



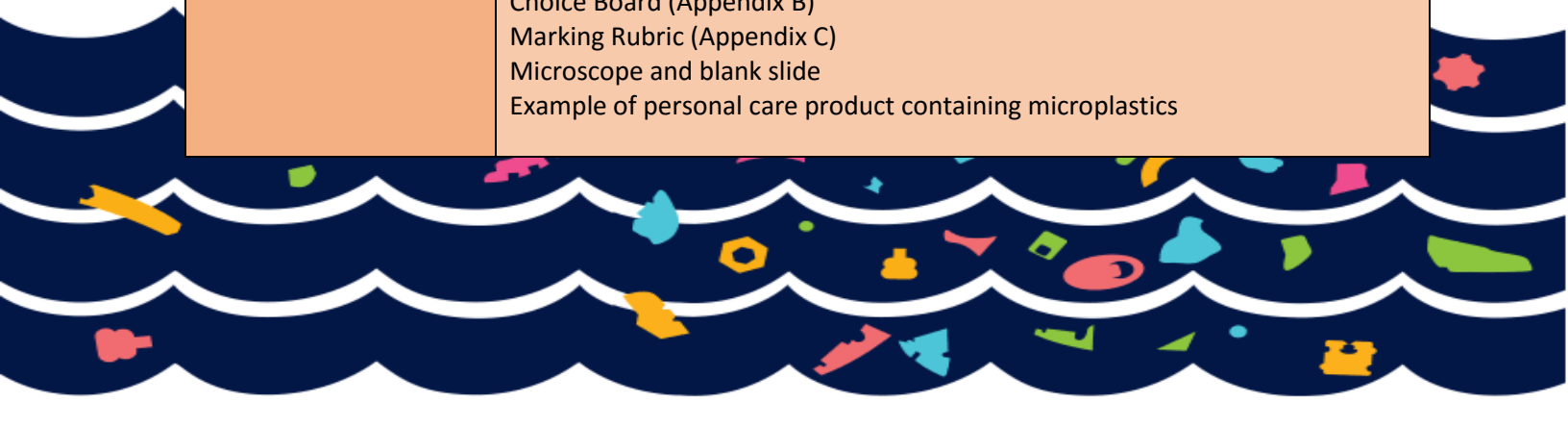
Fishing For Microplastics

Are There Microplastics Hiding In Your House?



Preparation

Class Level	Grade 6
Objectives	In this activity, students will learn what a microplastic is, what it is made out of, and how to identify microplastics in products. Students will also explore problems caused by microplastics in the ocean and possible ways to minimize the amount of microplastics in the ocean in the future.
Curriculum Links	<p>English Language Arts:</p> <p>A1 use speaking and listening to interact with others for the purposes of – contributing to group success</p> <p>C2 write a variety of effective informational writing for a range of purposes and audiences that communicates ideas to inform or persuade, featuring – clearly developed ideas by using focused and useful supporting details, analysis, and explanations</p> <p>C4 create meaningful visual representations for a variety of purposes and audiences that communicate personal response, information, and ideas relevant to the topic, featuring – development of ideas by making connections to personal feelings, experiences, opinions, and information – an expressive voice – an organization in which key ideas are evident</p> <p>Science:</p> <p>demonstrate the appropriate use of tools to examine living things that cannot be seen with the naked eye</p> <p>Social Studies:</p> <p>A1 apply critical thinking skills – including comparing, classifying, inferring, imagining, verifying, identifying relationships, summarizing, and drawing conclusions – to a range of problems and issues</p> <p>A2 interpret graphs, tables, aerial photos, and various types of maps</p> <p>A4 deliver a formal presentation</p> <p>A5 implement a plan of action to address a selected local or global problem or issue</p> <p>D3 evaluate effects of technology on lifestyles and environments</p> <p>*Additional Curriculum Links may be applicable depending on how groups decide to present their topic to the class (i.e. presentations with dances, songs or skits may hit links in Drama, Dance or Music).</p>
Background	Students will have previously taken part in the shoreline cleanup part of NS3's "Trash to Treasure" program. This activity is a follow-up to examine the smaller-sized plastics which were not collected at the beach.
Materials/Equipment	Fishing For Microplastics – Data Sheet (Appendix A) Choice Board (Appendix B) Marking Rubric (Appendix C) Microscope and blank slide Example of personal care product containing microplastics











Activity

Introduction	<p>To begin this activity, the teacher will need to introduce the plastics problem to the students. Introduction to plastic discussion may include the properties of plastics, plastic's ability to remain in the ocean environment, and the growing problem of the plastics in the environment. Using visual aids to introduce the plastic problem is often the most impactful method. It should be noted that some images of wildlife affected by plastics can be upsetting to some children. Show the class an example of a product containing microplastics. Take a small amount of the produce containing microplastics and place it on a slide (prepare this previous to lesson) and examine under a microscope with the class.</p> <p>Important Points:</p> <ol style="list-style-type: none">1. Plastics are manmade.2. Plastics are found in water and along beaches.3. Plastics are easily recognized.4. Plastics come in all shapes and sizes and can be mistaken for food.5. Small plastics less than 5mm in size are called microplastics. Macroplastics are larger than 5mm.6. Microplastics are harming organisms through blockage, false-cessation (feeling full), and POSSIBLE pollutant transference adsorbed onto the plastic surface.
Questions	<p>Are there microplastics in your products at home? How can you know if a product contains microplastics? What other products besides personal care products may have microplastics in them?</p>
Activity	<p>Direct students to go through the personal care products in their homes and look for signs of microplastics (polyethylene in ingredients, 'scrubbing' or 'exfoliating beads' in product description).</p> <p>Using the included chart (Appendix A), have the students record the type of personal care product, the name of the product and a physical description of the microplastics (if observable).</p> <p>Create a master list for the class to contribute their findings to (on the board, overhead or projector). Students submit their findings to the teacher (to be compiled by teacher or as a class).</p> <p>Possible class discussion topics:</p> <ul style="list-style-type: none">• How many students had microplastics in their products at home?• What type of product was most common to have microplastics in it?• Were there other products other than 'personal care products' which had microplastics in them?

