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| <b>Title:</b>                          | Friends for Life – Animal and Plant Interdependence  |
| <b>Grade(s):</b>                       | 4  |
| <b>Subject(s):</b>                     | Science  |
| <b>Author:</b>                         | ICAC Team  |
| <b>Overview:</b>                       | The teacher will review the basic needs of plants and animals and the importance and mechanism for adaptation to the environment including interactions with other organisms. Students will use a computer to access the Internet to research examples of interdependence of animals with other animals and with plants. They will use <b>Microsoft Word</b> to complete a chart, prepare an illustrated report, and present their report to the class.                |
| <b>Content Standards:</b>              | <p>SC (4) 5. Describe the interdependence of plants and animals.</p> <p>TC (3-5) 2. Use various technology applications, including word processing and multimedia software.</p> <p>TC (3-5) 5. Practice safe use of technology systems and applications.</p> <p>TC (3-5) 8. Collect information from a variety of digital sources.</p> <p>ELA (4) 8. Compose descriptive texts using an introductory paragraph, sensory details, vivid language, and a conclusion.</p> |
| <b>Local/National Standards:</b>       |  |
| <b>Primary Learning Objectives:</b>    | <p>Students will:</p> <p>Research the interdependence of plants and animals.</p> <p>Complete a chart giving examples of interdependence.</p> <p>Using Microsoft Word, write a descriptive researched-based report on the interdependence of plants and animals that includes an introductory paragraph, sensory details, vivid language, a conclusion, and pictures.</p>   |
| <b>Additional Learning Objectives:</b> | Using a computer, students will collaborate to create a class magazine or website concerning the interdependence of plants and animals.  |
| <b>Approximate Duration of Lesson:</b> | 90 minutes total - 45 minutes to gather data and 45 minutes to write reports and assemble class magazine or website.   |
| <b>Materials and Equipment:</b>        | Books and magazines with background information and pictures of plants, animals, and habitats.   |
| <b>Technology Resources Needed:</b>    | Computer with <b>Internet Explorer</b> and <b>Microsoft Word</b> , Internet connection   |
| <b>Background/Preparation:</b>         |  |
| <b>Procedures/Activities:</b>          | <p>Step 1 Review the role of plants and animals in a community. Ask students, “How do plants and animals get the energy that they need to live and grow?”</p>  |

- Plants use energy from the sun to make food from air and water.
  - During photosynthesis plants take in carbon dioxide from the air and give off oxygen.
- Animals breathe the oxygen and give off carbon dioxide which plants use. Animals get energy from food by eating plants or other animals.
  - **Herbivores** are animals that eat the plants as food.
  - **Carnivores** are animals that eat other animals for food.
  - **Omnivores** eat both plants and animals for food.

Ask students to give examples of animals in each category. *Where do we fit in the food chain? (Omnivores unless we are vegetarian.)*

Step 2 Besides providing oxygen and carbon dioxide for each other, plants and animals help each other in many ways.

Handout the table *Interdependence of Plants and Animals* (attached) to each student. Go over the first example on the table (oxygen-carbon dioxide interdependence). Assign each group one of the examples of interdependence to research. Within each group, the students should have different tasks (e.g., researcher, recorder, illustrator, editor).

Tell students that they will use Internet Explorer to research their assigned type of interdependence so that they can complete the table. They should consult the websites listed at the bottom of the table first. If they need more information, they should conduct a web search using the Google search bar.

Open the internet browser by clicking the icon at the bottom of the home screen.

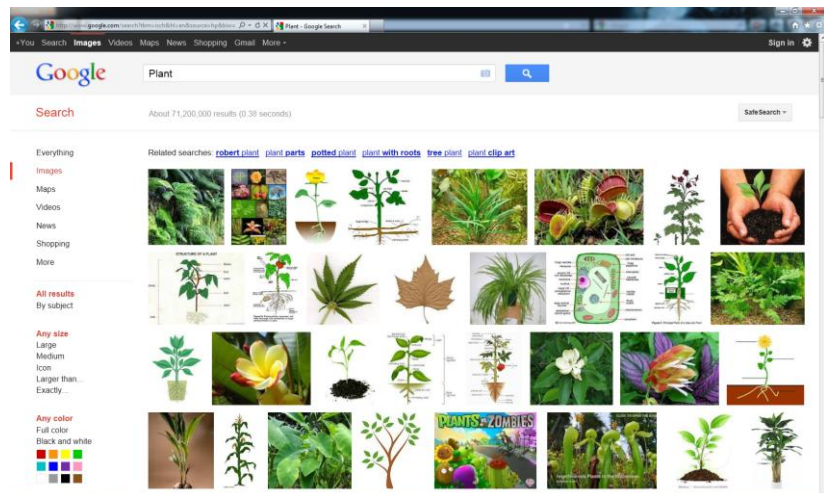


Step 3 Day 2:

Have students complete their assigned example of interdependence and then research and prepare a report on one animal or plant. The report should follow this format (write on board or provide handout):

1. **Introductory paragraph** naming the organisms involved in the interdependent relationship and the type of relationship
2. **Sensory details** and **vivid language** describing the organisms and their relationships
3. **Concluding paragraph** giving reasons why the relationship is beneficial to both organisms.

Step 4 Photographs of the plants or animals should be included in the report. If needed, review the process with the students. First find the image you wish to use on the Internet.



