



SOCIETY OF PHYSICS STUDENTS

An organization of the American Institute of Physics

Future Faces of Physics Award Proposal

Project Proposal Title	Promoting the Physics of Renewable Energy to Minority Students
Name of School	Indiana Wesleyan University
SPS Chapter Number	3116
Total Amount Requested	\$300.00

Abstract

The abstract should be **no more than 50 words**. The abstract should be a standalone description of the proposed project/activity/event, appropriate for posting on the SPS website or publishing in *The SPS Observer*. The abstract should be in paragraph form and should include the school name, a brief description of the proposed project, and a brief statement about the motivation for the project.

The Society of Physics Students at Indiana Wesleyan University would like to host an educational event at the local school, Marion High School. It would focus on an understanding of modern energy sources and renewable energy. The purpose would be to encourage interest in physics to an under-represented population.

Proposal Statement

The entire Proposal Statement should be no more than 2 pages, and organized as follows.

Overview of Proposed Project/Activity/Event

The Overview should be a more detailed description of the proposed project/activity/event than the abstract.

This section should include:

- Brief description – What will the project look like?
- Goals of the project – What will the project accomplish?
- Intended audience – Who is the target audience and how many people will be impacted?
- Background and motivation – What is the context and motivation for the project? This might include a discussion of how the projects builds on a previous project carried out by the chapter, where the idea came from, or why the chapter is well-positioned to carry out this project.

This section should explain to reviewers **WHAT** the project is and the context in which it will be carried out.

This project, tentatively titled “Promoting the Physics of Renewable Energies to Minority High School Students in Grant County, Indiana,” would be an event held at the local high school with the purpose of engaging students’ interest in physics and applied usage in the modern world. The event would consist of five to seven stations that students would move around, and at each station, a different idea of energy production or storage would be presented, focusing on hands-on experiences for the students. The goal of the project is to increase interest in physics by appealing to student’s desire to tackle real world issues from an intellectual standpoint. The audience would primarily be high school aged students with at least fifty students and the potential to reach several hundred. In the past, our SPS chapter has had similar activities at the middle school and late elementary school level but never to high school students. With the experience from the past events, we feel we have the capacity to reach high school students which is an important demographic with regard to encouragement in the sciences. There are a large number of students that we could potentially reach, including a large minority population in an under-privileged area.

How Proposed Activity Promotes Physics Across Cultures

This section should be a detailed description of how the project will meet the stated goal of the award: to promote physics across cultures. The text should explain why the project is appropriate for a Future Faces of Physics Award, and how it will attempt to meet a need in the community, strengthen a relationship, or fill a void.

This section should explain to reviewers **WHY** the proposed project is worthwhile and **WHY** it should be funded by a Future Faces of Physics Award.

Our project would promote interest in physics across cultural barriers by appealing to the large number of minority students in the Marion School system. Cultural and economic barriers discourage many students from pursuing a career in the sciences, but by encouraging and inspiring students by providing them a better understanding of how interesting physics can be and the difference that one can make by being involved in

physics, student's interest in physics will be piqued and encourage them to pursue any interest in physics further. Students of the current generation desire to make a difference in their world and by presenting them with a viable option to impact the world both environmentally and economically, we will be appealing desires which can produce strong desires for involvement in physics.

Plan for Carrying Out Proposed Project/Activity/Event

This section should detail the plan for carrying out the project, in bullet or paragraph form. Include, at minimum:

- Personnel - Who will be in charge of planning the event and how will progress be monitored?
- Marketing - How the project will be marketed to the target audience to ensure satisfactory participation?
- SPS member participation - How many SPS members or volunteers are likely to participate and in what capacity? Will volunteers be recruited from other groups as well?
- Expertise - Are there SPS members or others with special expertise that will help to ensure success?

This section should tell reviewers HOW the proposed activity will come to fruition. Please include adequate details so that reviewers see evidence of thoughtful planning.

