

**HORTONVILLE AREA SCHOOL DISTRICT
GRANTS FOR EXCELLENCE
2009-10**

APPLICATION FORM

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| Application Date: 12/14/2009 | (not to exceed \$5,000.00) Amount Requested: \$ \$1144.12 |
| Teacher's Name: Daniel Lundstrom | |
| Position: 6 th Grade Teacher | Subject or Grade: 6th Grade Science (grant will apply to multiple subject areas) |
| School Name: Greenville Middle School | |
| Project Title: Thinking Green, Saving Green, Staying Green | |
| <p>Project Description:</p> <p>PURPOSE: Through the development of this pilot project, students will 1) analyze and document electricity and resource consumption at school and at home, 2) identify ways that we can reduce the impacts we have on our natural resources and environment, 3) make recommendations to Greenville Middle School and families for improving energy conservation, and 4) implement these strategies to adopt wiser energy use practices.</p> <p>NEED: With rising energy prices and public acknowledgement of the reality of global warming, the education of our students must address the importance of being impact-conscious consumers and advocates for our family, local, national, and global (financial and natural) resources. Carbon footprint and clean energy are quickly becoming a part of household vocabulary; to prepare our students for the transition that has already begun to take place, we will embark on a comprehensive analysis of how we use our energy resources and choose to spend our financial resources. Once we have analyzed our initial habits, we'll look for ways to improve our energy use to become more conscientious consumers and, finally, recommend and implement changes.</p> <p>Research shows that students learn and retain information most readily when they are involved in the learning process. Project-based learning such as the year-long endeavor I am proposing challenges students to problem-solve, communicate with others, plan a course of actions, initiate a plan and evaluate the outcome. The project most clearly relates to science and math, but will have benefits in health, language, and social studies as well.</p> <p>PROJECT EXPLANATION: This project will establish a direct link between our habits as energy consumers and the financial and environmental impacts that result from our choices. With parent permission, 25 students at a time (approximate size of one average class) will check out</p> | |

an electricity use meter that plugs into standard electrical outlets. Electrical devices are then plugged into the meter to determine and compare the energy consumption of various appliances and electronic devices at home. In requiring parental approval, a dialogue between the teacher, student and family has already begun.

The data from each student will be compiled with a goal of categorizing areas of electricity usage and determining which areas consume the most electricity, as well the cost of operating household items. For example, what uses more energy, a desktop computer, or a video game system? This study will tap into student interest to hook the students' attention. During the process, we will identify and discuss ways that electricity is currently wasted. Aside from the obvious discussions and lessons that would tie in with the science curriculum (i.e. weather and clean/alternative energy sources, electricity and magnetism, technology) , the compiling of and analysis of statistical data is heavy in math, and will require input, creative thinking and application of information by students to real-world issues.

Furthermore, this data can be compared to electricity and resource consumption by average consumers in other countries. Recognizing that typical residents in a majority of other countries around the world use less energy per capita than United States citizens can be a valuable experience and expand students' global perspectives.

Students will research ways to reduce consumption individually (with the requested books) with a goal of sharing knowledge and encouraging practical resource-conscious practices at home and at school. All phases of the project are student centered, but teacher guided. In addition to books and electricity meters, funds provided will also purchase a recycling bin for the 6th grade wing at Greenville Middle School. I have also requested discretionary purchases for items such as compact fluorescent light bulbs (for students to take home, compare to a standard incandescent bulb, and keep at home for permanent use), canvas shopping bags and reuseable water bottles. These items will be given to students with a goal of promoting reduction in consumption.

Higher learning institutions such as UW Green Bay, the Cloud Institute, and even Harvard are promoting studies of sustainability education. Business managers recognize the value of future employees that can find ways to reduce cost and improve efficiency. Students will see that science, math, language, and communication are not isolated subjects taught during school hours.

The development and implementation of this pilot project will involve multiple class periods of science and math throughout the year (or semester) as I work with students and develop a timeline of specific lessons and activities for the program based on the results of initial data collection and analysis. A likely timeframe is to spend approximately 2-3 class periods to provide background knowledge and explain the procedure to students, 1-2 class periods for compiling initial data, and roughly 1 class period every two weeks for an entire quarter (or even semester) to analyze data and research methods of energy use reduction.

