



District: *New Branches*

Building: *New Branches Public School Academy*

Teacher(s): *Bobbijo Zoerhof*

Main Contact: *Bobbijo Zoerhof*

Email: *zoerhof4@aol.com*

Grade Level: *5<sup>th</sup> / 6<sup>th</sup>*

Subject(s): *Science*

First Trimester:

Second Trimester:

Third Trimester:

First Semester:

Second Semester:

All Year: *x*

---

**Name of Project:** *Greenhouse and Water Testing*

### **Project Overview**

*Give a brief overview of the project you are planning.*

*Our project focuses water testing in an indoor educational classroom, a greenhouse on the school grounds. The indoor greenhouse will provide opportunity for students to learn about lifecycles and ongoing environmental issues like water quality. Students will learn about the chemicals that harm our precious fresh water. The planting basins would have catch tanks to hold the water for water testing. One planting basin will be used to demonstrate the effects of harmful fertilizers and pesticides on our drinking water. This would be a demonstration learning tool for students to inform the public about not using fertilizers and pesticides. The other planters would not be treated and have lettuce grown organically without chemicals. Students would test both planters with the water tests and determine which one is harmful to our drinking water.*

### **Effective Practice: MEANINGFUL SERVICE**

*Service learning actively engages participants in meaningful and personally relevant service activities.*

#### **What community need will you address and how did you determine the need?**

*Our school recently received the Green School Award due to the awareness our students have on their environment. The upper grades teachers stress water quality and the effects harmful chemicals have on our environment and drinking water. We feel students would get a more extensive learning and understanding of water quality if we could have an indoor classroom to demonstrate the results of using harmful chemicals.*

*We conducted a brainstorming activity with both 5<sup>th</sup> and 6<sup>th</sup> grade about how they wanted to learn about water quality. The students love taking tests in the creek but also wanted an indoor space. After 30 minutes or so, the students thought a greenhouse with a growing plant basin showing the effects of harmful chemicals used. The student thought it would be a great demonstration piece for the community.*

#### **What service will you provide to address the need?**

*Students will research water quality in Michigan, their local city, and their community by Internet research, reading articles, and physically taking water quality tests with the help of WEMEAC. Students will continue with water quality lessons in the greenhouse.*

*Students will learn about the harmful chemicals that we use on a daily basis that affect the quality of our drinking water. Students will plant and grow vegetables to learn about ecosystems. Students will use one*

*basin as a demonstration table using harmful chemicals on the planting area. The catch tank that holds the water after it passes through the planting basin will be used for water testing and will be compared to the other basins that do not have chemicals in the water.*

*Students will hold informational demonstrations on open house days to inform the public not to use these harmful chemicals. Participating in this learning process, students will become aware of their responsibility to their environment.*

*Students will understand that we cannot live without clean drinking water. They will become stewards of earth by taking an active role in the greenhouse classroom and community outreach awareness informational days.*

*Students will identify and test fertilizers that are organic and non-harmful to our water and learn ways to preserve our freshwater.*

*Students will also provide healthy organic food (lettuce) on the lunch table. The students would correlate water safety and food service.*

## **Effective Practice: LINK TO CURRICULUM**

*Service learning is intentionally used as an instructional strategy to meet learning goals and/or content standards.*

### **How is this project related to your curriculum?**

*Ecosystems continually change with time as environmental factors and populations of organisms change.*

### **What are the educational goals?**

*For students to understand how humans and other factors alter the balance of the ecosystem and what we can do to preserve that balance.*

## **Curriculum Crafter Connections [www.curriculumcrafter.com](http://www.curriculumcrafter.com)**

**Strand:** *06SCI: (Life Science)*

**TLW:** *Identify the interactions and interdependence of populations, communities, and ecosystems and explain the factors that affect ecosystems.*

