Science 8 Cells, Tissues, Organs and Systems Unit

Big Idea: What are you made of?

Outcome:

CS8.1 Analyze the characteristics of cells, and compare structural and functional

characteristics of plant and animal cells.

Understandings:

 Cells are living systems that exhibit all characteristics of life.

 Growth and reproduction depend on cell division.

 Cells are selectively permeable.

 Gases and water move in and out of cells by diffusion and osmosis.

 Plant and animal cells have many cell structures which have important functions.

 Representations are ways to understand things beyond our immediate world.

Some representations are more effective and more easily understood than others.

Essential questions:

 What are the characteristics of all life?

How do single celled organisms take in food, move and reproduce?

Why are cells selectively permeable and how is this related to diffusion and osmosis?

What are cell structures and how do they function?

How can representations help us understand the structure and function of cells? (ELA integration)

Students need to know: (essential questions they are related to are in brackets)

Vocabulary: system, stimulus, reproduction, organism, structural, functional, characteristic, cell division, permeable, diffusion, osmosis

How to: Categorize cells, observe cell structures, model processes, and analyze strengths and weaknesses

Cell structures: cell wall, cell membrane, vacuole, nucleus, cytoplasm, mitochondria, chloroplast

And be able to: (essential questions they are related to are in brackets)

 - Categorize organisms

-Explain that cells are living systems that exhibit all characteristics of life. (1)

- Observe and describe how single celled organisms take in food, grow, move and reproduce.(2)

- Perform an experiment to observe diffusion and osmosis. (3)

- Observe, identify and explain cell structures found in plant and animal cells. (4)

- Construct a representation of the structures and functions of plant and animal cells. (4)

-Model diffusion and osmosis

Use appropriate science terminology

Work cooperatively to plan and construct a representation

Analyze strengths and weaknesses of representations.