

The South Bend Education Foundation Teacher Grant 2023

Let's get to know you!

First Name	
Last Name	
Email Address	
Mobile Phone	
School	Washington High School
What type of grant are you applying for?	Teacher Grant
Is this for a single classroom or is it building-wide?	Single Classroom

Let's learn more about your project!

Project Title	AP Environmental Science Eco-Columns
Academic Content Area	This project would be for our AP Environmental Science class. The majority of these supplies are non-consumable and would be reused every year for our eco-column project.
Target Grades	10th;11th;12th
Indiana Academic Standards or Improvement Priorities Addressed	This project will tie into a number of standards in the AP Environmental Science Course and Exam Description (CED). The following are the standards with the greatest tie-in: 1.1 - Explain how the availability of resources influences species interactions. 1.4 - Explain the steps and reservoir interactions in the carbon cycle. 1.5 - Explain the steps and reservoir interactions in the nitrogen cycle. 1.6 - Explain the steps and reservoir interactions in the phosphorus cycle. 1.7 - Explain the steps and reservoir interactions in the hydrologic cycle. 3.4 - Describe carrying capacity and the impact of carrying capacity on ecosystems. 4.3 - Describe similarities and differences between properties of different soil types. 8.2 - Describe the impacts of human activities on aquatic ecosystems. 8.5 - Explain the environmental effects of excessive use of fertilizers and detergents on aquatic ecosystems. 8.11 - Describe best practices in sewage treatment. It also teaches students science practices that are assessed on the AP Exam. 4.D - Make observations or collect data from laboratory setups. 5.A - Describe patterns or trends in data. 5.B - Describe relationships among variables in data represented. 5.C - Explain patterns and trends in data to draw conclusions. 5.E - Explain what the data implies or illustrates about environmental issues.
Approximate number of students who will benefit	20
Project Start Date	09/01/2023
Project End Date	12/01/2023

Team Member

Not Available

Team Member Custom Questions and Answers

Not Available

Technology

Does your project involve technology?	No
---------------------------------------	----

<p>Briefly describe the proposed project. Include how it will be tied to the Indiana Academic Standards or to the priorities established by your School Improvement Plan</p>	<p>This project would involve the AP Environmental Science students at Washington High School in building their own eco-columns. Eco-columns are made up of three different levels. The top level has soil and plants that the students will start from seeds. The middle level is a filter level with a screen, gravel, and sand. The bottom level is an aquatic level which, by the end of the project, will have aquatic plants and fish. Each group of students would build their own eco-column, and take data over the course of about 3 months. They will be measuring the soil quality in the top level over time, as well as the water quality in the bottom level over time. This long-term data collection, as well as other class teaching to supplement, will allow them to learn about the nutrient cycles (1.4, 1.5, 1.6, 1.7) as well as about eutrophication (8.5), which is a topic frequently assessed on the AP Environmental Science exam. Students will also learn about the properties of soil (4.3), as well as topics related to food chains. In my AP class I utilize standards-based grading, and so this project will help them build knowledge related to a wide range of standards, which should help with both in class exams as well as the AP Exam. I would repeat this project in coming years, so since most of the supplies are non-consumable they would be used by many more students than just next years students.</p>
--	--

Standards, Outcomes, and Measuring Success Set Number 1

Indiana Academic Standard	1.4, 1.5, 1.6, 1.7
Anticipated Measurable Outcomes	SWBAT connect the steps of the nutrient cycles with the processes happening in their eco-column.
How will you measure this?	As we learn about the nitrogen cycle, I will be able to measure this outcome through having students label on a diagram of the nitrogen cycle where the steps are happening in our eco-columns. Also, I will be able to measure through class discussions and questions asked of students. We will be able to do similar activities when we learn about the phosphorus cycle, the carbon cycle, and the water cycle.

Other anticipated outcomes that may not be measurable

Students will also be able to take from this the benefit of nitrogen fixing plants, and they can use this knowledge at their homes in their gardens. They can also use this hands-on learning about the carbon cycle to supplement their future learning about climate change in the second semester of the course.