*(Gist: Environmental Impact of Organisms)*

## **Additional State Standards and Benchmarks**

**List standards and benchmarks met by this project.**

**Strand:** *06SCI: (Life Science)*

**TLW:** *Classify organisms based on their source of energy and describe patterns of relationships between organisms within an ecosystem.*

*(Gist: Relationships of Organisms)*

## **Effective Practice: REFLECTION**

*Service learning incorporates multiple challenging reflection activities that are ongoing and that prompt deep thinking and analysis about oneself and one's relationship to society.*

**What form(s) of reflection will you use with the students to help them identify what they have learned and accomplished?**

*Classroom discussions, journals, public presentations*

## Effective Practice: DIVERSITY

*Service learning promotes understanding of diversity and mutual respect among all participants.*

**What types of diverse perspectives and experiences will be explored as part of your project? (i.e.: cultural, generational, abilities/disabilities, learning styles, etc)**

*Most students do not have the access to gardening due to the limited space of the city. Students will be exposed to greenhouse plants, growing, and monitoring the water quality that all plants must have. Students will also have the opportunity to water test and compare water basins. Student will be able to use chemicals on plants that they might not use like a pesticide. Students will gain knowledge of these harmful chemicals and what they do to their environment.*

## Effective Practice: YOUTH VOICE

*Service learning provides youth with a strong voice in planning, implementing, and evaluating service learning experiences with guidance from adults.*

**How will students gain ownership of the project?**

*Students will be able to choose what plants they would like to learn about. Students will take care of plants until maturity. Students will be responsible for taking care of plants. Students will monitor the water quality for their plants. Students will also be responsible for choosing chemicals known to be harmful to the environment. They will research chemical and compare the effects on the water by testing the water and comparing the water to water without chemicals.*

## Effective Practice: RECIPROCAL PARTNERSHIPS

*Service learning partnerships are collaborative, mutually beneficial, and address community needs.*

**Who will you partner with for this project?**

*WMEAC*

**How will students benefit from this partnership?**

*WMEAC will help explain and facilitate the water testing.*

**How will the partner benefit from this collaboration?**

*The partners will benefit by having 42 new stewards who are committed to taking care of and improving the quality of the water in Plaster Creek and the information shared with the community, by the students, through the following:*

- *Press release*
- *School website*
- *School flyer*
- *School newsletter*
- *School open house*
- *Evening community events*

## Effective Practice: PROGRESS MONITORING

*Service learning engages participants in an ongoing process to assess the quality of implementation and progress toward meeting specified goals, and uses results for improvement and sustainability.*

**How will you assess the student learning goals?**

*Students will be responsible for a growing plot. The progress will be monitored by the growth of the planting plot. They will be expected to complete water tests and be able to express the reason for the tests and what harmful effect the test has on the environment. Students will keep a journal log to document the planting, growing, and the water quality tests. Students will present their findings to other classmates and community during school open houses.*

### **How will you assess your service goals?**

*Our impact will depend on community awareness and student awareness. Students will be expected to demonstrate their findings to the community at open houses and also to their classmates.*

### **Effective Practice: DURATION AND INTENSITY**

*Service learning has sufficient duration and intensity to address community needs and meet specified outcomes.*

### **How will you prepare students for this experience?**

*We will take our students to the GVSU Agnus Research Vessel for a demonstration of water quality testing and the importance of quality drinking water.*

### **What are some sample possible activities students might do as part of this project?**

- *Procure a greenhouse and get the greenhouse up and running and to get plants started.*
- *Research water quality in Michigan and local community*
- *Conduct water tests*
- *Conduct soil/plant tests*
- *Students will educate the community on the effects of harmful chemicals that get into our water through pamphlets and public demonstrations.*
- *Students can also sell organically grown starter plants at public demonstrations*

For more information about Groundswell go to [www.groundswellmi.org](http://www.groundswellmi.org)

For more information about the Great Lakes Stewardship Initiative go to [www.glstewardship.org](http://www.glstewardship.org)