

## **Insects**

### English Language Arts

#### Primary: Pre-Kindergarten to Grade 2

This learning sequence is based on “Brrrr, It's Alive,” published in ISTE's *National Educational Technology Standards for Students: Connecting Curriculum and Technology* (2000). This lesson has been repurposed for use with a digital microscope. Repurposed with permission from *National Educational Technology Standards for Teachers: Preparing Teachers to Use Technology*, copyright © 2002, ISTE (International Society for Technology in Education), (800) 336-5191 (U.S. and Canada) or (541) 302-3777 (International), iste@iste.org, www.iste.org. All rights reserved. Permission does not constitute an endorsement by ISTE

### **Purpose**

Students will:

- Use oral, written, and visual language to communicate effectively with a variety of audiences for different purposes
- Use a variety of technological resources to gather and synthesize information, including a digital microscope
- Use a variety of technological resources to create and communicate knowledge, including a digital microscope
- Read a range of print materials to build an understanding of texts and acquire new information. Write in two forms: riddle and presentation.

### **Description**

Guessing riddles is something primary grade students always enjoy. The creation of riddles requires children to think analytically about what they are describing and provide enough information to distinguish it from other similar things. In this activity, students write a riddle that gives clues about an insect. Other students try to guess the insect's identity. The information gathered to create the riddle forms the foundation for putting together a report about insects.

Students look at the insect under a digital microscope in order to discover information not visible to the unaided eye. Secondly, students conduct further research through the Web or other supplemental materials. Finally, they organize the information they have found about an insect into a riddle with an electronic web or outline. These activities provide the basis for a short presentation that students create to go along with their riddle using the digital microscope software. Because this activity focuses on the effective use of language, be sure to provide additional resources and visual media that will aid comprehension for students whose first language is not English.

### **Activities Preparation**

- Consult the library media specialist for available resources. Select magazines, books, Web sites, and so on.
- Demonstrate how to create a web. Use concept-mapping software such as Expression or Inspiration®.
- Schedule time to confer with students individually or in small groups about their insect choices.
- To facilitate students' construction of Web outlines and electronic writing, schedule extra volunteers in the classroom on those days.
- Demonstrate simple operating procedures of the digital microscope and its multimedia software features, including how to capture, edit, print, and make presentations from images.
- Notify the school Webmaster about the students' projects, providing an approximate timeline.
- Consider combining all of the projects into one electronic format to facilitate sharing and dissemination.

<b>Activities</b>	<b>English Language Arts Standards</b>	<b>NETS for Students Standards</b>
<p>Have students brainstorm what they already know about insects and what more they want to learn (KWL-Know/Want to Know/Learned chart). Stimulate discussion about what the term insect means. Provide students with a short introduction to resources they can use to acquire information. Encourage them to browse through selected materials: nonfiction books, CD-ROMs, instructional television programs, electronic encyclopedias, and appropriate Web sites..</p>	<p><b>ELA 1, 8 IL 1</b></p>	<p><b>2, 4</b></p>
<p>Introduce simple operating procedures of the digital microscope and its multimedia software features, including how to capture, edit, print, and make presentations from images.</p> <p><i>This is best done by using a computer that is attached to a projector for whole group viewing.</i></p>		
<p>Model the first set of activities by showing an example of an insect under 10X magnification and have students guess what it is through riddle format. Show students how to handle insects carefully using tweezers, sample jars and containment dishes. Be sure to discuss proper care and the size of insects that can fit into the available collection containers without being harmed.</p>	<p><b>ELA 6, 7 IL 2</b></p>	<p><b>2, 6</b></p>
<p>Take a walk on school grounds and ask students to collect an insect they are interested in (with proper collection containers). Provide time for students to look at their insects under the digital microscope. Have students gather resource materials for further research on the particular insect they collected.</p>	<p><b>ELA 3, 8, 11</b></p>	<p><b>2, 4, 7</b></p>
<p>Review the parts of a riddle, what makes one interesting, carefully describe the properties of each, and what constitutes a good question. Have students use word-processing software to write a riddle about the insects they have chosen, including the information they have collected by looking at the insect under the microscope and through their research.</p>	<p><b>ELA 4, 5, 6, 8</b></p>	<p><b>1, 7</b></p>
<p>Assist students in capturing pictures of their insects that will show the attributes described in their riddle.</p> <p>Have students print out or create a short presentation with the digital microscope software with the images captured under the microscope. With young children or English language learners, the teacher may want to transcribe student descriptions.</p>	<p><b>ELA 4, 8</b></p>	<p><b>1, 8, 9</b></p>
<p>Have students read their riddles aloud while showing their presentation (or print outs) and have other students guess the insect. The riddles should demonstrate what kinds of facts students gathered about their insects.</p>	<p><b>ELA 4, 12</b></p>	
<p>The class then brainstorms common attributes for insects. Students check to see what attributes are true for all their insects while using concept-mapping software to make a web of the common attributes such as: legs, wings, body parts.</p>	<p><b>ELA 3</b></p>	
<p>Review the KWL-Know/Want to Know/Learned chart with students. Stimulate a discussion about what they have learned about insects. Provide ideas for further research on any Want to Know items from the chart that were not addressed in the previous activities.</p>	<p><b>ELA 3, 7, 8</b></p>	
<p>Projects (riddles, print outs and/or presentations) can be shared by posting in the classroom or class Web site, by making a hard copy for the media center or by transferring the presentations to videotape for students to view at home with their families.</p>	<p><b>ELA 8, 11, 12</b></p>	<p><b>1, 8, 9</b></p>

