

# STEAM (Science, Technology, Engineering, Art & Math) Lessons Based on 'A Whale's Tale'





## Who Wants to Live Here?

### STEAM Lessons (geared to elementary students)

SCIENCE	TECHNOLOGY	ENGINEERING	ART	MATHEMATICS
<ul style="list-style-type: none"> <li>• Discussion</li> <li>• Display</li> <li>• Experiment</li> <li>• Hypothesis</li> <li>• Research</li> </ul>	<ul style="list-style-type: none"> <li>• Display</li> <li>• Input data</li> <li>• Research via Internet</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss technology use by scientists</li> <li>• Using tools with precision</li> </ul>	<ul style="list-style-type: none"> <li>• Craft projects</li> <li>• Drawing/Painting Antarctic scenes</li> <li>• Mural</li> <li>• Using Elements of Art</li> <li>• Using tools with precision</li> <li>• Visual display of artwork</li> </ul>	<ul style="list-style-type: none"> <li>• Balance</li> <li>• Proportion</li> <li>• Using tools with precision</li> </ul>
GEOGRAPHY	LANGUAGE ARTS	<p><i>Modify unit lesson pieces to meet content area/grade level requirements. You may find additional standards (including state level) that apply to the activities, feel free to add them to your documentation.</i></p>		
<ul style="list-style-type: none"> <li>• Environment, habitat</li> <li>• Physical differences</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehension</li> <li>• Main idea</li> <li>• Speaking/listening</li> <li>• Supporting details</li> </ul>			

**Who Wants to Live Here?** *Visual art* focus with students drawing, painting or creating items shown in 'A Whale's Tale' or found when researching Antarctica. *Science* focus is habitat and experimenting with media, especially value in paint. Animals included should live in the Antarctic habitat.

### Art Projects (open-ended) / Craft Projects (specific product expected)

<p><b>Drawing/Painting penguins, seals and/or whales (individual)</b></p> 	<p><b>Antarctica Mural (group)</b></p> 	<p><b>Clothespin or Stick Animal Craft</b></p> 	<p><b>Paper Plate Whale/Penguin (craft)</b></p> 
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Materials/Sequence (art)		Materials/Sequence (craft)	
<ul style="list-style-type: none"> <li>Brushes</li> <li>Drawing paper or canvas</li> <li>Paints (acrylic, tempera or watercolor)</li> <li>Pencils</li> </ul> <p><i>Antarctic habitat has a limited color scheme which makes it an ideal topic for creating and using values.</i></p> <ol style="list-style-type: none"> <li>Plan - sketch whales &amp;/or penguins</li> <li>Create - paint on appropriate surface</li> <li>Revise - step back &amp; determine what else artwork requires</li> <li>Add finishing touches</li> <li>Share artwork &amp; reflect</li> </ol>	<ul style="list-style-type: none"> <li>Crayons, markers or paint</li> <li>Drawings of various Antarctic wildlife ('Color Wyatt and His Antarctic Friends' coloring book from <a href="http://bluesteam.org/books/">http://bluesteam.org/books/</a> can be used)</li> <li>Glue</li> <li>Large paper or appropriate background</li> </ul> <ol style="list-style-type: none"> <li>Plan – gather materials, divide jobs for task</li> <li>Create – create and color materials, cut out or sketch</li> <li>Revise – glue materials together or paint on background</li> <li>Add finishing touches</li> <li>Share artwork &amp; reflect</li> </ol>	<ul style="list-style-type: none"> <li>Clothespin</li> <li>Construction paper or foam</li> <li>Glue</li> <li>Markers</li> <li>Paper</li> <li>Scissors</li> </ul> <ol style="list-style-type: none"> <li>Plan – gather materials</li> <li>Create – color pieces as needed</li> <li>Revise – glue materials together</li> <li>Add finishing touches (eyes, etc.)</li> <li>Share artwork &amp; reflect</li> </ol>	<ul style="list-style-type: none"> <li>Construction paper (color based on type of whale)</li> <li>Glue</li> <li>Google eyes</li> <li>Markers</li> <li>Paint</li> <li>Paper plates</li> <li>Scissors</li> </ul> <ol style="list-style-type: none"> <li>Plan – gather materials</li> <li>Create – color pieces as needed</li> <li>Revise – glue materials together</li> <li>Add finishing touches (eyes, etc.)</li> <li>Share artwork &amp; reflect</li> </ol>
<b>High order questions:</b>	<ul style="list-style-type: none"> <li>How were photographs and videos incorporated to enhance the story?</li> <li>What art related skills did you observe the scientists using?</li> <li>How did colors in the video impact your impression of Antarctica?</li> <li>What elements of art are in this photograph? (line, shape, color, value, space, texture, form)</li> <li>What types of animals did you see during the video?</li> <li>What type of environment did you see during the video?</li> <li>If using paint how can you create different values?</li> </ul>		
<b>Engage</b>	<p><b>Set focus for video viewing</b> (to meet content requirements), Watch <b><i>A Whale's Tale: Wyatt's Antarctic Adventure with the Scientists</i></b> – available at <a href="http://bluesteam.org/video/">http://bluesteam.org/video/</a></p> <ul style="list-style-type: none"> <li>Discussion (small/large group)</li> <li>Questions:</li> <li>Plan artwork, discuss process and sequence of selected project</li> </ul>		