Standards, Outcomes, and Measuring Success Set Number 2

Indiana Academic Standard	1.1 and 3.4
Anticipated Measurable Outcomes	SWBAT recognize limiting factors that are affecting organisms in their ecocolumns.
How will you measure this?	As students eco-columns are growing, the organisms may run into limiting factors. For example, plants in the top level may be crowded, which is a density dependent limiting factor. I will be able to measure success of learning this by both assessment questions related to limiting factors and also through discussions with students.
Other anticipated outcomes that may not be measurable	Not Answered

Standards, Outcomes, and Measuring Success Set Number 3

Indiana Academic Standard	8.5
Anticipated Measurable Outcomes	SWBAT both measure and explain the impact of eutrophication on their eco-column.
How will you measure this?	Eutrophication results when there are excess nutrients in a body of water. These excess nutrients lead to excess plant growth, which eventually die. As these decompose, that uses up oxygen which can lower the amount of dissolved oxygen in the water. Students will be tracking the amount of dissolved oxygen in the lower level of their eco-columns throughout this project, and they will have to write explanations for why the dissolved oxygen is changing. Through this I will be able to assess their understanding of eutrophication.
Other anticipated outcomes that may not be measurable	Students can use this knowledge of eutrophication to help them care for ponds and lakes that they may live on or around in the future.

Standards, Outcomes, and Measuring Success Set Number 4

Indiana Academic Standard	4.3
Anticipated Measurable Outcomes	SWBAT measure the soil quality over time of the soil in the eco-column.
How will you measure this?	Students will be taking weekly measurements of nutrients in their soil. When we get to our soil unit, this will serve as a good starting point to understanding why these nutrients are important in soil, and how these nutrients can be added or kept in the soil.
Other anticipated outcomes that may not be measurable	Students can use this knowledge to test soil at home if they want to start a garden or put in raised beds.

Standards, Outcomes, and Measuring Success Set Number 5

Indiana Academic Standard	8.2
Anticipated Measurable Outcomes	SWBAT measure and explain the importance of several water quality measures.
How will you measure this?	Every week the students will be taking measurements of their water quality. Their water will need to have high enough dissolved oxygen levels before they can add their fish to the eco-column. This will serve as a type of mini assessment to see if they are able to use their knowledge to increase the dissolved oxygen if it is too low for fish.
Other anticipated outcomes that may not be measurable	Students will also learn through this how to collect and analyze data, which is a critical skill on the AP Exam as well as in science courses moving forward for them.

Additional Questions

Could this project be replicated in other locations?	Yes
If yes, how could this be done?	Other AP Environmental Science teachers could also build eco-columns in their classes after seeing how it can be utilized to support the curriculum.
Outline ways that your project might help raise the profile of the South Bend Education Foundation.	I am applying for this grant after hearing about a coworker who received a grant from the Education Foundation, so each grant that is accepted raises the profile of the South Bend Education Foundation. I also plan to make a sign when the eco-columns are up stating that the supplies were donated by the South Bend Education Foundation, so that any class visitors are aware of the positive impact that the Foundation is having in my classroom. Washington is also very good about posting interactive activities on all the school social media sites, and so we would be able to feature these on those social media pages.

Budget

Please upload your budget document here:	Grant Budget
Please enter your total budget / grant request amount	680.11

Supplemental Budget Documents

Please upload supplemental budget documentation here	Grant Budget
--	------------------------------

Certification & Acknowledgment

By checking this box, I acknowledge that the completion of this grant application is dependent on prior approvals.	Yes, I acknowledge
Digital Signature	

Installation

Does your project involve installation?	No
---	----

NGB

Not Available

NGB Custom Questions and Answers

Not Available

NGB

First Name	Last Name	Email	NGB	Record	Letter
Kenard	Robinson	krobinson2@sbc sc.k12.in.us	RN371879	Name: Rec398832, Status: Draft	Click on the 'Edit' button to replace this with your letter.

NGB Custom Questions and Answers

Rec398832

TECH/INSTALLATION	
TECH/INSTALLATION	
TECH/INSTALLATION	
TECH/INSTALLATION	
TECH/INSTALLATION	
ALL (INCLUDING PRINCIPAL VERIFICATION)	
ALL (INCLUDING PRINCIPAL VERIFICATION)	

Item Name	Item Description	Item Vendor ID Number
Sand	All-Purpose Play Sand - 1/2 Cu. Ft.	1891108
Gravel	Pea Gravel - 1/2 Cu. Ft.	1891124
Potting Soil	Miracle-Gro Potting Soil Mix - 2 Cu. Ft.	2667826
Colander	Chef Craft Select Plastic Deep Colander, 11x5 in. 5 qt., White	B0021Y9O10
Elodea	Egeria densa - living - Pack of 12	162101
Gambusia	Mosquito Fish - Pack of 12	145440
Dissolved Oxygen Probe	probe for measuring dissolved oxygen in aquatic ecosystems	B007Z4KKIQ
Luster Leaf Fertility analyzer	probe for measuring pH and fertility of soil	B08X6PM984
Screen Material	ADFORS 36" by 84 " Charcoal Fiberglass Replacement Screen	5671120
Temperature Probe	General Tools Digital Thermometer	DT310LAB
Nitrate Test Strips	Nitrate 0-25 ppm, Nitrate 0-500 ppm Two Pad Test Strip, pack of 100	B07WTXM6DB
Bottles	Crystal Geyser Alpine Spring Water, 1 gal	N/A

