Integrating Computing Across the Curriculum

Title:	Life Science Part 3 – Ecosystems
Grade(s):	5th
Subject(s):	Science, English Language Arts, Technology Education
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Overview:	After the teacher reviews habitats and ecosystems, students will create Part Three of their own series on the life sciences (Parts One and Two are found in preceding lesson plans). Students will use **Internet Explorer** to gather information and will use **Microsoft Word** to type a synthesis of their understanding of ecosystems and the relationships within an ecosystem.
Content Standards:	SC (5) 9. Describe the relationship of populations within a habitat to various communities and ecosystems. TC (3-5) 1. Use input and output devices of technology systems. TC (3-5) 2. Use various technology applications, including word processing and multimedia software. TC (3-5) 5. Practice safe use of technology systems and applications. TC (3-5) 6. Describe social and ethical behaviors related to technology use. TC (3-5) 8. Collect information from a variety of digital sources. TC (3-5) 12. Create a product using digital tools. ELA (5) 4. Use a wide range of strategies and skills, including using text features to gain meaning, summarizing passages, and drawing conclusions, to comprehend fifth-grade informational and functional reading materials. ELA (5) 9. Apply mechanics in writing, capitalization, direct quotation, and use of punctuation, including quotation marks and comma with direct quotations, colon to introduce a list, address and in a compound sentence. ELA (5) 10. Demonstrate knowledge of grammar and usage concepts, including subject-verb agreement with a compound subject; present, past, and future verb tenses; forms of adjectives; forms of nouns; and subject, object and possessive pronouns. ELA (5) 11. Use search strategies in the research process to identify reliable current resources and computer technology to locate information.
Local/National Standards:	
Primary Learning Objectives:	The student will: • use word processing software to create a document that (1) contains labeled illustrations of plants and animals from a selected ecosystem, (2) contains a written description of the

ecosystem, including the food chain, (2) contains a written description of three symbiotic relationships (mutualism, commensalism, parasitism) that occur in the ecosystem.
- demonstrate appropriate internet use by (1) applying search strategies to locate information; (2) citing sources used.

Additional Learning Objectives: The student will produce a document that demonstrates his or her ability to synthesize information; this document will be Part Three in a series on life sciences (Parts One and Two are outlined in preceding lesson plans).

Approximate Duration of Lesson: 60 minutes

Materials and Equipment: Textbooks, other reference materials on ecosystems, food chains, and symbiotic relationships (books, handouts, etc.)

Technology Resources Needed: Computer, Internet access, **Microsoft Word**, **Internet Explorer**, (for remediation: **Paint**)

Background/ Preparation: Be sure to review school and classroom rules for proper internet use and safety.
Students should be familiar with the topics of ecosystems, the food chain, and symbiotic relationships.

Procedures/Activities:

Step 1 *Review of Ecosystems, Food Chains, Symbiotic Relationships*

Introduce this lesson by reviewing a few key concepts:
-**Ecosystems** refer to the entire group of organisms living in a particular environment as well as the non-living (abiotic) elements (soil, water, sunlight). Examples include a pond or a forest ecosystem.
-Within each **ecosystem** is a **food chain**. The **food chain** refers to the exchange of matter (food) and flow of energy throughout the **ecosystem** and includes prey-predator relationships.
-**Symbiotic relationships** refer to the interactions among organisms of an ecosystem.
-**Symbiotic relationships** are called either "**mutualism**" *(both organisms benefit from the interaction)*,
"**commensalism**" *(one organism benefits and the other neither benefits nor is harmed)*, or
"**parasitism**" *(one organism benefits to the detriment of the other).*

Step 2 *Instructions for the Activity*

Each student will select an ecosystem to research and produce a report on.

Use **Microsoft Word** to create a document containing:
1. At least three labeled pictures/illustrations of organisms and environmental features from the ecosystem.
2. A written description of the ecosystem, including locations in the state or country, and examples of food chains in the ecosystem.
3. A written description with examples of organisms in three symbiotic relationships that occur in the ecosystem: mutualism, commensalism, parasitism.

Go over the following research points with students before they begin the project:

- Students may use books and/or the Internet to gather information.
- Any photos gathered from the Internet must be cited.
- Direct quotations need to have quotation marks. Other information is to be written in the student's own words.
- Keep track of sources used, as those need to be listed at the end of the document.
- Review classroom/school rules about Internet use. Remind students never to give any personal information and to only visit sites approved by the teacher.
- Enter key terms into a search box to find information (i.e., "**tundra**," "**symbiotic relationship in ecosystem**").

Step 3 *Accessing the Internet*

Click the **Internet Explorer** icon  and this screen will appear:

Students should insert keywords in the search box and click on "Search the web" to find the required information or use specific websites as directed by the teacher.

The Alabama Virtual Library and the Harcourt School Publishers Science website are kid-friendly places to start:
www.avl.lib.al.us (Go to: Student Resources-Elementary School)
www.hspscience.com (interactive information related to that in textbook)

To save an image from the Internet, right-click the mouse over the picture and select "Save Picture As…." (In order to retireve the information saved, be aware of where the document has been saved.)