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<b>Explore</b>	<ol style="list-style-type: none"> <li>1. Observe artwork, discuss-conceptualize artistic ideas and work.</li> <li>2. Choose 2 pictures from Antarctica, animal photographs or drawings compare and contrast what they observe (cite evidence or facts). (Double Bubble Thinking Map or Venn Diagram work well)</li> <li>3. Organize and develop artistic ideas and work, set timeline for completion.</li> <li>4. Begin to create art – Direct Instruction to begin, allow students time to add individual ideas.</li> </ol>
<b>Explain</b>	<ul style="list-style-type: none"> <li>• <b>Revise</b> and make corrections as art is being created.</li> <li>• Students reflect on personal art and make revisions as needed.</li> <li>• Questions/explanations: <ul style="list-style-type: none"> <li>○ Why did you do _____?, Did your art turn out as you expected?</li> </ul> </li> </ul>
<b>Elaborate</b>	<ul style="list-style-type: none"> <li>• Add <b>finishing</b> touches to art.</li> </ul>
<b>Evaluate</b>	<ul style="list-style-type: none"> <li>• <b>Share</b> artwork and reflect on final product. <ul style="list-style-type: none"> <li>○ What would you do differently if you were to do the same project again?</li> <li>○ What did you learn about value?</li> <li>○ How does coloring impact an animal's ability to function and survive in a particular habitat?</li> <li>○ What art skills do you think scientists' require?</li> <li>○ What do you see you like in your classmates' art?</li> </ul> </li> <li>• Plan next step for future learning.</li> </ul>
<b>Extend</b>	<ul style="list-style-type: none"> <li>• Read <b>A Whale's Tale - Wyatt's Antarctic Adventure: Tagged by Scientists</b> (narrative available at <a href="http://bluesteam.org/books/">http://bluesteam.org/books/</a>)</li> <li>• Read <b>Color Wyatt the Humpback Whale and his Antarctic Friends</b> (coloring book available at <a href="http://bluesteam.org/books/">http://bluesteam.org/books/</a>)</li> <li>• Conduct additional research about scientific careers and/or the use of technology.</li> <li>• Word list/crossword puzzles (available at <a href="http://bluesteam.org/activities/">http://bluesteam.org/activities/</a>)</li> <li>• Complete other art/craft projects</li> <li>• Read literature about Antarctica</li> <li>• Research marine life, habitat and/or geography.</li> <li>• Complete other integrated units in the series (available at <a href="http://bluesteam.org/resources/">http://bluesteam.org/resources/</a>): <ul style="list-style-type: none"> <li>○ <i>What is Buoyancy?</i></li> <li>○ <i>When Should I Care for the Earth?</i></li> <li>○ <i>Where in the World is Antarctica?</i></li> <li>○ <i>Why is This Whale Talking?</i></li> <li>○ <i>How Can I Build That?</i></li> </ul> </li> </ul>

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National Core Arts Standards Artistic Processes and Anchor Standards	Math - Common Core Standards	Language Arts - Common Core Standards
<b>K-5</b> <b>Creating</b> Conceiving and developing new artistic ideas and work. Students will: 1. Generate and conceptualize artistic ideas and work. 2. Organize and develop artistic ideas and work. 3. Refine and complete artistic work.	<b>Kindergarten</b> <b>Describe and compare measurable attributes.</b> CCSS.Math.Content.K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>Kindergarten</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. CCSS.ELA-Literacy.SL.K.2 Confirm understanding of text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
<b>K-5</b> <b>Performing/Presenting/Producing</b> <b>Performing:</b> Realizing artistic ideas and work through interpretation and presentation. <b>Presenting:</b> Interpreting and sharing artistic work. <b>Producing:</b> Realizing and presenting artistic ideas and work Students will: 4. Select, analyze, and interpret artistic work for presentation. 5. Develop and refine artistic techniques and work for presentation. 6. Convey meaning through the presentation of artistic work.	<b>1st Grade</b> <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>1st Grade</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. CCSS.ELA-Literacy.SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
	<b>2nd Grade</b> <b>Measure and estimate lengths in standard units.</b> CCSS.Math.Content.2.MD.A.4 Measure to determine how much longer an object is than another, expressing difference as a standard unit. <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>2nd Grade</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.2.1 Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. CCSS.ELA-Literacy.SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
<b>K-5</b> <b>Responding</b> 9. Understanding and evaluating how the arts convey meaning. Students will: 10. Synthesize and relate knowledge and personal experiences to make art. 11. Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.	<b>3rd Grade</b> <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>3rd Grade</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.3.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly. CCSS.ELA-Literacy.SL.3.2 Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
<b>Next Generation Science Standards</b> <b>Grades K-5</b> <b>Connections to Engineering, Technology, and Applications of Science Interdependence of Science, Engineering and Technology.</b>	<b>4th Grade</b> <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>4th Grade</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, groups, teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
	<b>5th Grade</b> <b>Convert like measurement units within a given measurement system.</b> CCSS.Math.Content.5.MD.A.1 Convert among different-sized standard measurement units within a given system (e.g., convert 5 cm to 0.05 m) & use conversions in solving multi-step, real world problems. <ul style="list-style-type: none"> <li>Use appropriate tools strategically.</li> <li>Attend to precision.</li> <li>Look for and make use of structure.</li> </ul>	<b>5th Grade</b> <b>Comprehension and Collaboration:</b> CCSS.ELA-Literacy.SL.5.1 Engage effectively in a range of collaborative discussions with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly. CCSS.ELA-Literacy.SL.5.2 Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.