

Cell Organelles

Lesson Overview:

In this lesson, students will use the 5-3-1 and Making Thinking Visible (MTV) to express their findings on a specific organelle. The class will be given a physical location (the school, the mall, home, or a city) to use as a comparison to the cell organelle they choose. Each cooperative group will be given an organelle to research using the internet, science book or their Interactive Science Notebook (ISN). They will use the 5-3-1 strategy to find the most important function of the organelle. The students will then use Making Thinking Visible to depict their organelle within the assigned physical location.

Standards Addressed:

- SC 2005 7-2.1 Summarize the structures and functions of the major components of plant and animal cells (including the cell wall, the cell membrane, the nucleus, chloroplasts, mitochondria, and vacuoles).
- SC 2014 7.L.3A.3 Develop and use models to explain how the relevant structures within cells (including cytoplasm, cell membrane, cell wall, nucleus, mitochondria, chloroplasts, lysosomes, and vacuoles) function to support the life of plant, animal, and bacterial cells.
- NGSS MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

Disciplinary Literacy Best Practices:

Making Thinking Visible (MTV)

5-3-1

Triangle, Circle, Square

Gallery Walk

Lesson Plan

Time Required – One 50-minute Class Period

Disciplinary Vocabulary: plant cell, animal cell, organelle, cytoplasm, mitochondria, cell wall, chloroplast, nucleus, cell membrane, and vacuole.

Materials Needed:

- Chart Paper (1 per group)
- Index card (1 per group)
- Markers
- 2-8x11 paper per student
- Paper and Pencil
- Resources for research (science textbook, internet, science notebook, etc.)

Assessment: Completed Triangle, Circle, Square and Gallery Walk

Engage

- The teacher introduces the 5-3-1 concept and MTV model by telling the students they are going to compare a cell to a location in their area.
- The class then votes on the location to use for comparison.
- Cooperative groups then pick their top 3 organelles.
- The teacher uses birthdays to give cooperative groups the choice of their organelles.
- Students are given the statement:
The _____ is like the _____ of a mall, school, city, or home.

Explore

- Students research 5 functions for their group's organelle.
- Students discuss the 5 functions and narrow the results down to 3 good answers and finally the number 1 answer the group agrees on as the primary function of the assigned organelle.
- Students use this 1 function to compare to a location.
- Student groups make their thinking visible with an illustration on chart paper to explain their thinking to the rest of the class.
- Teacher acts as a facilitator to monitor group's interactions, questioning groups while they work.

Explain

- Groups present their illustrations to the class. Each group will explain the connection of the function of their organelle to the location represented.
- For each presentation the audience will complete a Triangle, Circle, Square reflection. (Triangle – 3 points to remember, Circle- a question they may have about the organelle, and Square connecting the organelle to a real fact)
- Students will take a Gallery Walk for each organelle that is displayed in the hall and add notes to their reflection paper.

Extend

- Students will share reflections and put their findings in their ISN (interactive science notebook).

Teacher Reflections and Biographical Information:

The 5-3-1 method worked well to allow students to find the main function of the organelle. Students were directed to only list functions that they fully understood, which ensured they could make the connection to a real place within their location. Having to narrow the list to the one most important fact for the function of the cell organelle allowed student groups to have the dialogue necessary to reach a consensus. The MTV strategy gave each student a visual to connect to the function. I realized after the lesson that I may have rushed the students to get their facts narrowed down to one so that they could move on to Making Thinking Visible. Next year, I will probably give students another day to present and reflect. The extra day could lead to students sharing their findings and having more time to process the information.

Sheri Sims is a National Board Certified teacher. In her 27 years of teaching, she has taught 1st grade, 5th, and 7th grade. She has been teaching 7th grade science for 10 years at East Clarendon Middle/High School, Clarendon 3, Turbeville, SC.