## **Tools and Resources**

### **HARDWARE:**

Computers  
Digital microscopes  
Specimen collection equipment (tweezers, collection bins and/or containment dishes).

### **SOFTWARE:**

Digital microscope, word-processing, concept-mapping, multimedia encyclopedia, and internet access.

### **OTHER:**

USDA Agriculture Research Service, Sci4Kids site  
[www.ars.usda.gov/is/kids/insects/insectintro.htm](http://www.ars.usda.gov/is/kids/insects/insectintro.htm)

Insect Lore (Insectlorepedia & Insectucational)  
[www.insectlore.com](http://www.insectlore.com)

University of Illinois Extension: Let's Talk about Insects (in English & Spanish)  
[www.urbanext.uiuc.edu/insects/index.html](http://www.urbanext.uiuc.edu/insects/index.html)

Nonfiction books about insects, magazines, instructional television programs  
broadcast locally about insects.

## **Comments**

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Ideally this learning sequence will be applied in a classroom with at least 1 computer per 5 students. However, if this is not feasible, teachers may adapt this sequence in classrooms with one computer. Students can rotate through the actual use of the digital microscope in small groups as a learning center that is part of a rotation through a group of learning centers.

This lesson sequence can easily be adapted for use with different subject matter, e.g. flowers, plant materials, rocks.

## Assessment

Criteria	Level 4	Level 3	Level 2	Level 1	Score
Active Engagement	Enthusiastically and articulately expresses educated viewpoints in class discussions; actively listens and responds to peers	Participates in class discussions voluntarily. Occasionally unengaged while others are speaking; speaks clearly around topics of personal interest, yet unable to engage in other types of conversation	Participates in class discussions only when called upon, and does so without a clear understanding of the discussion context; mumbles when speaking	Does not participate in class discussions	
Create Riddle	Riddle is clear and complete. Student evidences understanding of the properties of a riddle.	Riddle is clear and complete, but does not evidence full understanding.	Riddle is incomplete. Alludes to riddle format, but does not evidence full understanding.	Riddle is unclear, confusing, and/or incomplete.	
Recognizing Attributes of an Object	Student identifies 3 attributes of insect.	Student identifies 2 attributes of insect.	Student identifies 1 attribute of insect.	Student did not identify attributes of insect.	
Use of Digital Microscope	Digital microscope used to collect information about insect and 3 relevant images captured.	Digital microscope was used to collect information about insect and 1-2 relevant images captured.	Digital microscope was used to collect information about insect and 0 relevant images captured.	Student did not use digital microscope and did not complete assignment.	

This rubric was put together with the “Rubric Wizard” tool at [www.taskstream.com](http://www.taskstream.com)

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## Credits and contact information

This lesson sequence was adapted from a previously published piece *Brrrr, It's Alive* (2000) written by Barbara Ridgway, Helena Public Schools, Helena, Montana ([bridgway@helena.k12.ca.us](mailto:bridgway@helena.k12.ca.us))

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