



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Future Faces of Physics Award Proposal

Project Proposal Title	Energy: Harnessing the Power of Nature
Name of School	Green River College
SPS Chapter Number	2535
Total Amount Requested	\$289.80
Prepared by	Alyssa Leano

Abstract

Green River College's SPS Chapter and ESOL program are partnering to conduct a program that teaches students from varying cultural and socioeconomic backgrounds about the power of nature and energy. We will enlighten students about the physics behind energy and cultivate the scientific curiosity of a diverse demographic.

Proposal Statement

Overview of Proposed Project/Activity/Event

We drew inspiration from innovator William Kamkwamba, the man whose life is the subject of the best selling novel, The Boy Who Harnessed the Wind. Kamkwamba lived in Malawi, a land that was wrought with famine and scarce with opportunity. Despite the circumstances, Kamkwamba viewed the world around him as a resource and sought to harness those resources in order aid his family and his village. With some ingenuity and an innate curiosity for science, Kamkwamba learned to harness the power of electricity by building a makeshift wind turbine using nothing but scrap metal and old bicycle parts. Using Kamkwamba's success story as a platform, we are partnering with Green River College's ESOL (English for Speakers of Other Languages) to deliver a lesson plan that teaches energy and circuits in a way that encourage participants to view the world around them differently and scientifically. The ESOL program serves immigrants and refugees from a wide array of age groups and backgrounds. Our mission is to promote the idea that science is readily available despite your ethnic or socioeconomic roots. The lesson will encourage discussion on what energy is, where it comes from, what it does, and how we use energy in our daily lives. We will then supplement this exploration with hands-on experimentation and allow participants to build their own circuits and motors to demonstrate the power of physics in harnessing energy. Students will exit this lesson with a deeper appreciation and understanding of the power of physics in generating energy. Our current plan is designed to serve 100-200 ESOL students at Green River College over the course of two years. As we streamline our program, we will be extending our influence and impact to local schools and student communities in the future.

How Proposed Activity Promotes Physics Across Cultures

Much like how Kamkwamba cultivated the power of wind to power his village, we aim to cultivate the scientific curiosity of people who come from underrepresented demographics. Our mission is to spread the notion that science is for everyone and that science can be found in everything. We will achieve this by partnering with ESOL program, who serves people from a vast range of cultural and socioeconomic backgrounds. We will inspire these students with Kamkwamba's story and empower them with knowledge of how energy works. This will be done with goal of encouraging them to pursue studies in sciences at Green River College.

Plan for Carrying Out Proposed Project/Activity/Event

This project will be managed by Dr. Ajay Narayanan (SPS Chapter Advisor), Alex Lee (SPS President), and Alyssa Leano (SPS Vice President). Dr. Narayanan will be present to provide expertise on the subject, facilitate discussion, and provide training to SPS members on the execution of this lesson. Alyssa Leano and Alex Lee will be in charge of coordinating the logistics of the events, monitoring the progress and success of these events, and handling marketing and outreach opportunities. We expect 5-8 SPS volunteers to participate in facilitating these events and assisting students as they build their motors and circuits.

Project/Activity/Event Timeline

Dates of the demonstrations are to be announced. This is because we will be partnering with the ESOL program. Demonstration dates will be determined in accordance to the ESOL instructor's pacing and readiness of the class. This is a long term project that is currently projected to span over the course of 2 academic years with the prospective end period being Spring 2018. We will be doing demonstrations on a quarterly basis as new cohorts of ESOL students enter their program. Marketing of these demonstrations will be handled by the SPS Vice President.

Activity Evaluation Plan

There will be several key performance indicators that will be used to measure the success of the event. One of which will be a detailed report will be generated after every event by SPS officers that were present. These reports will outline the highlights of the event and will include successes as well as opportunities for growth and improvement. A record will be included that details the cultural backgrounds of each participant so that we can measure the breadth of diversity that we were able to reach. Each participant will also partake in a formative assessment that allows them to reflect on what they learned from the lesson. We are hoping that the quality of our lesson will be reflected in these assessments. The last performance indicator will be verbal and written feedback from the participants. We have already received several thank you letters from the participants of our initial instance of the event.

Budget Justification

Our lesson plans focuses on having participant build and create their own circuits and motors, therefore the budget that we are proposing that will be used to purchase materials that will be used in three demonstrations of circuits and motors. A portion of the proposed budget will be used to purchase materials that the participants will use when they are building their own motors. Materials needed include magnet wire, magnets, sandpaper, and structural material. A marginal portion of the budget will be use to replace battery packs and lightbulbs in another demonstration. Another portion of our budget will be used to purchase GenCons, which are hand generators that will be used in the last demonstration. All other materials needed in the demonstrations will be provided by the Green River College physics department.