UC MERCED SCHOOL OF ENGINEERING
Service Learning Program

Merced County Office of Education
Team Get S.E.T.
Science, Engineering, and Technology
Get S.E.T.
Get Science, Engineering, and Technology

Our Client:
Merced County Office of Education

Our Mission:
To design fun and exciting curriculum for K-12 students to aide them in understanding Chemistry, Physics and Biology properties as they apply to engineering contexts and to work with teachers to create new and effective ways to demonstrate these principles.
Our Goal

• Our goal is to increase students’ interest in science and math through interacting games and hands-on experiments.

• We want to inspire students to become college-bound in a science, math, or engineering field.

• We look forward to helping teachers improve students’ knowledge in scientific areas.
Organization

• Project Teams
  - Elementary
  - Automotive
  - Trebuchet
  - “Fourth” Team

• Administrative Teams
  - Newsletter
  - Website
  - Documentation
  - Recorder
Elementary Team

• Burbank Elementary
• Chenoweth Elementary
• Elmer Wood Elementary
Ice Cream = Chemistry?

- If you need ½ cup of milk to make one Ice Cream in a Bag, how many ice creams can you make with 3 gallons?
- 1 gal = 4 qts
- 1 qt = 2 pints
- 1 pint = 2 cups
4 qts /1 gal  x  3 gal  =  12 qts
2 pints/qt  x  12 qts  =  24 pints
2 cups/1 pint  x 24 pints  =  48 cups
2 – ½ cups/1 cup x 48 cups  =  96- ½ cups

That means 96 ice creams were made for visitors on Bobcat Day!
Revamping...

Color by...

...equations!
Semester Achievements

Elmer Wood
3- Kindergarten classes
4- 2nd grade classes
1- 3rd grade class

Burbank
1- 3rd grade class
1- 4th grade class

• Ice Cream in a Bag
• Graph-A-Pic*
• Pollutants
• “Chem” Rover*
• Create a Creature
• pH Testing with Cabbage
• “The Cell”
Trebuchet Team

• Constructed a metal trebuchet in order to motivate students to pursue careers in Science, Engineering, and Technology

• Use the trebuchet along with original worksheets to help students understand the principles of physics
Metal Trebuchet

- Made entirely of metal for longevity
- Mounted on a trailer for simple transportability
- Easily replaceable and affordable parts
- Variable counterweight for adjustable launch distances
- Consistent and accurate launches
Miniature Trebuchets

- Can be easily and quickly assembled
- Made of inexpensive, easily obtainable materials such as Styrofoam, binder clips, wooden dowels, etc.
Worksheets

• Worksheets based on the radial trebuchet motion reinforce physics principles such as kinematics in a manner that is easily understood.

• Worksheets can be used with either the large trebuchet or miniature trebuchets as part of the lab.
Trebuchet’s Accomplishments

• Travel to schools in order to make classroom presentations
• Use with completed worksheets in classrooms to help students understand physics’ principles
• Present the trebuchet during UC Merced events such as Bobcat Day to promote the Service Learning program
Automotive Physics

Goal:
• Show physical representations of acceleration for high school physics students
• Teach in a fun environment
• Teachers can access the lab from our webpage
Automotive Physics

Content of lab:

• A video presentation of cars accelerating and decelerating
• Problems presented through video
• Students are aided in solving problems
• Students are split up into groups and given remote control cars and asked to determine their acceleration
• After completing all of the above the class will compare acceleration numbers from a real car and a remote control car.
“Fourth” Team’s Goal

• To increase the number of middle school students interested in Engineering, Science, and Technology with an emphasis in Bio-Engineering at an early age
What students will gain from these projects

- Cultivating creative thinking
- Basic research paper writing techniques
- Team cooperation
- Developing problem solving skills
- Enjoying science!
“Fourth” Team: This Semester’s Project

• Client: Mr. Thompson and his 5th and 6th grade GATE students at Elmer Wood Elementary
• Project: dissecting hearts, eyes, kidneys, and brains
• Fifty students participated
Group Synchronization

• Developing individual goals that were common among the group
• Achieving high caliber performance and depth within a large team
• Budget coordination between teams for current projects with consideration for future needs
• Surmount time schedule conflicts
• Communication within the team and with clients
Team Accomplishments

• Procured our own hardware and software for comprehensive team activities
• Multi-language Newsletter for a larger audience
  – English, Hmong and Spanish
• Explored science with students at Elmer Wood, Burbank, and Chenoweth elementary schools
• Gained valuable experience by working closely with our clients and students
• Inspired students to pursue a higher education in science and engineering
**Budget Management**

![Budget Management Software](image)

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**Ending Balance:** 848.92
Future Goals

• Finish current projects
  – Elementary Team, Fourth Team
• Establish more project teams
• Expand the number of students and teachers reached

www.getset.sl.ucmerced.edu
Get S.E.T. would like to Thank...

- Christopher Viney
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- PG&E
- MCOE Teachers and Staff
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