



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Future Faces of Physics Award Report

Project Proposal Title	Promoting the Physics of Renewable Energy to Minority Students
Name of School	Indiana Wesleyan University
SPS Chapter Number	3116
Project Lead (name and email address)	Alexander Waters alex.waters@myemail.indwes.edu
Total Amount Received from SPS	\$300.00
Total Amount Expended from SPS	\$300.00

Summary of Award Activity

Indiana Wesleyan University's SPS chapter had the opportunity to reach out to the local high School and hold an event consisting of five interactive demos. During this event we explained some of the many sources of renewable energy, how they work, and their many applications as well as turn the abstract concept of waves into a more concrete applicable concept. We also were able to build invaluable relationships with multiple faculty at the high school opening the door for future collaboration.

Statement of Activity

Overview of Award Activity

The IWU SPS chapter held an event at the local high school consisting of five interactive demos. The small groups of seven students per station was vital in achieving a personal, interactive environment in which the students could learn something during every demo and give their attention for 55 minutes. Our first two stations consisted of dye-sensitized solar cells, a solar charger USB kit, wind turbine kit, and galvanometer to explain how a wind turbine generates electricity. Our next two stations involved a non-Newtonian fluid, as well as a chladni plate. In these stations we were able to visually explain interference patterns, 2-dimensional nodes, resonant frequencies, and the some of the applications of these concepts. Our final station was a liquid nitrogen demonstration. This demo helped keep the energy level and attentiveness of students up as well as teach them about the correlation between temperature and energy. In the closing minutes the students filled out a survey so we could learn what we did well and where we could improve.

This project provided means to demonstrate that physics is more than just complex problems that seemingly have no meaning in the real world. When you dive in, physics is actually paving the way in solving many problems our world is encountering, including the energy crisis. We also built a relationship between our SPS chapter and multiple faculty at the high school opening the door for future partnership in raising awareness in physics at the high school level.

Our target audience was high school students and we were able to reach out to 35 students during the event. This was the first of two outreach activities that our SPS chapter participated in this year. While this one was directed towards making connections with the local high school and their students, the other was directed towards the college student body. Due to the event taking place during the last period of the day at the high school, the feedback we received was very brief but we were very happy with how uniformly positive it was.

Impact Assessment: How the Project/Activity/Event Promoted Physics across Cultures

Our main objective in this event was to inspire a group of students to pursue their interests in the sciences, and more specifically physics despite the cultural and economic barriers they may face following this career path. We decided the best place to do this was our local high school due to nearly half of the students being a minority at the school district and the majority of those minority students being African American. The school's graduation rate is also well below the Indiana average as the majority of students considered economically disadvantaged and on the free/reduced lunch program. We hoped to provide the inspiration for students to surpass the obstacles they'll face. Our secondary goal was for this event not only to be a success but to forge a relationship with faculty of Marion High School in order to continue to be involved. Based on personal observations, contact with faculty, and feedback from students, I believe both of these goals were achieved.

Our assessment plan was student feedback through surveys. In the last few minutes of class we passed out short surveys to the students. Our questions included:

1. What was your favorite demo/station? Why?
2. What can we do to improve this event?
3. Did this change your outlook on physics? How?

As expected the favorite station was the one they got to freeze a few items with liquid nitrogen as well as eat ice cream made with it, but about a third of the students were split evenly between the other four stations. Many students said they enjoyed the hands-on nature of the demos but we should continue working on increasing how interactive they are. In response to the final question many students said they found the demos and event really cool but it didn't really change their outlook. A few students however said that they've been interested in the sciences and it was cool to see what physics is like once you get beyond the classroom. We felt very positive about these results due to the fact that at this point in a student's life, piquing one's interest can be the most important thing.

