Lesson 6

Timeframe

Two to three 50-minute class periods

Materials

- Graph/colored paper
- Colored pencils
- Poster paper
- Craft/art supplies
- Media collected during your field trip(s)

Objectives

- Create a final product and present findings via graphs, tables, paragraphs, pictures, etc.
- Attempt to answer an investigative question based on findings and data, and identify areas to further investigate if unable to answer question
- Build an argument by using data as evidence
- Understand what a community stakeholder is and identify local stakeholders
- Construct recommendations for partner/stakeholders related to investigative question and the needs of the community

Sharing Your Field Project

Teacher Background

Student projects produce real results, and celebrating their contributions and demonstrating to others what they have learned is an important part of the learning experience. This lesson will help students prepare to tell your project story to the community. Not only does the community want to hear about the goals and outcomes of the project, but it is important to compile project information into a complete and final package that makes sense to your students.

Students should compile data and create the story of their project. It's important to consider the multiple ways of telling the project's story; synthesizing and analyzing the data is simply one piece of a compelling story. Remember to have students utilize all their project team skills and talents to include creative arts, natural history, technology, and community components in their watershed story. Their story should capture information about the investigative question they chose, hypothesis they tested, methodology they used, and conclusions they were able to draw.

Description

In this final activity, students will develop their communication and presentation skills. This is also the class's opportunity to share its findings with stakeholders, the school, and the community. You will want to help students tie this back to the community needs discovered and the work they did in Lesson 1, so that it is a meaningful presentation for your particular audience.

Preparation

Ideally you will plan or take part in an event in which students can share their projects with their community, the partner or stakeholder you worked with, and their school. This could be done at a family math and science night, science fair, or a partner organization's board meeting or community night, or you may want to create a special event for your class at the school. Be sure to invite families, partner organizations, stakeholders, other teachers and school staff, community members, etc., and if possible, include students in the planning process. Other ideas for sharing projects include working with a local watershed council or other partners to showcase them at a meeting or event, hanging up posters in their building to share with the public, or showcase students' posters at the school. Articles, videos, and pictures can (and should!) be uploaded to StreamWebs, school and partner websites, or to Wikispaces.

Activity Introduction

Let students know that an important part of doing science is sharing results with your community, the watershed council you may have worked with, and any other potential stakeholders, via products such as a report, poster, article, video, song, or a combination of these products that answers the project's overall investigative question(s) and showcases the results.

- Who are our stakeholders? *Individual people, a group, business, or an organization with an interest in your project, such as: your school, watershed council, state park, or any other partners with whom you will be sharing information.*
- What will we share with our stakeholders? *Our data collected; our results and findings from analyzing our data; information regarding our research; answers to our investigative questions; other questions that came out of our research; any recommendations that we have.*

Next Generation Science Standards

DISCIPLINARY CORE IDEAS:

LS2.A: Interdependent Relationships in Ecosystems
LS2.C: Ecosystem Dynamics, Functioning, and Resilience

PERFORMANCE EXPECTATIONS:

MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

PRACTICES:

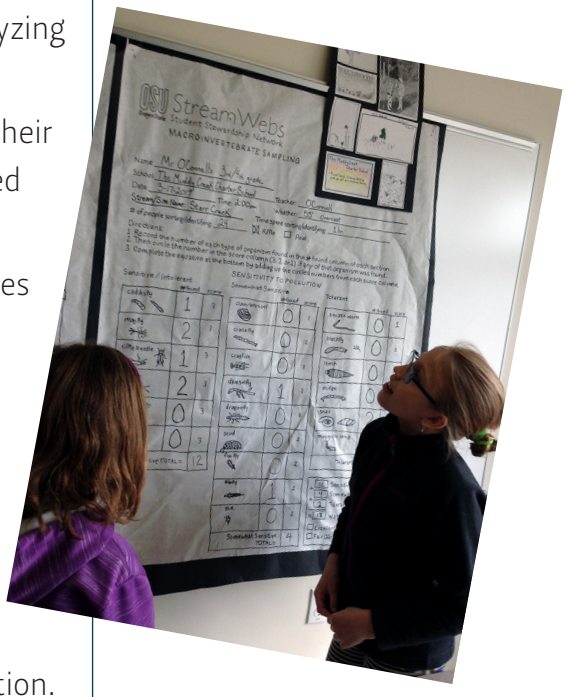
Practice 1: Asking Questions and Defining Problems
Practice 3: Planning and Carrying out Investigations
Practice 4: Analyzing and Interpreting Data
Practice 6: Constructing Explanations and Designing Solutions
Practice 7: Engaging in Argument from Evidence
Practice 8: Obtaining, Evaluating, and Communicating Information