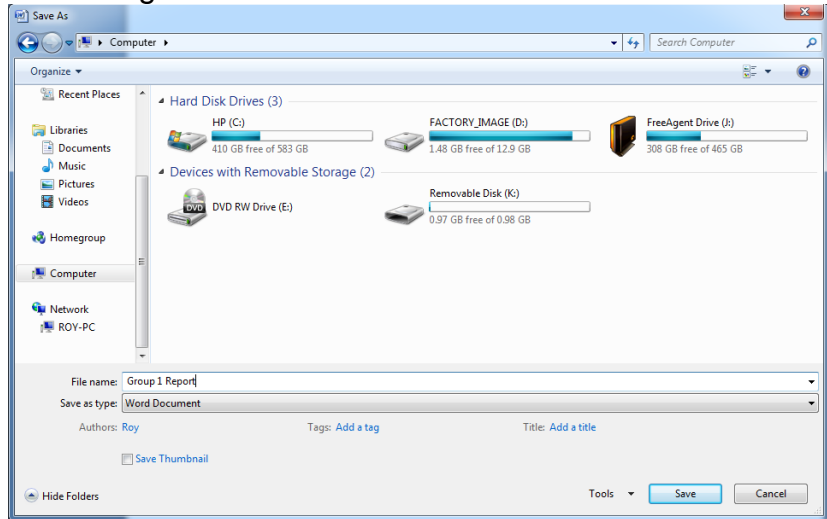
Select the image. Then, right click on the image and select the “copy” option on the dropdown menu.

Return to Microsoft Word. To paste your image onto the screen, right click with your mouse and select "paste."

Step 5 Place a copy of the chart on the board or project with an Elmo and have each group provide details of their assigned example of interdependence. Students should use the results of each group to complete their charts.

Using the Elmo and computers, have each student present his or her report to the class.

**Step 6** Save each report onto a flash drive for printing or uploading to the Internet. To save to a flash drive simply insert the flash drives into one of the USB ports. Once you've inserted it, select the Microsoft Office logo, located at the top left of the screen. Next select the "Save As" option and a box will open up. On the left side of the box, select "Computer" and your screen will look something like this:



Now, select the icon labeled "Removable Disk." Remember to give the document a file name and select "Save."

Once you've collected all of the reports on a flash drive, upload them to the school website or class blog or print them out to assemble into a *Friends for Life* class magazine. Leave the magazine in the class library or on display so students have an opportunity to read the articles.

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|-------------------------------|--|
| <b>Attachments:</b>           | Rubric<br>Interdependence Chart<br>Website links   |
| <b>Assessment Strategies:</b> | See assessment rubric at end of lesson plan. Assessment will be based on completion of the Interdependence Table and the descriptive report.   |
| <b>Extension:</b>             | Have students find and research other kinds of interdependent relationships.<br>Have students investigate mutualism, commensalism and parasitism. Have students compare and contrast these three different types of relationships. |
| <b>Remediation:</b>           | Provide students with specific relationships to research such as the relationship between soldier ants and the trees they live in.   |

### Assessment Rubric for Plant and Animal Interdependence

|                      | 1   | 2  | 3  | 4   |
|----------------------|---|--|--|---|
| <b>Participation</b> | No participation in the activity  | Some participation, but was off task part of the time, or did not contribute to group effort.                      | Participated for most of the project and contributed to the table.                             | Remained on task and contributed to successful group outcome.   |
| <b>Chart</b>         | Didn't create a chart, or wasn't accurate at all.   | Created a chart, but wasn't finished or accurate.  | Created an accurate chart with some descriptions.  | Created an accurate chart including good descriptions of interdependence of organisms and how each benefits.          |
| <b>Report</b>        | Didn't write an essay, had substantial content errors, or was missing most required elements. | Wrote an essay, but had several content errors or was missing more than one of the required elements of the essay. | Wrote an essay that contained a content error or lacked one of the requirements for the essay. | 100% accurate essay including introductory paragraph, sensory details and vivid language, and a concluding paragraph. |
| <b>Grammar</b>       | Didn't write an essay, or had substantial grammatical errors.                                 | Wrote an essay, but had more than 2 grammatical errors.  | Wrote an essay that contained only 1 or 2 grammatical errors.                                  | 100% error free   |

### ***Interdependence of Plants and Animals***

|   | Example of Interdependence | Organisms Involved                 | Description of Interdependence<br>How does each benefit?   |
|---|----------------------------|------------------------------------|--|
| 1 | Oxygen-Carbon Dioxide      | All green plants and animals       | Plants produce oxygen which animals and plants breathe and animals produce carbon dioxide which plants use to make food. |
| 2 | Nutrition                  | Acorns from oak tree and squirrels |  |
| 3 | Pollination                |                                    |  |
| 4 | Seed dispersal             |                                    |  |
| 5 | Soil aeration              |                                    |  |
| 6 | Shelter & Self defense     |                                    |  |

Website Sources for Information:

<http://www.pbs.org/wnet/nature/episodes/deep-jungle-monsters-of-the-forest/the-amazing-brazil-nut-tree/3365/>

[http://schools.bcsd.com/fremont/4th\\_Sci\\_Life\\_Plant\\_Animals.htm](http://schools.bcsd.com/fremont/4th_Sci_Life_Plant_Animals.htm)

<http://waynesword.palomar.edu/acacia.htm>