110648

From: support@civicplus.com [mailto:support@civicplus.com]
Sent: Wednesday, October 12, 2011 9:48 PM
To: Group_PW Web Email
Subject: Online Form Submittal: Recycling Education Grant Application

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Recycling Education Grant Application

Name of institution:*	Willowbrook High School		
Address:*	1250 S. Ardmore Ave Villa Park IL 60181		
Name and title of person to contact:*	Mrs. Justine Bryers Teacher		
Email address:*	jbryers@dupage88.net		
Phone number:*	630-530-3966		
Number of students residing in incorporated Lombard (estimate):*	533	Total number of students:*	2100
Amount of grant request:*	$5347.00		

Has the institution previously received grant money from the Village of Lombard?*
(X) Yes ( ) No

How many students will the grant funds help to educate:*
250 per year

Has your institution earned the Earth Flag?*
(X) Yes ( ) No

Does your institution have an environmental club?*
(X) Yes ( ) No

How many students are being taught about recycling?*
600

How many students participate in recycling efforts?*
2100

Please attach a report and/or documents which provide the following:

* A clear, concise description of the proposed project.
* How the project promotes enthusiasm to learn more about the environment.
* How the project fits into your organizations curriculum and how it will enhance environmental education or outreach.
* A detailed description of the items requested and costs.
* If the grant request involves commodity purchases, provide three quotes including vendor name and prices.
* If recycled products are being purchased, list what percentage of product is made from recycled

materials.
* How environmental programs are emphasized in your classes.
* Your current recycling, environmental and/or conservation programs and past accomplishments.
* How long your current program has been in place.
* What your institution does for the environment other than recycling.
* How your program has helped people in the Village of Lombard.

Please use the Browse button to attach your documents.*

lombard 2011 fall.doc

* indicates required fields.

The following form was submitted via your website: Recycling Education Grant Application

Name of institution:: Willowbrook High School

Address:: 1250 S. Ardmore Ave
Villa Park IL 60181

Name and title of person to contact:: Mrs. Justine Bryers Teacher

Email address:: jbryers@dupage88.net

Phone number:: 630-530-3966

Number of students residing in incorporated Lombard (estimate):: 533

Total number of students:: 2100

Amount of grant request:: $5347.00

Has the institution previously received grant money from the Village of Lombard?: Yes

How many students will the grant funds help to educate:: 250 per year

Has your institution earned the Earth Flag?: Yes

Does your institution have an environmental club?: Yes

How many students are being taught about recycling?: 600

How many students participate in recycling efforts?: 2100

Please attach a report and/or documents which provide the following:

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Additional Information:
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Description of proposed project:

Willowbrook High School would like to take advantage of the brook that runs through the property to conduct water tests using the Vernier system of data collection. This system involves using probes designed to collect data such as amounts of chloride, ammonium, nitrate, calcium and dissolved oxygen. The probes can also collect information on characteristics such as flow rate and turbidity. This would replace tests which exposes the students to harmful chemicals. It is also technology that will better prepare students for higher education and the careers of the future.

The data that is collected will help the students to determine if the brook is polluted and help them to form hypotheses about where the pollution may originate. This gives the students a real life problem to solve in their own community. The data that is collected with Verneir along with macro invertebrate studies will provide a good picture of the water quality of the brook. The Vernier system can store data so that we may compare from collection to collection and look for seasonal and long term changes. The Vernier system is also a more reliable form of data collection then the chemical test performed by students.

Promoting enthusiasm to learn about the environment:

This project promotes the students enthusiasm to learn about the environment on several levels. It is a hands-on study of something that is literally in the schools backyard and encourages students to care for the waterway. They see the damage that garbage and chemicals do to the brook and they become stewards of the brook-it gives the students a sense of ownership. The project also incorporates the use of technology to collect and display the data in a clear easy to understand manner. This generation of students grew up using technology so it is only natural that bringing that technology into a science class would encourage them to learn about the environment. The fact that the students are outside and performing labs in the field also promotes enthusiasm about the environment.