Activity

1. Divide students back into their field investigation teams. Instruct students that they are going to continue to build upon their answer to their investigative question(s).
2. Give students a few minutes to get their investigative question(s), graphs, data, and other information gathered and ready to use.
3. Give students time to refine graphs, tables, or other forms of data interpretations they may need to answer their investigative question.
4. Explain to students that they are going to build an argument using their data as evidence to defend their answers to their investigative question(s). Students need to refer back to their investigation plan, tools used, the data found, and make a plan to provide the best evidence they have to support their conclusions and claims. Data are not evidence until used in the process of supporting a claim!
5. To help students get started, have them free-write two or three paragraphs sharing what they found during their field investigations. Tell them to start with their investigative question, and attempt to answer it by referring to and analyzing the data to explain and defend their answers.
6. Have each team share and then combine the best parts of their paragraphs to create a draft of a written piece to be included in their final presentation.
7. Have students attempt to fill in the sentences "____ indicates that ____" or "evidence from ____ indicates that ____."
8. Go over any guidelines or presentation elements that you would like students to include. Have students brainstorm what kind of presentation they would like to create and how they might share it. *We encourage you to upload your projects onto the project page in the StreamWebs database as one avenue of sharing!*
9. Give students plenty of time to create their team's presentation. Remind them that the idea is to share what they learned from their field project in a creative way with stakeholders or an interested audience, such as the watershed council or state

Guiding Questions

- HOW do I plan to share my project and make the sharing successful?
- WHO will I share my project with? *City council members, school board, watershed council, school paper, local businesses, family and friends, agency partners, other?*
- WHAT resources do I need to compile/create my presentation? *PowerPoint, maps, datasheets, Excel...*
- WHERE and WHEN will I share my project?

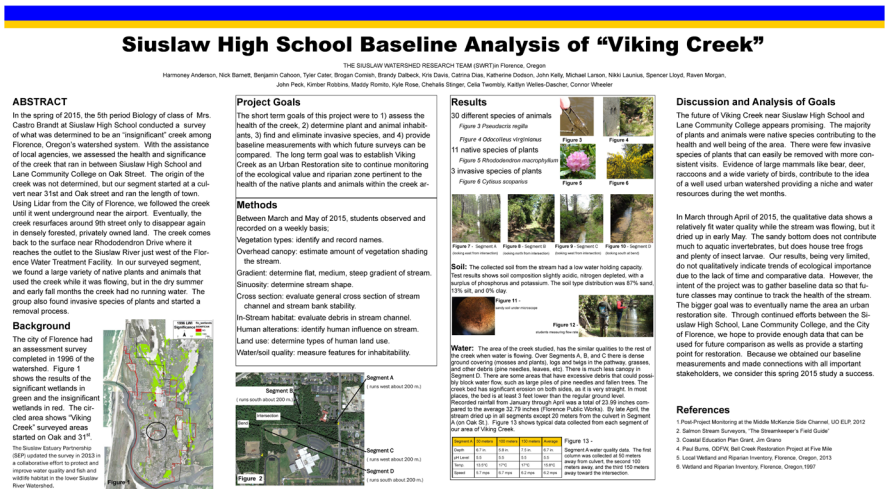


park you may have worked with on your project. Students may also be able to share their findings at a family math and science night, or through another school event.