* School purchases should be tax exempt, please contact budget office for additional details prior to purchase

Vendor Name	Vendor Address	Vendor Phone	Vendor Email
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Amazon	N/A	N/A	N/A
Carolina Biological	2700 York Road, Burlington	800.334.5551	N/A
Carolina Biological	2700 York Road, Burlington	800.334.5551	N/A
Amazon	N/A	N/A	N/A
Amazon	N/A	N/A	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Amazon	N/A	N/A	N/A
Amazon	N/A	N/A	N/A
Walmart	700 W Ireland Rd, South Be	(574) 299-1284	N/A

ase

Vendor Website	Cost Per Item	Number Needed	Tax (if applicable)	Total Amount
https://www.menards.com	\$3.97	1		\$3.97
https://www.menards.com	\$3.49	1		\$3.49
https://www.menards.com	\$14.99	1		\$14.99
https://www.amazon.com	\$9.40	1		\$9.40
https://www.carolina.com	\$12.00	1		\$12.00
https://www.carolina.com	\$19.25	1		\$19.25
https://www.amazon.com	\$199.79	2		\$399.58
https://www.amazon.com	\$27.48	2		\$54.96
https://www.menards.com	\$6.99	1		\$6.99
https://www.amazon.com	\$24.94	2		\$49.88
https://www.amazon.com	\$21.15	2		\$42.30
https://www.walmart.com	\$1.38	30		\$41.40
			Total Cost:	\$680.11

Shipping Cost
\$21.90

Item Name	Item Description	Item Vendor ID Number
Sand	All-Purpose Play Sand - 1/2 Cu. Ft.	1891108
Gravel	Pea Gravel - 1/2 Cu. Ft.	1891124
Potting Soil	Miracle-Gro Potting Soil Mix - 2 Cu. Ft.	2667826
Colander	Chef Craft Select Plastic Deep Colander, 11x5 in. 5 qt., White	B0021Y9O10
Elodea	Egeria densa - living - Pack of 12	162101
Gambusia	Mosquito Fish - Pack of 12	145440
Dissolved Oxygen Probe	probe for measuring dissolved oxygen in aquatic ecosystems	B007Z4KKIQ
Luster Leaf Fertility analyzer	probe for measuring pH and fertility of soil	B08X6PM984
Screen Material	ADFORS 36" by 84 " Charcoal Fiberglass Replacement Screen	5671120
Temperature Probe	General Tools Digital Thermometer	DT310LAB
Nitrate Test Strips	Nitrate 0-25 ppm, Nitrate 0-500 ppm Two Pad Test Strip, pack of 10	B07WTXM6DB
Bottles	Crystal Geyser Alpine Spring Water, 1 gal	N/A

* School purchases should be tax exempt, please contact budget office for additional details prior to purchase

Vendor Name	Vendor Address	Vendor Phone	Vendor Email
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Amazon	N/A	N/A	N/A
Carolina Biological	2700 York Road, Burlington	800.334.5551	N/A
Carolina Biological	2700 York Road, Burlington	800.334.5551	N/A
Amazon	N/A	N/A	N/A
Amazon	N/A	N/A	N/A
Menards	365 W University Dr, Misha	(574) 271-0135	N/A
Amazon	N/A	N/A	N/A
Amazon	N/A	N/A	N/A
Walmart	700 W Ireland Rd, South Be	(574) 299-1284	N/A

ase

Vendor Website	Cost Per Item	Number Needed	Tax (if applicable)	Total Amount
https://www.menards.com	\$3.97	1		\$3.97
https://www.menards.com	\$3.49	1		\$3.49
https://www.menards.com	\$14.99	1		\$14.99
https://www.amazon.com	\$9.40	1		\$9.40
https://www.carolina.com	\$12.00	1		\$12.00
https://www.carolina.com	\$19.25	1		\$19.25
https://www.amazon.com	\$199.79	2		\$399.58
https://www.amazon.com	\$27.48	2		\$54.96
https://www.menards.com	\$6.99	1		\$6.99
https://www.amazon.com	\$24.94	2		\$49.88
https://www.amazon.com	\$21.15	2		\$42.30
https://www.walmart.com	\$1.38	30		\$41.40
			Total Cost:	\$680.11

Shipping Cost
\$21.90