The second quarter/semester would focus on communicating recommendations to Greenville Middle School and families, implementing the suggested practices, collecting data and analyzing the results; this analysis process will also require approximately 1

class period every two weeks for the remaining duration. Students will stagger use of the meters and share the resource books so that each student could be involved in some aspect of the project at any given time, and ideally the initial run will involve two sections of science (each with approximately 25 students). If continued, the project would involve the entire 6th grade student body at Greenville Middle School the following year. The project addresses several areas of 21st Century Learning Skills as well as many Wisconsin Science and Math Performance Standards.

The goals of the project include fostering a greater understanding of our energy and resource use, identifying potential areas of change, and implementing ideas. We can determine if our goals have been met by having students perform an energy analysis or audit before the project starts, and once again at the end of the project with hopes of showing a reduction of household energy use. Success of the project could also be established by assessment of student input and learning through written projects associated with the program and formal and informal classroom observation of discussion and planning.

EVALUATION:

By the end of the initial year of implementation, I will have a better understanding of how long of a time frame will be needed for subsequent years, and will be able to establishing some statistical baselines of energy use. Provided the electricity meters hold up, there would be little additional cost to operate this project in future years. Once proven effective, the project will easily be extended to additional classrooms and schools, and/or can be modified to meet the needs of a variety of grades and ability levels throughout the district.

The project activities of collecting, recording and analyzing data about our energy use, making a plan for reducing consumption, communicating ideas, and implementing changes clearly satisfies a need that we as global citizens must address--reducing our impact on the environment. The objectives of improving consumer awareness and promoting conscientious energy and resource use will be achieved not only by one classroom full of students for one year, but ideally many households and many students for years to come.

BUDGET:

Even partial funding of this grant will get the ball rolling on a version of this project. Local businesses and utility companies will be contacted to inquire about material or goods donations as well as matching funds, which would be a great way to encourage involvement of the local community members and show how businesses can have a direct, positive impact on the development of our students as financially minded, environmentally conscious consumers.

Describe which 21st Century Learning Skills your students will gain expertise in as a result of the implementation of your grant and specifically what they will do to gain this expertise:

This long-term project promotes learning and collaborative problem solving; it is interdisciplinary in core subjects by its nature as it requires the comprehension and application of science and math concepts, as well as communication of ideas.

To be successful, students will need to think and work creatively to identify what can be done in their home, at school, and in the community to minimize the negative impacts we might have. In addition, students will work with other students and adults to develop possible solutions and promote wise resource use; therefore, communication and collaboration are essential components.

This comprehensive look at individual energy use and the economic advantages of reducing our consumption involves Global Awareness, aspects of Economic and Financial Literacy (reducing costs through energy use reduction), and certainly Environmental Literacy.

Ultimately, Thinking Green, Saving Green, Staying Green will challenge students to utilize their learning and innovation skills; it will be an evolving project based learning experience that promotes meaningful, memorable application, analysis, synthesis and evaluation of ideas and takes learning outside the classroom walls and into the "real world."

Total Project Budget (please itemize: \$1144.12

| Item Description | Cost |
|--|------------|
| Kill-A-Watt Electricity Use Monitor P3 P4400 (25 units) \$19.99 each from NewEgg.com (\$499.75) | |
| You Can Save the Planet - Wines (book - 25 copies at \$4.99) | \$124.75 |
| What's It Like Living Green?: Kids Teaching Kids, by the Way They Live - Ammon Vanderwood (book - 10 copies at \$14.99) (\$149.90) | |
| Consumer Guide to Home Energy Savings, 9th Edition: Save Money, Save the Earth - Thorne Amann (book - 5 copies \$14.00 each from Amazon.com) Home Energy Diet - Scheckel (book - 5 copies \$15.56 each from Amazon.com) (\$147.80 total) | |
| 1001 Ways to Save the Earth - Yarrow (book - 3 copies \$9.95 each) The Green Book: The Everyday Guide to Saving the Planet One Simple Step at a Time (book - 3 copies \$10.04 each) (\$59.97 total) | |
| Nature Bin - Square Recycling Bin for cans/bottles (\$61.95) Eco-Friendly products for student use/implementation (\$100.00) | (\$161.95) |
| Total Project Cost: | \$1144.12 |

Duration of Project: From February 2010 (or as soon as funding is available) to May, 2010 (to be repeated in subsequent years).

Application form due December 18th at 4:00 p.m.