Activity Wrap Up

When students are done with their final presentation, have each group present to the class. This should be practice for sharing with the broader community!

If you plan to follow up your field investigation with a stewardship project, use the StreamWebs Stewardship 101 planning sheet as a guide to planning a stewardship project with students!



Siuslaw High School Baseline Analysis of "Viking Creek"

THE SIUSLAW WATERSHED RESEARCH TEAM (SWRT)in Florence, Oregon

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ABSTRACT

In the spring of 2015, the 5th period Biology of class of Mrs. Castro Brandt at Siuslaw High School conducted a survey of what was determined to be an "insignificant" creek among Florence, Oregon's watershed system. With the assistance of local agencies, we assessed the health and significance of the creek that ran in between Siuslaw High School and Lane Community College on Oak Street. The origin of the creek was not determined, but our segment started at a culvert near 31st and Oak street and ran the length of town. Using Lidar from the City of Florence, we followed the creek until it went underground near the airport. Eventually, the creek resurfaces around 9th street only to disappear again in densely forested, privately owned land. The creek comes back to the surface near Rhododendron Drive where it reaches the outlet to the Siuslaw River just west of the Florence Water Treatment Facility. In our surveyed segment, we found a large variety of native plants and animals that used the creek while it was flowing, but in the dry summer and early fall months the creek had no running water. The group also found invasive species of plants and started a removal process.

Background

The city of Florence had an assessment survey completed in 1996 of the watershed. Figure 1 shows the results of the significant wetlands in green and the insignificant wetlands in red. The circled area shows "Viking Creek" surveyed areas started on Oak and 31st.

The Siuslaw Estuary Partnership (SEP) updated the survey in 2013 in a collaborative effort to protect and improve water quality and fish and wildlife habitat in the lower Siuslaw River Watershed.

Project Goals

The short term goals of this project were to 1) assess the health of the creek, 2) determine plant and animal inhabitants, 3) find and eliminate invasive species, and 4) provide baseline measurements with which future surveys can be compared. The long term goal was to establish Viking Creek as an Urban Restoration site to continue monitoring of the ecological value and riparian zone pertinent to the health of the native plants and animals within the creek ar-

Methods

Between March and May of 2015, students observed and recorded on a weekly basis;

Vegetation types: identify and record names.

Overhead canopy: estimate amount of vegetation shading the stream.

Gradient: determine flat, medium, steep gradient of stream.

Sinuosity: determine stream shape.

Cross section: evaluate general cross section of stream channel and stream bank stability.

In-Stream habitat: evaluate debris in stream channel.

Human alterations: identify human influence on stream.

Land use: determine types of human land use.

Water/soil quality: measure features for inhabitability.

Figure 2

Results

30 different species of animals

Figure 3 Pseudacris regilla

Figure 4 Odocoileus virginianus

11 native species of plants

Figure 5 Rhododendron macrophyllum

3 invasive species of plants

Figure 6 Cytisus scoparius

Figure 3 Figure 4 Figure 5 Figure 6

Figure 7 - Segment A (looking east from intersection) Figure 8 - Segment B (looking south from intersection) Figure 9 - Segment C (looking west from intersection) Figure 10 - Segment D (looking south on bend)

Soil: The collected soil from the stream had a low water holding capacity. Test results shows soil composition slightly acidic, nitrogen depleted, with a surplus of phosphorus and potassium. The soil type distribution was 61% sand, 13% silt, and 6% clay.

