

Grade 7
Life Systems

The Galapagos Islands: Oil Spill Near the Coast

The Task

Students were to research and examine environmental issues related to an oil spill off the coast of the Galapagos Islands. They were then to present their findings in graphic and written formats to be submitted to a fictitious youth science magazine. Specifically, they were to:

- conduct the research;
- create a graphic organizer to present information;
- create a flow chart depicting short-term and long-term effects of the spill;
- write a letter to the editor of a youth science magazine, supported with scientific facts, to express agreement or disagreement with an expert's statement on the effects of the spill and to suggest ways of reducing the risk of such a spill in the future.

Expectations

This task gave students the opportunity to demonstrate their achievement of all or part of each of the following selected overall and specific expectations from the strand Life Systems: Grade 7 – Interactions Within Ecosystems. (The codes that follow the expectations are from the Ministry of Education's *Curriculum Unit Planner*.)

Students will:

1. demonstrate an understanding of the interactions of plants, animals, fungi, and micro-organisms in an ecosystem (7s1);
2. investigate the interactions in an ecosystem, and identify factors that affect the balance among the components of an ecosystem (7s2);
3. demonstrate an understanding of the effects of human activities and technological innovations, as well as the effects of changes that take place naturally, on the sustainability of ecosystems (7s3);
4. identify living (biotic) and non-living (abiotic) elements in an ecosystem (7s4);
5. interpret food webs that show the transfer of energy among several food chains, and evaluate the effects of the elimination or weakening of any part of the food web (7s9);
6. investigate ways in which natural communities within ecosystems can change, and explain how such changes can affect animal and plant populations (7s11);
7. use appropriate vocabulary, including correct science and technology terminology, to communicate ideas, procedures, and results (7s15);
8. communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, oral presentations, written notes and descriptions, charts, graphs, and drawings (7s17);

9. investigate the impact of the use of technology on the environment (7s18);
10. identify and explain economic, environmental, and social factors that should be considered in the management and preservation of habitats (7s24).

Prior Knowledge and Skills

To complete this task, students were expected to have some knowledge or skills related to the following:

- investigating the interactions of components within an ecosystem
- using research materials to create point-form notes
- developing and using graphic organizers such as mind maps, webs, chains, and flow charts
- developing and creating a supported opinion piece

For information on the process used to prepare students for the exemplar task and on the materials and equipment required, see the Teacher Package reproduced on pages 42–48 of this document.

Task Rubric – Grade 7: The Galapagos Islands: Oil Spill Near the Coast

Expectations*	Level 1	Level 2	Level 3	Level 4
Understanding of Basic Concepts				
The student:				
1, 4, 5	<ul style="list-style-type: none"> – identifies a few relevant abiotic and biotic components of the ecosystem – correctly depicts a few interactions between components of the ecosystem 	<ul style="list-style-type: none"> – identifies some relevant abiotic and biotic components of the ecosystem – correctly depicts some interactions between components of the ecosystem 	<ul style="list-style-type: none"> – identifies a considerable number of relevant abiotic and biotic components of the ecosystem – correctly depicts a considerable number of interactions between components of the ecosystem 	<ul style="list-style-type: none"> – identifies many relevant abiotic and biotic components of the ecosystem – correctly depicts many interactions between components of the ecosystem
Inquiry Skills				
The student:				
2, 6, 9	<ul style="list-style-type: none"> – supports opinion(s) with limited use of scientific facts 	<ul style="list-style-type: none"> – supports opinion(s) with some use of scientific facts 	<ul style="list-style-type: none"> – supports opinion(s) with adequate use of scientific facts 	<ul style="list-style-type: none"> – supports opinion(s) with significant use of scientific facts
Communication of Required Knowledge				
The student:				
7, 8	<ul style="list-style-type: none"> – communicates understanding of components and interactions within ecosystems with limited clarity – makes limited use of appropriate science and technology vocabulary 	<ul style="list-style-type: none"> – communicates understanding of components and interactions within ecosystems with some clarity – makes some use of appropriate science and technology vocabulary 	<ul style="list-style-type: none"> – clearly communicates understanding of components and interactions within ecosystems – makes general use of appropriate science and technology vocabulary 	<ul style="list-style-type: none"> – clearly and precisely communicates understanding of components and interactions within ecosystems – makes extensive use of appropriate science and technology vocabulary
Relating of Science and Technology to Each Other and to the World Outside the School				
The student:				
3, 9, 10	<ul style="list-style-type: none"> – makes limited predictions about the short-term and long-term effects of oil spills – makes limited recommendations for reducing the risk of similar future events 	<ul style="list-style-type: none"> – makes simple predictions about the short-term and long-term effects of oil spills – makes somewhat reasonable recommendations for reducing the risk of similar future events 	<ul style="list-style-type: none"> – makes reasonable predictions about the short-term and long-term effects of oil spills – makes reasonable recommendations for reducing the risk of similar future events 	<ul style="list-style-type: none"> – makes sophisticated predictions about the short-term and long-term effects of oil spills – makes insightful and reasonable recommendations for reducing the risk of similar future events

*The expectations that correspond to the numbers given in this chart are listed on pages 12–13.

Note: This rubric does not include criteria for assessing student performance that falls below level 1.

Student Task Description

Students were presented with the following scenario and set of instructions:

Your science class regularly receives the science magazine *Youth Science*, which is aimed at teenagers and young adults. In the most recent issue, there is an article about an oil spill near the coast of the Galapagos Islands. In the article, an oil industry expert makes the following statement:

The recent oil spill off the coast of the Galapagos Islands will not cause any significant long-term damage to the environment because the components of the ecosystem will be able to cope with any changes caused by the spill.

Since your class has just finished studying ecosystems, your teacher has asked you to use information recently learned in class, as well as information gathered through your own research, to prepare a submission to *Youth Science* magazine in response to the expert's statement.

Your response is to include:

1. a graphic organizer in the form of a web that will inform readers about the abiotic and biotic components of the Galapagos Islands as well as show how they interact;
2. a flow chart depicting the potential short-term and long-term effects of the spill on the components of the ecosystem;
3. a letter to the editor of *Youth Science* magazine, supported with scientific facts, expressing your agreement or disagreement with the expert's statement, and suggesting ways of reducing the risk of such a spill in the future.