



Community Action

Show Us Your Mussels Challenge

Grades: 5-9

Type of Lesson

This lesson has been adapted to use in distance or self-guided instruction settings.

Activity Overview

Students will read and research information about recent work being done to help freshwater mussels, and write persuasive letters to those in their community to persuade them to get involved in specific actions that would continue the work being done.

*This lesson should be completed after previous lesson's background information on freshwater mussels.

Objectives

- Students will research freshwater mussel conservation using multiple sources to find supportive evidence.
- Students will persuade those in their community to get involved in specific actions that would continue the work being done for conservation of freshwater mussels.

Technological Considerations

The majority of materials in this lesson can be printed out and sent to families or provided as hyperlinks for students to access content if they have an internet connection.

Materials Students/Families Need

- Freshwater mussel text and image resources (see links in Lesson Resources to be printed for students or sent as resources)
- Persuasive writing videos (or alternative resources on structuring this type of writing)
- Letter template (in this packet)
- Letter rubric (in this packet)



Standards Connections

Minnesota State Standards

6.7.1.1-7.7.1.1-8.7.1.1 Write arguments to support claims with clear reasons and relevant evidence.

5.1.1.1.1 Evidence & Communication: Explain why evidence, clear communication, accurate record keeping, replication by others, and openness to scrutiny are essential parts of doing science.

5.3.4.1.3 Impact of Decisions: Compare the impact of individual decisions on natural systems.

8.1.1.2.1 Reasoning based on Evidence: Use logical reasoning and imagination to develop descriptions, explanations, predictions and models based on evidence.

9.3.4.1.2 Human Alterations of Earth: Explain how human activity and natural processes are altering the hydrosphere, biosphere, lithosphere and atmosphere, including pollution, topography and climate.

9.4.4.1.2 Human Effects on Ecosystems: Describe the social, economic and ecological risks and benefits of changing a natural ecosystem as a result of human activity.

NGSS

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.*

Time

Two 45-minute lessons

Procedure

DAY ONE: Introduction and gathering background information

1. Share with students that they will be researching and writing persuasively about freshwater mussels.
2. Have students read the “Overlooked Gems” article to start learning basic terminology and types of mussels.
3. Share with students that they will be given time to learn more about mussel conservation efforts for background information, and then will be writing letters to people in their community that can help support these efforts.
4. Allow students time to review the resources and take notes on information that they believe would be important for those in their community to know, information that could be helpful in persuading others to get involved, and any facts they find interesting/helpful.



5. If possible, allow students to virtually share their thoughts on what they think about the resources and mussels. Give students a chance to ask questions and share personal connections they may have with mussels, or Minnesota's lakes and rivers, to prompt excitement about the topic.
6. Share with students that the Minnesota Zoo and the DNR have been working to increase the population of many native mussel species. This will not only help the mussels themselves, but will also help the ecosystem of our lakes and rivers. In order to make sure this all happens successfully, we need to make sure those in our community know what is currently happening, what else could be done to help, and how they can get involved in freshwater mussel conservation.

DAY TWO: How to organize and write a persuasive letter

1. Remind students that they will be taking the information from the previous lesson and will use it to write a persuasive letter to someone/an organization in their community to help them get involved in local efforts for mussel conservation or assistance.
2. Have students watch all three of the following videos (Total Time: 5 minutes) to get a better idea of what persuasive writing is, and how they can begin to brainstorm ideas/outline their letters.
 - a. What is Persuasive Writing? :(1:46)
<https://www.youtube.com/watch?v=hD9arWXIddM>
 - b. Planning and Pre-Writing: (1:58)
<https://www.youtube.com/watch?v=nHCYvNvV68c>
 - c. Developing Reasons: (2:26)
<https://www.youtube.com/watch?v=6bbWJKIvl2c>
3. Share the letter template with students. Depending on their ability/familiarity with letter writing, they can either use the form or write freely.
4. Either generate idea together with students or provide students with a list of community members who could help with conservation efforts.
 - a. Students should use the graphic organizer attached to this lesson to generate their ideas
 - b. The first organizer has pre-chosen categories for younger/adaptive writers
 - c. The second organizer is blank for more advanced writers
5. Once students have chosen whom they are writing to, they should fill in the template or write freely. Remind students that they are writing in a professional manner, so slang and abbreviations would not be appropriate at this time.
6. When students have completed their template, they can write their final draft either by hand or by using a technology typing resource if available. Letters can then be sent either via mail or via email.



Assessment

Students will have created one persuasive letter. This can be assessed for both writing standards as well as science standards. The rubric included can be used as a resource to check for student understanding, as well as grading purposes.

Extension

To extend learning, have students create a step-by-step plan that the community member they have written to could follow in order to help the conservation efforts, or what they could do personally in their own home to help these efforts. This can be included within the letter as a separate “checklist” for community members to follow.

Lesson Resources

Good Background Information on Mussels:

Xerces Society for Invertebrates

Intro to mussels

<https://xerces.org/endangered-species/freshwater-mussels/about>

“Overlooked Gems: The Benefits of Freshwater Mussels” in Wings (Fall 2008):

Essays on Invertebrate Conservation, a publication of the Xerces Society.

https://xerces.org/sites/default/files/2018-04/08-229_fall%202008_Wings.pdf (pgs. 12-20)

“Freshwater Mussel Conservation: A Guide to Saving the Unsung Heroes of Our Waters”

<https://xerces.org/publications/brochures/freshwater-mussel-conservation-guide-to-saving-unsung-heroes-of-our-waters>

Minnesota DNR Mussel Information

https://www.dnr.state.mn.us/minnaqua/speciesprofile/freshwater_mussels.html

<https://www.dnr.state.mn.us/mussels/howlive.html>

PBS Mussel Video: “Selection, Deception, and Reproduction: Mimicry in Freshwater Mussels”

<https://www.pbslearningmedia.org/resource/nat16.sci.lisci.mussel/selection-deception-and-reproduction-mimicry-in-freshwater-mussels/#.WOT421VKjIU>

Persuasive Writing Videos:

What is Persuasive Writing?: <https://www.youtube.com/watch?v=hD9arWXIddM>

Planning and Pre-Writing: <https://www.youtube.com/watch?v=nHCYvNvV68c>

Developing Reasons: <https://www.youtube.com/watch?v=6bbWJKIvl2c>

Ideas for Community Action from MN Zoo:

<http://mnzoo.org/conservation/minnesota/freshwater-mussels/>