How the project fits into the curriculum and how it will enhance environmental education or outreach:

The project actually fits into two curriculums. For Environmental Science it is the centerpiece of the water pollution unit. It give the student a chance to see if the pollutants discussed in class exist in the brook and helps them focus on where the pollution may be from and how to reverse the pollution problem. In the Chemistry curriculum, the students will use the data collected to show how chemicals effect the environment and to think of green chemistry alternatives. Both classes will benefit from using the data collected for data analysis.

It is hoped that the students will become involved in caring for the brook and other bodies of water in the towns that they live in. As the students become adults they will be empowered with the knowledge they gained through the project-and hopefully will be better citizens.

How environmental programs are emphasized in your classes:

Every freshman taking biology learns about ecology and environmental issues for the first quarter of the year. Many students are enrolled in environmental science, a yearlong science elective in which environmental topics are more deeply investigated. Students taking AP Biology also learn about conservation and the environment.

Courses outsides the sciences are educating the students about the environment as well. The art class does a unit on recycled art and has the students use garbage to create masterpieces. Sustainability is also discussed in the social studies classes as part of their population studies.

Your current recycling, environmental and/or conservation programs and past accomplishments

Every classroom recycles paper products and students are encouraged not to waste paper and other materials. Resource conservation is discussed in social studies classes as well as science courses. A display cabinet that the environmental club keeps up educated students on recycling and conservation throughout the year. The school also recycles aluminum cans, and plastic bottles. The Environmental Club has started collecting batteries this year and will be disposing of them at a hazardous waste collection-diverting hundreds of batteries out of the landfill.

As part of our "Building the Future" initiative the school has installed motion sensitive lights in all of the classrooms and bathrooms so that the lights go off when no one is in the room thus saving electricity. They also installed automatic toilets and sinks so we may conserve water.

How long has your current program been in place?

The Students for a Better Environment environmental club has been in place for 25 years at Willowbrook High School.

What does your institution do for the environment other then recycling?

Besides recycling and reducing our waste- Students for a Better Environment have collected gym shoes for Nike's reuse a shoe program. SBE have competed in the Illinois Envirothon where the Willowbrook team won first place in DuPage County for the three years and has taken 2nd place for 3 years. The students of Willowbrook generously donated unwanted or used crayons to be melted down and reformed into large crayons for students with special needs to use. Willowbrook's bookstore has donated gently used books to Book Rescue operations to send to needy students. The Willowbrook Library has donated unwanted books to the recycling events. Willowbrook instituted a locker clean out collection where new and gently used school supplies were collected and distributed at registration to needy families. Also, the students clean the brook several times a year.

How your program has helped the people of the Village of Lombard:

By promoting recycling and conservation efforts in the school it is hoped that the students that live within the Village of Lombard will practice recycling and conservation efforts at home. In collecting and dropping off literally truck loads of used texts and library books at Lombard's Recycling Extravaganza, the students aided the people of Lombard directly by providing books. We hope to continue to find way to reach out to the people of Lombard and to aid in environmental causes.

Detailed description of items

The Vernier LabPro offers the most versatility in collecting data from Vernier sensors. You can use LabPro with a compatible Texas Instruments graphing calculator, with a computer and Logger *Pro* software, or on its own as a remote data collector. If your school has more TI graphing calculators than computers, the LabPro is an affordable way to add data-collection to science experiments.

- Compatible with over 50 Vernier sensors
- Six data-collection channels allow you to use multiple sensors at once
- Samples up to 50,000 readings per second
- Analog output for controlling electrical devices, such as DC motors, fans, LEDs, and more for engineering projects

The Barometer can be used to measure and monitor atmospheric pressure. It works well for conducting weather studies or experiments that involve pressures close to normal atmospheric pressure. It can also be used as an altimeter if you have a portable interface.

Chloride: The concentration of the Chloride ion gives a quick measurement of salinity of water samples. Use the Chloride ISE to measure chloride levels in ocean saltwater or salt in food samples.
The Chloride ISE has a combination-style, non-refillable, gel-filled electrode. Unlike other ISEs available from Vernier, the Chloride ISE has a solid-state membrane that does not need to be replaced.