Key Metrics and Reflection

<p>The Future Faces of Physics Award is designed to promote projects that cross cultures. What cultures did your project attempt to bring together?</p>	<p>The students who participated came from a wide array of ethnic and socioeconomic backgrounds; this event brought different groups of students together on an equal field and also bridged the gap between the University and the Community.</p>
<p>How many attendees/participants were directly impacted by your project? Please describe them (for example “50 third grade students” or “10 high school volunteers”).</p>	<p style="text-align: center;">35 High School Students</p>
<p>How many students from your SPS chapter were involved in the activity, and in what capacity?</p>	<p style="text-align: center;">Eight (8) students Three (3) Participated in Planning All Eight (8) in the Activity</p>
<p>Was the amount of money you received from SPS sufficient to carry out the activities outlined in your proposal? Could you have used additional funding? If yes, how much would you have liked? How would the additional funding have augmented your activity?</p>	<p>The amount of money received was sufficient to execute our activities.</p>
<p>Do you anticipate repeating this project/activity/event in the future, or having a follow-up project/activity/event? If yes, please describe.</p>	<p style="text-align: center;">Yes, we would like to continue our relationship with the science department at Marion High School and develop further outreach opportunities for the high school students in the community.</p>
<p>What new relationships did you build through this project?</p>	<p style="text-align: center;">We have built a relationship with multiple teachers from the high school as well as become familiar with many high school students.</p>
<p>If you were to do your project again, what would you do differently?</p>	<p style="text-align: center;">We would attempt to include more hands on activities and arrange with the school for a longer time with the students.</p>

Press Coverage (if applicable)

The IWU SPS Chapter did not receive any press coverage in relation to this award or project.

PhotosActivity



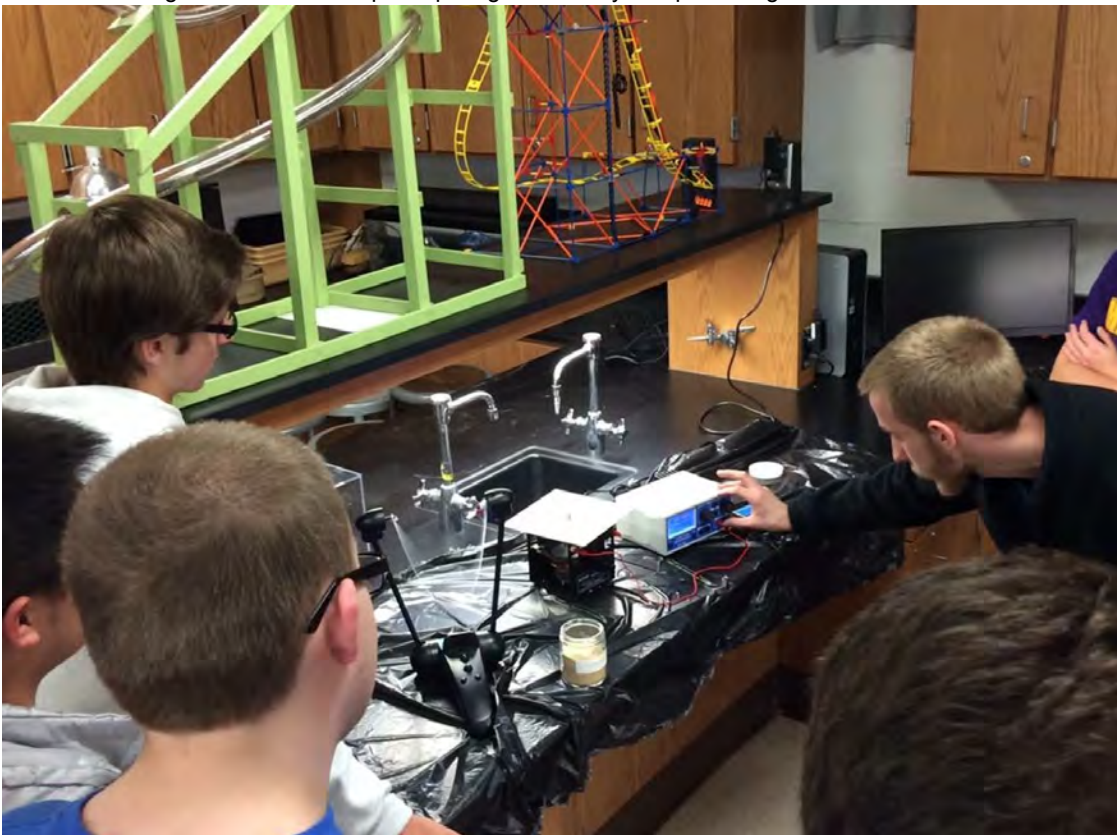
Students participating in various demos. Credit. Dr. Ramos