The SPS chapter president will assign a member to take charge of the specific planning of the event in conjunction with our faculty advisor. This person will be monitored by regular reports to the chapter leadership and to the faculty advisor. The event will be marketed through the high school's announcements, fliers posted in the school, and through word of mouth through conversations with the science teachers. We will need at least 6 members and volunteers, preferably ten, in order to properly execute this event. While we will primarily draw from SPS members, we will also be approaching Indiana Wesleyan's "Science Club" for potential volunteers as well as advertising it to students in the physics classes at the university through the several physics professors. Several of our SPS members have experience in planning events of similar nature, in addition to those who have participated in similar events in the past. Multiple members of our chapter are graduates of Marion High School and their contacts within the school will be invaluable in organizing and advertising this event. One of our members is an Eagle Scout who has a strong background in leadership and organization. Additionally, several of our members have a passion for physics in alternative energies.

Project/Activity/Event Timeline

This section should detail the timeline for carrying out the project. Work backwards from the project date and include key milestones and the dates by which important details needed to be finalized in order to complete the project on time.

This section should tell reviewers WHEN the planning efforts and proposed activity will happen.

Note: The dates below reflect optimal placement of the event with respect to the university's academic schedule, however they are flexible to accommodate any changes proposed by the school and/or any restrictions placed on preparation with regard to funding availability.

Anticipated Event Date: April 1st 2015

In preparation:

1. Wednesday March 25th – Practice setup, run through, and tear down
2. Wednesday March 18th – Finalization of station explanations and demonstrations
3. Wednesday March 11th – Rough preparation of station explanations and demonstrations
4. Wednesday February 25th – Determine specifics of ideas and theories presented at each station and determine flyer design to post in the school
5. Wednesday February 18th – All members will present research on the various methods of energy production and which physics concepts would best be presented and how to present them
6. Wednesday February 4th – Order all materials and demonstration equipment
7. Wednesday January 14th – Establish official date and time for event

Activity Evaluation Plan

The Activity Evaluation Plan should be no more than 300 words. This section should explain how the chapter will evaluate the success of the activity in meeting the goal of the award—promoting physics across cultures. This may be as simple as keeping accurate records or administering a short survey of participants.

Some key metrics of success might be:

- Attendance or participation numbers
- Survey results from participants
- Feedback from key participants

This section should tell reviewers HOW the chapter will evaluate whether the proposed activity promoted physics across cultures.

In order to evaluate the effectiveness of this event, we will be asking students to fill out a brief survey at one of the stations during the event. By students completing this, we will have a tally of how many students participated, basic demographic information, and what they thought of it. Questions may include:

- Year in school
- Future plans

- Interest in Physics before and after
- Favorite part of the event

These results would then be collected and compiled by the chapter for usage in the future. By determining which age group primarily attended the event and what their main interests were, we will be able to further nurture their interest in physics by catering to this demographic in future events and interactions with them.

Budget Justification

The Budget Justification section should be no more than 300 words. This section should justify the expenses outlined in the Budget Proposal. For example, if the funding will be used to purchase volunteer t-shirts, explain why volunteer t-shirts would be useful and how they would help meet the goals of the project. (The actual budget must be submitted as a separate file, created in conjunction with the “Future Faces of Physics Award Proposal Budget Template.”)

Include information about any money or supplies coming from other sources that will leverage the funding requested from SPS. Include in-kind funding and support (borrowed equipment, etc.) that will be used in carrying out the project.

The Future Faces of Physics Award Proposal Budget should tell reviewers WHAT the funds will be used to purchase. This section should explain to reviewers HOW the items listed in the budget will help accomplish the goals of the project and of the Future Faces of Physics Award more generally.

The dye-sensitized solar cell kit will be one of the primary educational tools for this event. This kit which was developed by the NSF for use in educational demonstrations will highlight the wide variety of solar energies which are currently being developed and will be key to our demonstration.

Similarly, the Wind Turbine kit will highlight one of the other main sources of renewable energy readily available, especially within Indiana where wind farms are currently being developed.

The USB Solar Charger kit will help to demonstrate the versatility of renewable energy sources and highlight the multi-faceted uses for alternative energy sources, including in outdoors and survival situations.

The Solar Car will be used to highlight one of the many potential uses of solar energies and as a centerpiece to start discussions about the use of alternative energies in transportation.

The poster supplies will be vital to spreading the information regarding this event around the school and serve to further our event by increasing the number of students reached by our event.