

Model Solar Car Design and Racing – LBJ Science Academy Dec. 2008.

A workshop was conducted at the LBJ Science Academy in December 2008 to introduce the students in John Stormberg's senior physics class to solar energy by having them build a solar powered model car from 'kits' provided. The project was conducted by ACCESS using funds from the Texas Solar Energy Society (TXSES) which purchased the kits. Donna Vliet arranged the project with John Stormberg and Gary Vliet conducted the workshop.

The workshop was conducted over two days about ten days apart, to allow the students to build their cars. The first day Gary presented a Power Point lecture, which overviewed solar energy and a variety of solar applications. Each student received a copy of the 300 or so slide Power Point, as well as a seven page write-up about the solar car design and the functions of the components. The students at the Academy are rather advanced in their learning and are able to grasp the essential physical principles involved in a 'solar car'. He also demonstrated in general how the kits are assembled, but only in general, as it was intentionally left to the students to come up with their own unique designs.

The kit components included: a solar panel with 6 cells (to produce about 3 volts), a small D-C motor, a set of gears, front and rear axles, and wheels. These kits were purchased from Solar World in Colorado. The solar powered car is a *great vehicle* to introduce students to a variety of physics principles: solar cells (solid state physics, conversion of solar radiation to electricity), the motor (converts electrical energy to rotary mechanical energy), the gears (teach speed and torque relationships), and finally the wheels and road (which permit conversion of rotary motion to linear motion through friction). Yes, friction is essential to many things we do, but is often thought of in a negative way.

The second session, which was conducted about 10 days later, occurred on a very crisp but fortunately a sunny day. We spent a brief time in the classroom to allow the students to put the finishing touches on their cars. As expected, there was a variety of designs in the six cars completed. Two of them had designed the panel to allow it to be adjusted according to the direction of the sun. We held the challenge on the LBJ tennis courts, with one TV camera and a few other people in attendance. Both Donna and Don Cook took a few pictures. The student with the winning car, was ????? ???. He was interested in keeping the car so reimbursed ACCESS \$34, the cost of the kits. The accompanying pictures show: the presentation in the classroom, John Stormberg and his students, racing the cars on the tennis court and the winner ??? ???.

It is expected that similar workshops will be conducted in other schools in the Austin area. We'll keep you posted.