Designate where to save the picture from the options to the left. (Desktop or My Documents is usually best).

Be sure to record citation information for the image.

To retrieve the saved pictures:

- On the desktop: Look for the file on the Desktop and double click.
- In My Documents: Go to the Start menu and select My Documents.

Step 4 *Creating the Project*

After obtaining necessary information, students should be ready to begin their project.
Students will use **Microsoft Word** to type the report.

In needed, review with students how to access and use the basic functions of Word.

Step 5 *Wrap-up*

Have students display their projects by either using a Promethean Board or ELMO to project the Computer screen to the class or by having classmates visit each other and observe various projects.

Discuss the projects: How are the projects the same? How are they different?

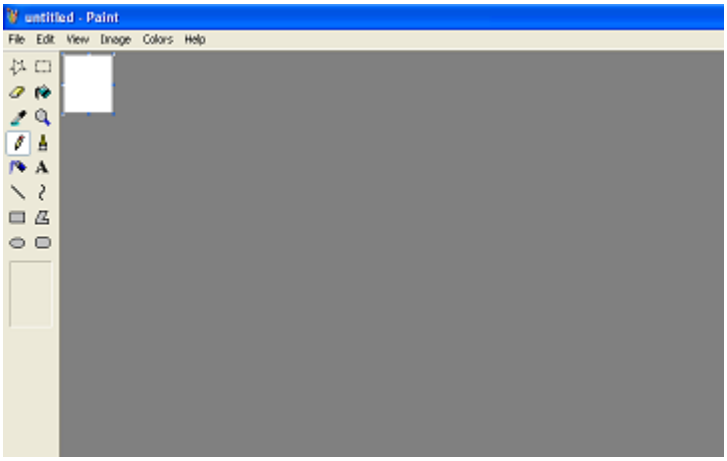
Attachments: Rubric
Assessment Strategies: Rubric

Extension: Write a letter to a community leader (principal, mayor, etc.) stating things that the community can do to take care of our ecosystem. Students can choose from local environments such as their neighborhood, a nearby park, or a local body of water. Letters should include: a problem that is occurring (i.e., trash being thrown in the lake), a way to solve the problem (place trash cans in the park around the lake), and how that will help the ecosystem (organisms in the lake will be healthier, people will enjoy the lake more).

Remediation: If students are having difficulty understanding the concept of symbiotic relationships, have them use **Paint** to draw an illustration of relationships found in familiar situations.
For example, in a backyard, a **parasitism** relationship might exist between a dog and fleas (the fleas benefit, but the dog is harmed); a **commensalism** relationship between the dog and the grass (the dog rolls in the grass for a back scratch, but the grass is not really affected); and a **mutualism** relationship between a dog and a human (the human plays fetch with the dog for enjoyment and the dog gets exercise).

Paint can be accessed by clicking on the paintbrush icon.
Go to the Start menu, click All Programs, Click Accessories, Click **Paint.** The icon looks like this: 

This window will appear:



Rubric for Science of Life: Part 3 Ecosystems

	1	2	3	4
Illustrations/ pictures of organisms and environmental features of ecosystem.	Contains fewer than two pictures, contains no labels, contains no citations.	Contains two pictures with missing labels or missing citations.	Contains two pictures with adequate labels and citations.	Contains at least 3 pictures with complete labels and accurate citations.
Written description of ecosystem.	Description is missing or incorrect on one or more areas of organisms, environment, food chain; multiple grammar or mechanics mistakes.	Description needs work; lacks content about organisms, environment or food chain; several grammar or mechanics mistakes.	Good description; contains some information about organisms, environment, and food chain; mostly accurate grammar & mechanics.	Excellent description of organisms, environmental features, food chain; accurate grammar & mechanics.
Written description of 3 symbiotic relationships in the selected ecosystem.	Description is missing 1 or 2 relationships; content is incorrect; multiple grammar or mechanics mistakes.	Description is missing a relationship; content mostly correct; several grammar or mechanics mistakes.	Good description containing all 3 relationships, but needs more content; accurate grammar & mechanics.	Excellent description containing all 3 relationships; correct content; accurate grammar & mechanics.
Student internet use.	Student did not follow school/class internet rules; did not search appropriately; did not include citations.	Student followed school/class internet rules; needs improvement in search strategies; missed some citations.	Student followed school/ classroom internet rules; used adequate search strategies; cited sources.	Student followed school/ classroom internet rules; used good search strategies; cited sources correctly.

Information for this lesson gathered from:

Bell, M. J., DiSpezio, M. A., Frank, M., Krockover, G. H., McLeod, J. C., ten Brink, B., et al. (2006). Interactions among living things. In Bryant, N.A., Jr., Jones, R.M., Lang, M.P (Eds.), *Science* (pp. 146-205). Orlando, FL: Harcourt School Publishers.