

Greater Interest in Government

The purpose of the Greater Interest in Government Program, established in 1969 by Frederick A. Faville, Illinois Beta '19, is to stimulate interest in civic affairs and public-policy issues among student members of Tau Beta Pi. The Executive Council awards annual grants up to \$750 each for these activities from the investment earnings of the Greater Interest in Government Fund.

☞ California Upsilon ☞

Robotics and Electricity Lab Kits

THE CALIFORNIA UPSILON CHAPTER at California State University, Sacramento, wanted a Greater Interest in Government project that would both interest its members and serve the local community. Our research sought a project to provide maximum benefit to Tau Beta Pi and the local community. During the research phase, we contacted local governmental agencies asking them for ways we could assist. After a few replies, we saw that a local high-school project would provide the benefits we wanted. We suggested to the vice principal our desire for a robotics project and personally talked with many teachers about their needs. One teacher suggested that we provide laboratory kits for his physics students. We found this appealing because it would encourage interest in science and engineering for hundreds of students over many years. Therefore, we designed a project that both explored robotics and provided laboratory equipment.

Designing the electricity laboratory kits required a significant amount of research to find an economical and flexible solution. We wanted the students to be able to explore more than just light bulbs and resistors. Kits that were sold commercially, though easy for students to use, lacked the ability to perform all the experiments we wanted. Surprisingly, some of these low-end kits cost nearly \$70 each. Kits that would provide the utility we wanted cost even more. After drawing up a list of what we wanted our kits to do, we found that purchasing our own components from local electronic-surplus stores would cost much less. Our kits would include digital multi-meters, prototyping boards, individual components, wire, and alligator clips. California Upsilon purchased the parts for 12 kits for \$40 per kit. The physics teacher was excited to receive the kits and implemented them in his advanced-placement physics class the following week.

The physics teacher provided instruction in physics, but it was students who provided instruction in programming and electronics. The robotics project was conducted similarly to a senior project that one might expect in college with four student volunteers and two mentors. We allowed the students to choose their own micro-controller and robotics kit, which they chose from a local company. Before beginning the robotics curriculum, they learned how to read resistor values, understand Ohm's law, and basic programming tech-



Highlands High School has new kits.

niques. Our students then decided what their robot would do.

The robot would be able to travel to a pre-programmed location, avoid obstacles on the way, and then lock on and follow an object near that spot. Our four students were successful in meeting that goal, although we were sidetracked occasionally by the spontaneous "What if we . . ." questions for which the students could not resist discovering answers. Besides learning more about technology, these students learned how to analyze a problem, work as a team, and divide the labor among themselves. The skills they learned will certainly help them toward future success.

Highlands High School was grateful for what Tau Beta Pi provided. In addition to the time we spent helping students this semester, the laboratory kits and robotics kit will continue to benefit others for years to come. With gratitude for our work, the vice principal invited us to help again and promised a feature article in the school district's public newspaper.

—Jonathan D. Young, *President*
—Pauline N. Mukhar, *Vice President*