Figure 11 - (sandy soil under microscope)

Figure 12 (students measuring flow rate)

Water: The area of the creek studied, has the similar qualities to the rest of the creek when water is flowing. Over Segments A, B, and C there is dense ground covering (mooses and plants), logs and twigs in the pathway, grasses, and other debris (pine needles, leaves, etc). There is much less canopy in Segment D. There are some areas that have excessive debris that could possibly block water flow, such as large piles of pine needles and fallen trees. The creek bed has significant erosion on both sides, as it is very straight. In most places, the bed is at least 3 feet lower than the regular ground level. Recorded rainfall from January through April was a total of 23.99 inches compared to the average 32.76 inches (Florence Public Works). By late-April, the stream dried up in all segments except 20 meters from the culvert in Segment A (on Oak St.) . Figure 13 shows typical data collected from each segment of our area of Viking Creek.

Segment A	Segment B	Segment C	Segment D	Average
Depth	8.7 in.	5.9 in.	7.5 in.	8.7 in.
pH Level	5.0	5.5	5.5	5.5
temp.	53.6°C	17°C	17°C	15.8°C
Speed	0.7 mph	0.7 mph	0.2 mph	0.2 mph

Figure 13 -

Segment A water quality data. The first column was collected at 50 meters away from culvert, the second 100 meters away, and the third 150 meters away toward the intersection.

Discussion and Analysis of Goals

The future of Viking Creek near Siuslaw High School and Lane Community College appears promising. The majority of plants and animals were native species contributing to the health and well being of the area. There were few invasive species of plants that can easily be removed with more consistent visits. Evidence of large mammals like bear, deer, raccoons and a wide variety of birds, contribute to the idea of a well used urban watershed providing a niche and water resources during the wet months.

In March through April of 2015, the qualitative data shows a relatively fit water quality while the stream was flowing, but it dried up in early May. The sandy bottom does not contribute much to aquatic invertebrates, but does house tree frogs and plenty of insect larvae. Our results, being very limited, do not qualitatively indicate trends of ecological importance due to the lack of time and comparative data. However, the intent of the project was to gather baseline data so that future classes may continue to track the health of the stream. The bigger goal was to eventually name the area an urban restoration site. Through continued efforts between the Siuslaw High School, Lane Community College, and the City of Florence, we hope to provide enough data that can be used for future comparison as wells as provide a starting point for restoration. Because we obtained our baseline measurements and made connections with all important stakeholders, we consider this spring 2015 study a success.

References

1.Post-Project Monitoring at the Middle McKenzie Side Channel, UO ELP, 2012

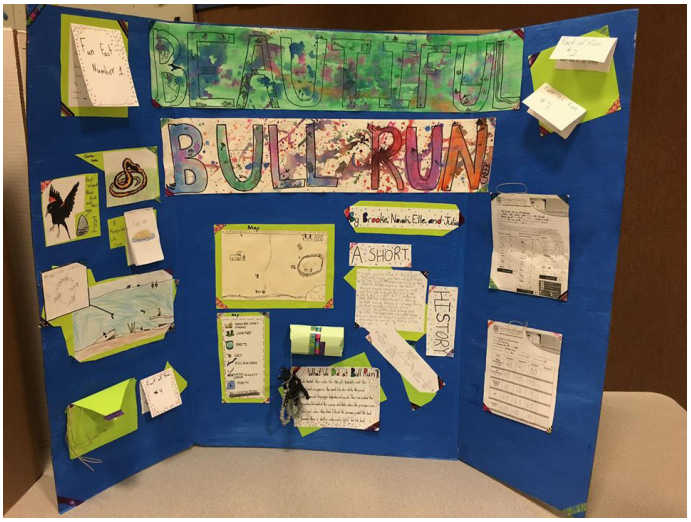
2. Salmon Stream Surveyors, "The Streamkeeper's Field Guide"

3. Coastal Education Plan Grant, Jim Grano

4. Paul Burns, ODFW, Bell Creek Restoration Project at Five Mile

5. Local Wetland and Riparian Inventory, Florence, Oregon, 2013

6. Wetland and Riparian Inventory, Florence, Oregon,1997



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