

Lesson Plan

Description
 You can use analogies to describe the roles of the organelles inside of a cell. Cells are like...schools, cities, cars, zoos...pick your favourite thing and figure out how to relate a different system to the how organelles function inside of our cells.

Learning Outcomes
 Students will learn that ribosomes make proteins from RNA.

 They will learn the importance of the different organelles in cells and why viruses need our cells to reproduce.

Specific Expectations
 Identify structures and organelles in cells, including the nucleus, cell membrane, cell wall, chloroplasts, vacuole, mitochondria, and cytoplasm, and explain the basic functions of each (e.g., the nucleus holds all the information needed to make every cell in the body)

- Materials**
- Descriptions of what each of the organelles do
 - Something to write with
 - Something to write on
 - Optional – find objects to represent your organelles by their function

Action
 Think of a way you can describe the functions of the organelles in a cell using something else that we know and understand. For example, if you say cells are like schools, what would each of the organelle represent in the school? Cell membranes would be the walls, and the channels in the cell membrane would be the doors that open at certain times. The endoplasmic reticulum are the hallways, and the ribosomes are the teachers.

 Decide what each organelle will be in your comparison scenario. Describe your reasoning and how your model shows the roles and functions of cellular organelles.

 You can also select actual objects to represent your organelles, but the objects should represent the function of your organelles, not necessarily their appearance or form.

Consolidation/Extension

Students can fill out a chart with organelle functions, and what has been used to represent that organelle and why. Make sure that students understand the importance of cells having organelles which viruses do not. Viruses need host cells to do many of the tasks they are not capable of doing themselves.

Further Extension:

- 1) Have students come up with analogies to represent how all the organelles work together inside the cell for proper function. Students can come up with a variety of ways to present their analogies. For example, students can make 3D models from household items or food, a digital story using a photo presentation app or program, a comic with multiple panels, or a diagram of the inside of the cell.
- 2) Students can learn about diseases associated with improper organelle function. An example would be the case study lesson plan called, Little Girl Lost: A Case Study on Defective Cellular Organelles found here:
http://sciencecases.lib.buffalo.edu/cs/collection/detail.asp?case_id=783&id=783

Accommodations/Modifications

This activity focuses on cells and the Grade 8 curriculum. For the Grade 7 students, you could look at the roles of living organisms within an ecosystem and use an analogy to describe how everything fits together. Specifically, how is a population of animals like the immune system? They need to protect their population from outsiders. Some individuals have roles of caring for the sick. More generally, how are ecosystems like schools or cities. Find a link between humans and “the natural world”.

Assessment

This assignment can be used for assessing communication skills of your students. How well can they relate the form and function of cell organelles to other systems we know and understand?

Additional Resources

- <https://en.wikipedia.org/wiki/Organelle>
- <https://www.sciencelearn.org.nz/resources/499-cell-organelles>