Nitrate: Nitrate concentration, which can be increased by acidic rainfall, fertilizer runoff from fields, and plant or animal decay or waste, is an important parameter in nearly all water quality studies. Use the Nitrate ISE to determine the concentration of the nitrate ion in a water sample. The Nitrate ISE has a combination-style, non-refillable, gel-filled electrode. Like all other PVC ISE membranes, the membrane on the ISE has a limited life expectancy. However, the replaceable module of ISE allows you to simply discard the used membrane module, and replace it with a new one.

Calcium: Data from the Calcium ISE can give a good indication of hardness of water (as Ca2+). The concentration of Calcium is also used as an endpoint indicator in EDTA-Ca/Mg hardwater titrations.

Ammonium: Use the Ammonium ISE to measure levels of ammonium ions introduced from fertilizers. It can also indicate aqueous ammonia levels if sample solutions are acidified to convert NH_3 to NH_4^+.

The Flow Rate Sensor can be used for environmental or Earth science studies. Flow rate data can be used to calculate the discharge value for a stream or determine the sediment transport of a stream. The Flow Rate Sensor includes 3 riser rods, which enable the impeller to be placed at fixed depths, and is equipped with a 5 m cable so your data-collection equipment can stay on shore. The Flow Rate Sensor also separates into four sections for easy transport and convenient storage.

The Dissolved Oxygen Probe is great for biology, chemistry, ecology, or integrated science courses. It can be used to perform a wide variety of experiments to determine changes in dissolved oxygen levels, one of the primary indicators of the quality of an aquatic environment.

- Built-in temperature compensation lets you calibrate in the lab, then make measurements outdoors without having to recalibrate.
- Disposable caps with pre-fit membranes allow you to quickly and conveniently change membranes.
- Calibrate in the units you choose: % dissolved oxygen, mg/L, or ppm dissolved oxygen

The Turbidity Sensor measures the turbidity of fresh-water or seawater samples in NTU (Nephelometric Turbidity Units, the standard unit used by most water collection agencies and organizations). Its small, sleek design and simple setup make it easy to use at the collection site or in the classroom.
In addition to water quality studies, it can also be used to monitor precipitate formation or algae and yeast populations in chemistry and biology classes. The Turbidity Sensor includes high-quality Hach StablCal™ 100 NTU standard for quick calibration and a high-grade glass cuvette for your water sample.

Water Quality with *Vernier* has 16 water quality tests, including pH, total dissolved solids, dissolved oxygen, BOD, flow rate, turbidity, nitrates, and phosphates. All nine tests in the Water Quality Index (WQI) are supported. A comprehensive introduction is included for each test, providing important background information for the students.
Included with *Water Quality with Vernier*

- Complete student experiments with materials list, step-by-step instructions, data tables, and questions.
- Teacher Information section for each experiment with complete directions for setting up experiments, helpful hints, and sample graphs and data.
- Word-processing files of the student sections on a CD so that any experiment may be easily edited to your specifications (Microsoft Word for Macintosh and Windows files).
- CD includes instructions to perform the experiments on every supported platform:
    - Computer
    - LabQuest in standalone mode
    - Calculator (EasyData and Datamate)

Features listed above are only available when you purchase the lab book. They are not in the downloadable evaluation PDFs.

Vendor pricing and items requested:

	FLINN VERNIER	WARD'S VERNIER	VERNIER VERNIER	FREY LOGIT	Number requested	Total
LabPro	220.	220.	220.	LOGIT BLACK BOX 198.95	7	$1540.00
Barometer	76.50		71.	103.95	3	$213.00
Chloride Sens	186.60	179.	179.	398.95	3	$537.00
Nitrate Sens	186.60	179.	179.	398.95	3	$537.00
Calcium Sens	186.60	179.	179.	398.95	3	$537.00
Ammonium Sens	186.60	179.	179.	398.95	3	$537.00
Flow Rate	130.	129.	129.	271.95	3	$387.00
Diss Ox.	208.55	209.	209.	349.95	3	$627.00
Turbidity	112.55	112.	112.	XXXX	3	$336.00
Water Qual. Lab Manual	48.	48.	48.	XXXX	2	$96.00
Total						**$5347.00**