

# Project/Problem Based Learning Template

<b>Created By:</b> Sarah Thomas		<b>Topic:</b> Cells: Molecules to Organisms	<b>Grade Level or Subject:</b> 7th Grade Science
<b>Science Standards:</b>  7.LS1.1) Develop and construct models that identify and explain the structure and function of major cell organelles as they contribute to the life activities of the cell and organism.			
<b>Math Standards:</b>			
<b>ELA Standards:</b>			
<b>Additional Standards (Social Studies, Art, Physical Education):</b>			
<b>PBL Summary:</b> Write a few sentences describing this PBL unit.  Students will use their knowledge of cells and organelles to identify the cell wall and nucleus of three different parts of a pumpkin. They will compare and contrast each part of the pumpkin and how their organelles are identifiable. This lab will be done on Halloween to tie in a nationally celebrated holiday to our science lesson.		<b>Multi-Dimensional/Driving Question:</b> All plants are made of cells. How do gamete membranes (seed membrane) compare to other pumpkin cells?	
<b>Tennessee Academic Standards for Science Connection</b>			
<b>Disciplinary Core Idea(s):</b>  From Molecules to Organisms: Structures and Processes	<b>Science &amp; Engineering Practice(s):</b>  Planning and carrying out controlled investigations	<b>Cross Cutting Concept(s):</b>  Structure and function	
<b>21<sup>st</sup> Century Skills Addressed (circle all that apply):</b>			
<b>Creativity</b>	<b>Collaboration</b>	<b>Critical Thinking</b>	
<b>Communication</b>	Information literacy	Media literacy	<b>Technology Literacy</b>
<b>Flexibility</b>	Leadership	Initiative	Productivity
			Social Skills

**Culminating Event:** What final student learning products will show student mastery of the content area standards?

Students will complete a graphic organizer to demonstrate understanding. They will illustrate their findings of each part of a pumpkin, as well as the cell parts they are able to identify. In pairs, students will also complete a venn diagram comparing and contrasting gametes and normal plant cells.

**Hook Event:** Develop an introductory activity that will spark student interest and further questions.

The following video of pumpkins smashing in slow motion will play on youtube as the students are walking in the door to complete their starter.

<https://www.youtube.com/watch?v=4bALl6dhVRk>

Starter for the day:  
Create a venn diagram. List the similarities and differences between plant and animal cells.

**Community Partners:** List potential business or industry partners that could add to the learning experience for students. Include websites or contact info.

- 1.
- 2.
- 3.

What do you need from these partners (i.e. guest speaker, field trip, help facilitate an activity)?

- 1.
- 2.
- 3.

**Daily Activities:** What activities will students complete to answer the multi-dimensional/driving question (that reinforces content from the standards)?

**Activity:**

1. Microscope lab to view parts of the pumpkin at various settings to compare and contrast each part of the pumpkin
2. Venn diagram to demonstrate understanding.

**Resources/Materials Needed:**

- Pumpkin
- Knife
- Peeler
- Lab Trays
- Slides (3 per pair)
- Slip covers (3 per pair)
- Tweezers

**Technology Integration:** How is technology embedded into this PBL unit?

- Hook Video on Youtube to gain student interest
- Microscopes to view Pumpkin
- Active Board

**Capstone Presentation:** In pairs, students will create a venn diagram comparing gametes to plant cells on butcher paper to share with the class at the culmination of the activity.

