

## Lesson Plan for Henrico 21 Awards

Lesson Title: ThingLink Cell Lesson

Lesson Submission Number:

Target Grade/Subject: Science/5th Grade

Length: 3 hours in school with additional work at home

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Summary: *(Summarize your lesson in 250 words or less)*

This culminating project was used to assess the students' knowledge of plant and animal cells. After writing questions to help guide their learning, students began researching cells. Students then made a 3-D model of a plant cell and a model of an animal cell and labeled and described the cells' main organelles. Finally, the students made an interactive model of their cell project on their iPads in order to share their work with others on the web.

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Essential questions: *(What are the foundational questions that students should be able to answer after this lesson?)*

- How do you create a model showing the key parts of an animal cell and a plant cell?
  - How do you describe the purposes and location of 4 animal cell organelles and 6 plant cell organelles.
  - How would you relate the functions of cell organelles to objects in your everyday life?
  - How do you communicate your knowledge of plant and animal cells to others using an interactive model and a ThingLink on the web?
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Lesson Development:

Process/Tasks/Assessment: *(Describe what the teacher and students are doing during this lesson. Include details about particular tasks and essential resources/tools. Include a description of the artifact that you will collect as evidence of content/skill mastery and state how you will communicate your assessment expectations to the students.)*

This lesson begins with a student writing questions about what they would like to know about cells. These questions will guide their exploration as they begin researching both plant and animal cells. After compiling their questions, the teacher will pass out the project guidelines and rubric for the assignment. The students will begin their research, using printed materials, the web, e-books on their iPads, as well as science apps on their iPads. As the students collect their info, they will submit their findings on a Google form [Link to Research Collector](#) (provided by the teacher). This allows students to share their findings with the rest of the class in order for them to electronically collaborate during their research. After research is done, the teacher will "share" all of the compiled research with the students through their personal Google docs.

**Student research:** [Sample 1](#), [Sample 2](#) The students will use their research to create a 3-D model of an animal and plant cell, labeling and describing the main organelles. After the projects

are complete, the students will use their iPads to create a correlating interactive model that can be shared on the web. Students will take pictures of the models and import them into different creative apps. Students have the choice as to which app they would like to use to effectively share their projects.

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#### TIP Chart Assessment:

*(Using the TIP Chart, identify which level (e.g. entry, developing, approaching, ideal/target) your lesson falls in for each of the categories below and write a brief statement to describe what the students are doing as it relates to the indicators on the TIP chart.)*

#### Categories:

##### Research and Information Fluency: Ideal/Target

-The students are forming their own questions to help guide their research. The students will use a variety of materials to research (science magazines, textbooks, web, e-books on iPads, science apps on iPads). Students also assembled and synthesized their research and used this information to complete their displays. Finally, they used Tellagami app to produce movies where avatars explained the purpose of the cell parts. This was link to their project using the Web tool ThingLink and a QR code was added to their display enabling viewers to powerfully interact with the information and the display.

##### Communication and Collaboration: Approaching

-The students had to establish group norms and Use appropriate digital tools to facilitate research collaboration with classmates through their personal Google drive accounts. The students will create interactive models of their cells to share their projects. On these projects they will have links to Avatars that will speak about the cell parts for them.

##### Critical Thinking and Problem Solving: Developing

The students direct their learning by creating their own essential questions.

##### Creativity and Innovation: Approaching

The students created meaningful, original create 3-D cell models and electronic avatars to relay their cell research to people observing their models. The students had to synthesize existing and self-generated knowledge and create new ways to have that information relayed to someone looking at their project. On this project the students were free to choose any materials or iPad applications to create their models. This project was completely open to a student's full creative talents.

#### Artifacts

Below are links to the students' interactive models of cells.

<http://www.thinglink.com/scene/494917432700305408>

<http://www.thinglink.com/scene/494918811258978304>  
<http://www.thinglink.com/scene/493130072576753665>  
<http://www.thinglink.com/scene/495237648621764610>  
<http://www.thinglink.com/scene/493129858436562944>

## **CREATIVE PROJECT: 3-D MODEL OF a PLANT & ANIMAL CELL**

### **Science Content Learning Targets:**

- I can create models showing the key parts of an animal cell and a plant cell.
- I can name and describe the purposes of 4 animal cell organelles and 6 plant cell organelles.
- I can show the location of all organelles within animal and plant cells.
- I can use my own words to describe in writing the structure of animal and plant cells.
- I can communicate my knowledge of plant and animal cells to others using a model and a ThingLink.

### **Task:**

**Students are to make a 3-D model of a plant cell and a model of an animal cell, label them with the cell parts, and briefly describe the purpose of each part or organelle.** You have free choice as to what kind of materials & supplies they choose to use for the cells and its parts (i.e: beans can be used to represent mitochondria). We have materials for you to use at school or you may use materials from home.

\*This is to be a 3-D model representation of two cells, not a drawing or picture.\*

**- Labels to Include** - Your model must include the following *labeled* cell parts (organelles) with a *brief description* of their purpose.

**Animal Cell Organelles:** Cell Membrane, Nucleus, Cytoplasm, Vacuole

**Plant Cell Organelles:** Cell Membrane, Cell Wall, Nucleus, Chloroplast, Cytoplasm, Vacuole

**- Grading Expectations** - You are expected to label each cell part and describe each

label of each cell *in your own words with accuracy*. You will also be graded for showmanship and creativity. The “A” grade cell model will be two believable cells made by using varied colors, variety of mixed media (not just 1 type of material to make the whole model), with originality.

## CELL PROJECT RUBRIC

The rubric below will be used to score your final project of your 3-D plant and animal cells.

	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Content of plant cell (6 organelles) and animal cell (4 organelles)</b>	0-3 items labeled	4-5 items labeled	6-7 items labeled	8-9 items labeled	10 items labeled
<b>Accuracy</b>	0-3 items correctly positioned	4-5 items correctly positioned	6-7 items correctly positioned	8-9 items correctly positioned	10 items correctly positioned
<b>Showmanship &amp; Creativity</b>	Labeled only, no color	Labeled only, limited color	Labeled and varied colors	Labeled, varied colors, variety of mixed media	Labeled, varied colors, variety of mixed media, originality
<b>Labels Accurately Described in YOUR Own Words using complete sentences and correct grammar.</b>	0-3 labels correctly described	4-5 labels correctly described	6-7 labels correctly described	8-9 labels correctly described	10 labels described
<b>Each organelle is compared to a real world object within the description.</b>	0-3 organelles compared	4-5 organelles compared	6-7 organelles compared	8-9 organelles compared	10 organelles compared

<b>A "ThingLink" has been created for each cell with all organelles included.</b>	0-3 No ThingLink Created or few organelles included	4-5 ThinkLink was created but organelles description quality was poor	6-7 ThingLink was created but many of the organelles descriptions were hard to hear or understand	8-9 Thinglink was created and most of the organelles description were easily understood.	10 ThingLink was exceptional there were no problems in with any of the organelle descriptions.
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