Two SPS Students demonstrating the wind turbine and explaining how it utilizes wind energy with a galvanometer. Credit: Dr. Ramos



SPS members and high school students participating in a variety of liquid nitrogen demonstrations. Credit: Dr. Ramos



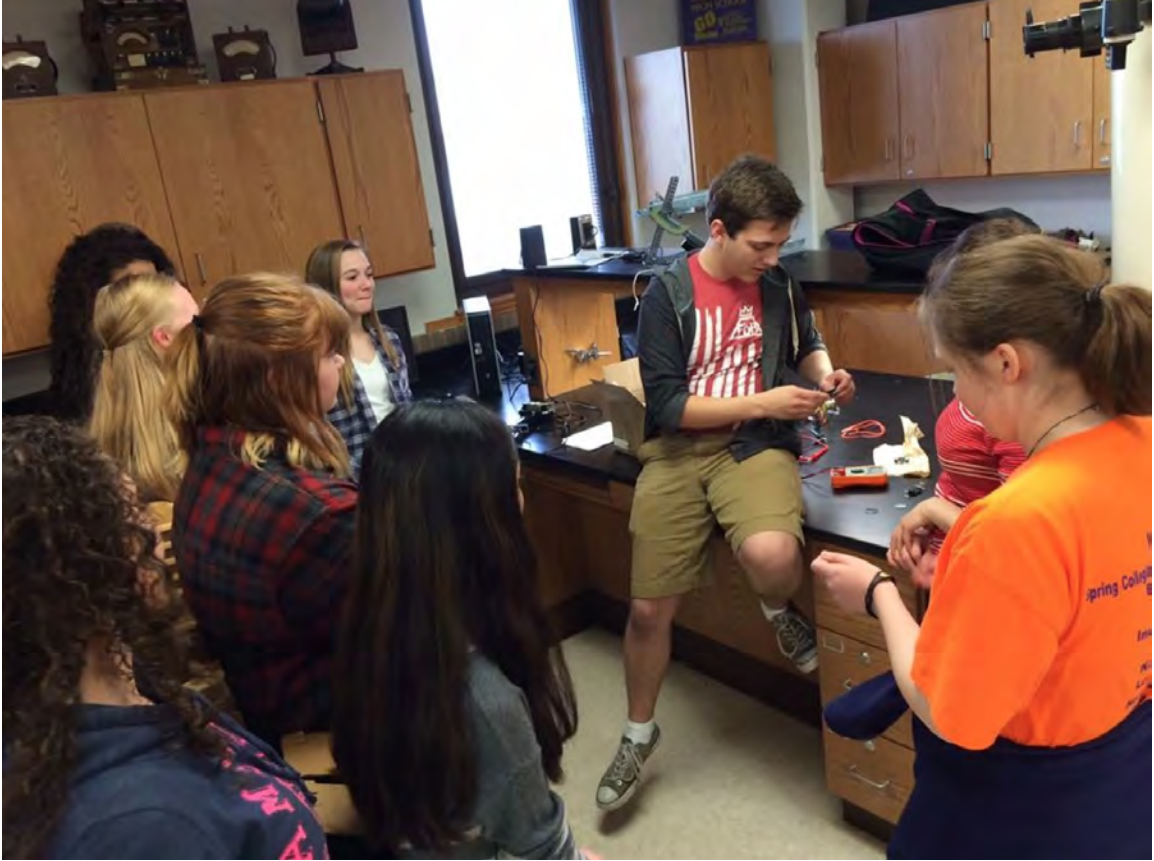
SPS President Alex Waters explaining the Chladni Plate and resonance to a group of high school students. Credit: Dr. Ramos



SPS member demonstrating non-Newtonian fluids. Credit: Dr. Ramos



SPS members and high school students participating in a variety of liquid nitrogen demonstrations. Credit: Dr. Ramos



SPS Secretary, Tom Simons measuring the voltage on a self built, dye sensitized solar cells. Credit: Dr. Ramos



SPS advisor and members participating in this outreach opportunity at the local high school. Credit: Dr. Ramos



If you have any questions, please contact the SPS National Office Staff
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