Integrating Computing Across the Curriculum

Title:	Life Science Part 1 – Plants and Animals	
Grade(s):	5th	
Subject(s):	Science, English Language Arts, Technology Education	
Author:	ICAC Team	
Overview:	After the teacher describes common parts of plant and animal cells, students will create Part One of their own series on the life sciences (Parts Two and Three are found in subsequent lesson plans). Students will use **Internet Explorer** to gather information and will use **Microsoft Word** to type a synthesis of their understanding of the common parts of plant and animal cells.	
Content Standards:	SC (5)	7. Identify common parts of plant and animal cells, including the nucleus, cytoplasm, and cell membrane.
	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, including capitalization of first word in a direct quotation and use of punctuation, including quotation marks and comma with direct quotations, colon to introduce a list, and commas after introductory words, with a noun of direct 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.

Primary Learning Objectives:	The student will: • use word processing software to create a document that (1) contains labeled identifying organelles of plant and animal cells, (2) contains a written description of nucleus, cytoplasm, and cell membrane, (3) contains a written comparison of plant and animal cells; • 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 will demonstrate his or her ability to synthesize information; this document will be Part 1 of a series on life sciences (Parts 2 and 3 will be created in subsequent lesson plans).
Approximate Duration of Lesson:	About 60 minutes: 10 minutes instruction; 30-45 minutes to work on project; 5-10 minutes to share projects
Materials and Equipment:	Textbooks, other reference materials on animal and plant cells (books, handouts, etc.)
Technology Resources Needed:	Computer, Internet access, **Microsoft Word**, **Internet Explorer,** (for extension: **Paint**)
Background/ Preparation:	Proper instruction on internet safety and use of search engines is required prior to this lesson. Be sure to review school and classroom rules for proper internet use and safety. Students should be familiar with topics relating to plant and animal cells, as well as **Microsoft Word** and **Internet Explorer**.
Procedures/ Activities:	Step 1 *Review of animal & plant cells* Introduce this lesson by reviewing key concepts of animal and plant cells: Animals and plants are made of **cells** *(basic units of all living things**)*** containing **organelles,** *such as a **mitochondrion.*** Animal and plant cells both have a ***nucleus*** *(a membrane-bound structure in a cell containing the cell's hereditary material*, **cytoplasm** *(a watery fluid inside the cell that contains organelles)***, cell membrane** (*outer layer of cell that separates it from environment and encloses the cytoplasm)*. Plant cells have **cell *walls (****the rigid outermost cell layer found in plants and certain algae, bacteria, and fungi)* and **chloroplast** (*membrane-bound organelle that is site of photosynthesis and contains chlorophyll).* Animal cells do not have cells walls or chloroplast. Plant cells have **vacuoles** *(an organelle containing*

water and exporting unwanted items from the cell), while animal cells have **vesicles** *(membrane sacs filled with fluid that export unwanted wastes from the cell)***.**

Step 2 *Instructions for the Activity*

Explain that students will be completing the following project:

Use **Microsoft Word** to create a document containing:

1. A picture of at least one plant cell and one animal cell, labeling each organelle.
2. A written description of the nucleus, cytoplasm, and cell membrane.
3. A written comparison of plant and animal cells.

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 site the source.
- 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., "plant cells," "mitochondrion").

Step 3 *Accessing the Internet*

To access the internet click on **Internet Explorer** icon .

This page will appear:

Students should insert keywords in the search box and click on "Search" 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)

If needed, review with students how to save an image from the Internet:
Right-click the mouse over the picture and select "Save Picture As…."
(In order to retrieve 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.

Review how to use Word if needed.

Encourage students to be creative in putting their projects together; they may change font sizes, colors, etc. to add variety to their project.

Inserting a saved image:
To insert an image saved on the Computer, recall where the image (file) was designated to be saved. (Most likely, on the Desktop or in My Documents).

To insert a saved Picture in **Microsoft Word :**
Click on the *Insert* tab. (The second tab beside *Home*.)
Under the *Insert* tab, click on Picture. A window will appear where you can find your file.

Click on Desktop or My Documents. Locate the place where you saved the image. Click on the file (image) you want to open and click Insert.

The picture will now appear in the **Word** Document.

Now use the mouse to move and resize the picture. *Important for typing text around image:* click on the image, then click on "Format" under the red "Picture Tools" tab. Click on "Text Wrapping" and then select "Behind Text."
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To save the **Word** Document :

- Click on the **Microsoft** symbol at the top left of the page.
- From this menu click *Save As.*
- Click the first option; *Microsoft Word Document.*
- A window will appear. Designate where to save the file. (Desktop, My documents, etc.)
- Give the file a name and click save.
- The Document is now saved in the designated location.

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 other projects.

Discuss the projects. How are the projects the

same? How are they different?

Attachments: Rubric

Assessment Strategies: See assessment rubric at end of lesson plan.

Extension: *Drawing Cells in **Paint***

For a greater challenge, have students use **Paint** to draw and label plant and/or animal cells.

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: 

Remediation: If students are having problems with the writing section of the document, have them create a bulleted descriptive list. Students may type the topic of each list (i.e., "nucleus"), and then below that use the dash "-" to bullet points that describe the topic (i.e., "divides upon reproduction," "tells the cell what to do"). After creating a list, students may find it easier to write complete sentences/paragraphs with the information they have listed.

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). Cells to body systems. In Bryant, N.A., Jr., Jones, R.M., Lang, M.P (Eds.), *Science* (pp. 28-63). Orlando, FL: Harcourt School Publishers.

Rubric for Science of Life: Part 1 Plants and Animals

	1	2	3	4
***Picture of plant cell* is labeled with at least four organelles; contains citation for picture.**	Contains accurate label for 1 organelle; is missing citation.	Contains accurate labels for 2 organelles; contains citation.	Contains accurate labels for 3 organelles; contains citation.	Contains accurate labels for 4 organelles; contains citation.
***Picture of animal cell* is labeled with at least five organelles; contains citation for picture.**	Contains accurate label for fewer than 2 organelles; is missing citation.	Contains accurate labels for 3 organelles; contains citation.	Contains accurate labels for 4 organelles; contains citation.	Contains accurate labels for 5 organelles; contains citation.
Written description of nucleus, cytoplasm, & cell membrane.	Description is missing two organelles; content is incorrect; multiple grammar or mechanics mistakes.	Description needs work or is missing one organelle; several grammar or mechanics mistakes.	Good description of all three organelles; mostly accurate grammar & mechanics.	Excellent description of all three organelles; accurate grammar & mechanics.
Written description comparing animal & plant cells.	Comparison needs work; content is incorrect; multiple grammar or mechanics mistakes.	Comparison needs work; content mostly correct; several grammar or mechanics mistakes.	Good comparison; correct content; mostly accurate grammar & mechanics.	Excellent comparison; correct content; accurate grammar & mechanics.
Student internet use.	Student did not follow school/classroom internet rules; did not search appropriately; did not include citations.	Student followed school/classroom 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.