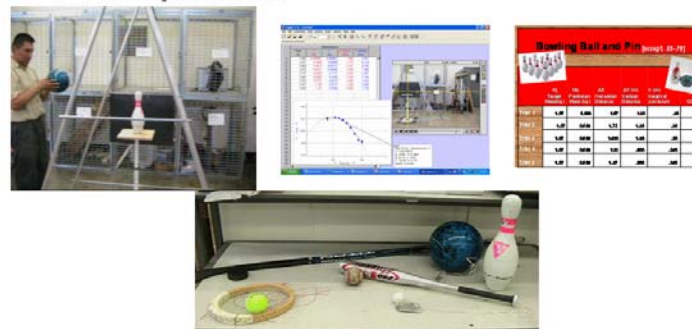


Class of 2006: Blinn Dorsey, John Shilko, Catharine Slader, Katy Freytag, Gerome Muriel

## The Coefficient of Restitution in Sports

by Catharine Slader & Gerome Muriel, Hope High School  
Janet Blume, Brown

- Test coefficients of restitution of sports equipment using a pendulum apparatus.
- Conservation of energy and projectile motion calculations are performed.
- Careful measurements are made
- Professional reports are written.



## Skateboard Mathematics: Parabolas

Blinn Dorsey, The Gordon School  
Janet Blume, Brown



$$y = a(x - b)(x - c)$$

Students study parabolas via trajectory motion. Videos of trajectory motion are made, data plotted and curve-fit. Results are used to predict trajectories.