Worms

Title: Parasitic Worms Project

Grade Level: 9-12

Subject/Content: Science/Biology

Summary of Lesson: Students will research one type of parasitic worm and give a PowerPoint presentation about what they learn. Students will look into topics such as lifecycle, evolved traits, and traits of related organisms for their parasitic worm of choice.

Focus Question: How can worms survive by parasitizing human hosts?

Resource: Science in Context

Procedures:

Steps/Activities by the Teacher:

- Lead a class discussion about the roles that worms can play in an ecosystem. Explain that some worms have a positive impact on their ecosystem while others can act as parasites.
- Direct students to access Science in Context and search for ‘worms’.
- Direct students to research one type of parasitic worm.
- Explain that students will be creating a PowerPoint presentation where they will research one type of parasitic worm in depth. This project may be done individually or with a partner at the teacher’s discretion.
- Show students the rubric below on which they will be graded:

<table>
<thead>
<tr>
<th>Parasite Project Rubric</th>
<th>Names: ___________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exceeds Standard (10)</strong></td>
<td><strong>Meets Standard (5)</strong></td>
</tr>
<tr>
<td>Evolved Traits (20)</td>
<td>At least four. Well explained. Good understanding of evolution.</td>
</tr>
<tr>
<td>Presentation and worksheet (10)</td>
<td>Faced audience. Did NOT read directly from slides. Thoughtful questions on WS. &gt;5 mins.</td>
</tr>
<tr>
<td>Professional Behavior (10)</td>
<td>Worked without prompting. Focused on the task at hand. Collaborated with team.</td>
</tr>
</tbody>
</table>

Presentation time: ___________  Final Score: _____/80

- Highlight the ‘Exceeds Standard’ column of the rubric and explain that students will be expected to achieve to this level.
• Lead a brief class discussion about what students like in a good PowerPoint presentation. (eg. pictures, not a lot of text, brevity, etc)
• Allow students to start researching. Monitor progress and give feedback where appropriate.
• When students have completed their project, lead a classroom discussion about what makes a good presentation. Have students brainstorm a list of good and bad aspects of a presentation in their notes.
• Direct students to present their projects to the class. If needed, have students who are listening write down three details about each project as notes. Alternatively, have students create their own worksheet for the rest of the class to fill out when they are giving their presentation.

Steps/Activities by Student(s):

• Access *Science in Context* and search on ‘worms’.
• Research all relevant information about one type of parasitic worm.
• Review the rubric below on which you will be graded.

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<tr>
<td><strong>Exceeds Standard (10)</strong></td>
<td><strong>Meets Standard (8.5)</strong></td>
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Presentation time: ___________   Final Score: __80__

• Create a PowerPoint presentation that satisfies the ‘Exceeds Standard’ column of the rubric.
• With the class, brainstorm a list of good and bad aspects of a presentation. Record these lists in your notes and apply them to your presentation.
• Present your project to the class. Fill out your notes or worksheets, as the teacher directs, while other students are presenting.

**Outcome:** Students will understand the parasitic relationship between worms and humans. Students will understand the complicated life cycle of worms. Students will improve their presentation skills.
Related Activities:

**Global Studies**
- Direct students to listen to this RadioLab episode about parasites. Have students write an essay about how parasites have affected the development of societies all around the world, including the American South. [http://www.radiolab.org/story/91689-parasites/](http://www.radiolab.org/story/91689-parasites/)

**Chemistry**
- Analyze the many different chemicals that worms use to mimic chemicals in the human body. These chemicals must be similar, or identical, in structure to human chemicals in order to trick the human body into accepting the parasitic worms. Compare the structure and function of worm and human chemicals.

**Learning Expectation:** Students will use their research skills to find relevant information about parasitic worms. Students will use their creativity to design a PowerPoint project using that relevant information. Students will demonstrate their presentation skills by presenting their findings to the class.

**Standards Alignment**

**Next Generation Science Standards**

HS-LS1-3. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

LS1.A:4. Feedback mechanisms maintain a living system’s internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)

HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2.CC.5.1. Much of science deals with constructing explanations of how things change and how they remain stable. (HS-LS2-6), (HS-LS2-7)

**Standard Source:** Next Generation Science Standards (2013)
Common Core State Standards

Grades 9-10

CCSS.ELA-Literacy.RST.9-10.2 Determine the central ideas or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

CCSS.ELA-Literacy.RST.9-10.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.

CCSS.ELA-Literacy.RST.9-10.5 Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

CCSS.ELA-Literacy.RST.9-10.10 By the end of grade 10, read and comprehend science/technical texts in the grades 9-10 text complexity band independently and proficiently.

CCSS.ELA-Literacy.WHST.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Grades 11-12

CCSS.ELA-Literacy.RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

CCSS.ELA-Literacy.RST.11-12.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

CCSS.ELA-Literacy.RST.11-12.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

CCSS.ELA-Literacy.RST.11-12.10 By the end of grade 12, read and comprehend science/technical texts in the grades 11-12 text complexity band independently and proficiently.

CCSS.ELA-Literacy.WHST.11-12.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.