<p>Post-Data Collection Discussion/Presentation</p>	<p>Break students up into four groups (or individually) and have each group or individual brainstorm and research a different aspect of microplastics. Have each group or individual present their findings by using a method from the choice board (Appendix B)</p> <ul style="list-style-type: none"> • Who or what may pollution of microplastics into the ocean affect (<i>Possibilities include marine organisms, fisheries and aquaculture and tourism</i>). • What are some more eco-friendly alternatives for microplastics in consumer products (<i>examples are: raw sugar, apricot shells and cocoa beans</i>). • How other places in Canada are affected by microplastics (<i>the Great Lakes are a large source of microplastic contamination</i>) and have students look into current or proposed laws and regulations against microplastics. • Where do the microplastics go after they go down the drain? (<i>Wastewater Services in the Regional District of Nanaimo map shows different wastewater treatment facilities in the Regional District of Nanaimo</i>) <ul style="list-style-type: none"> • <i>Duke Point Pollution Control Centre: Effluent is discharged into the Strait of Georgia 242 m off shore at a depth of 43 m</i> • <i>Greater Nanaimo Pollution Control Centre: Effluent is discharged into the Strait of Georgia 2,030 m offshore at a depth of 70m</i>.
<p>Assessment</p>	<p>Data Collection: Collect data sheets from students to check for completeness and data recording ability. Post-Activity: Mark each group or individual according to rubric provided (Appendix C)</p>
<p>Next Steps</p>	<p>Consider signing out NS3's <u>Beach Detective – Microplastics Investigation Trash to Treasure Class Resource Kit</u> to continue learning about microplastics by conducting your own classroom experiment and contributing your data to actual scientific studies!</p> <p>E-mail amie.oxler@nanaimoscience.org for more details</p>

Appendix B

CHOICE BOARD FOR MULTIPLE INTELLIGENCES

<p>Verbal/Linguistic</p> <ul style="list-style-type: none"> • Write instructions • Keep a personal journal • Create a poem • Create TV ads • Read stories to others • Retell in your own words • Teach concept mapping • Create crossword puzzle 	<p>Logical/Mathematical</p> <ul style="list-style-type: none"> • Create a time line • Compare/contrast ideas • Create an outline for a story • Design a map • Decipher codes • Create patterns • Design a game to show... 	<p>Visual/Spatial</p> <ul style="list-style-type: none"> • Create a poster • Draw a map • Create visual diagrams • Draw from different perspectives • Create a comic strip • Graph results of a survey 
<p>Interpersonal</p> <ul style="list-style-type: none"> • Tell stories • Teach a cooperative game • Role play a situation • Discuss and come to a conclusion • Survey or interview others 	<p>Free Choice</p>	<p>Body Kinesthetic</p> <ul style="list-style-type: none"> • Make up a cooperative game • Practice physical exercise • Conduct hands-on experiments • Construct a model or representation 
<p>Musical Rhythmic</p> <ul style="list-style-type: none"> • Create raps • Play musical instruments • Write to music • Teach dance steps • Make up sounds and sound effects • Write a jingle • Create rhymes that... 	<p>Naturalist</p> <ul style="list-style-type: none"> • Collect and categorize data, materials, or ideas • Discover or experiment • Take a field trip • Study means of survival • Adapt materials to a new use • Label and classify 	<p>Intrapersonal</p> <ul style="list-style-type: none"> • Keep a personal journal • Write about personal experiences • Think about and plan... • Review or visualize • How would it feel to... • Imagine and write about the future 

Source: <http://daretodifferentiate.wikispaces.com/Choice+Boards>

Appendix C

Fishing for Microplastics - Project Rubric

Topic:

Partners:

Aspect	Not Yet Within Expectations	Meets Expectations	Fully Meets Expectations	Exceeds Expectations
Organization	Materials are not neat and are difficult to understand.	Some materials are neat and some information is easy to understand.	Most materials are neat and most information is easy to understand.	All materials are neat and information is easy to understand.
Content	End result demonstrates lack of understanding of subject area.	Basic understanding of subject area is met.	Subject understanding is demonstrated through end result project.	Subject area mastery is demonstrated through end result project.
Teamwork	Few group members contributed to project.	Some group members contributed to project.	Most group members contributed to project.	Each group member made contributions to project.
Presentation	Information is unclear or lacking Several spelling and grammar errors.	Information is presented with limited knowledge. Some spelling and grammar errors.	Information is presented with acceptable knowledge and creativity. Few spelling and grammar errors.	Information is presented with knowledge and creativity. No spelling or grammar errors.