ArtsNow®
Teaching and Learning Across the Curriculum

GRADE 5 Project Overview

Project 1: Do You See What I See?

Animal and Plant Cells • Relationships/
Parts of a Whole/Comparison

Project Essential Questions

- How does the concept "Parts of a Whole" relate to understanding organisms?
- What does it mean to magnify?
- What do we see when we take a closer look?

PROJECT DESCRIPTION

The purpose of this project is to introduce students to the tools used to observe cells. Students will investigate the appearance of various cells using a microscope. Students will explore how the parts of a small organism work together and compose the parts of a whole. This lesson suggests also collaborating with the art teacher to take a closer look at students' microscope sketchings and creating a large work of art that amplifies the organelles that make up a cell.

LEARNING TARGETS

"I Can…"

- Use a microscope or hand lens to verify that organisms are made up of cells
- Interpret what I see in the microscope by sketching

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Units provide differentiated ideas and activities aligned to a sampling of standards.
The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

Produced through the U.S. Department of Education: Arts in Education—Model Development and Dissemination Grants Program
Cherokee County (GA) School District and ArtsNow, Inc.

DURATION: 2 Days

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ESSENTIAL QUESTIONS

- How does the concept "Parts of a Whole" relate to understanding organisms?
- What does it mean to magnify?
- What do we see when we take a closer look?

STANDARDS

Curriculum Standards	Arts Standards
S5P1. Students will verify that an object is the sum of its parts. b. Investigate how common items have parts that are too small to be seen without magnification **S5L3. Students will diagram and label parts of various cells.** a. Use magnifiers such as microscopes or hand lenses to observe cells and their structure. b. Identify parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus) and determine the function of the parts	**VA5PR.1.e** Creates artworks from direct observation **VA5PR.2.** a. Creates artworks with a variety of media b. Draws images from careful observation

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• Plant • Animal • Single-celled • Multi-celled • Membrane • Wall • Cytoplasm • Nucleus • Chloroplasts • Microscope • Magnifier	• Media • Balance • Emphasis • Perspective

TECHNOLOGY INTEGRATION

Computer, internet, projector, microscopes, viewers, and prepared slides of various cells: plant and animal parts

ASSESSMENTS

Formative	Summative
• Student sketches created after rotating through the microscope stations and observing the various slides of different cells • Teacher-led questioning throughout the station rotation	• **Field of View Handout** (see Downloads) Students are to select one of the images they saw with the microscope and create a field of view drawing representing what they observed after viewing various cells. • **Written Reflection** (see Downloads)

MATERIALS

Microscopes, slide viewers, prepared slides of various cells, drawing paper with circular "Field of View," colored pencils, crayons
*Various types of cell slides can be purchased at: **www.carolina.com**, keyword "cell slides"

Activating Strategy (5-10 min)
Project a picture of the painting of a cancer cell on the whiteboard: **Cancer Cell Image:** http://mcc.jhu.edu/news/couple-sees-beauty-in-cancer-painting **Questions used to explore the cell image:** ● What media is used in the painting? ● How is the artist able to create perspective? ● What does the artist emphasize? ● What kind of balance is apparent in the painting (symmetrical, asymmetrical, radial)? ● Class will discuss the visual aspects of cell organelles, such as cell wall, cell membrane, nucleus, chloroplasts, shape, and relative size.
Main Activity
Part 1: ● Teacher will model how to use the microscope with various slides. The teacher will review the parts of a microscope and proper ways to use it, by showing how to adjust focus, place slides on the stage, and adjust slides. ● Students rotate through 5 centers viewing slides of various cells or organism parts. Students will make a rough draft of the image seen including size, organelles, and hypothesize what type of cell they see in each. ● Students will then choose one of the cells they viewed and create a detailed drawing of what they saw in their microscope field of view. **Part 2**: ● Teacher will collaborate with the visual arts teacher to direct students to use their cell drawings in groups to collaboratively create a large painting representation of the cell and all of its parts. *Materials: Circular pieces of canvas or thick paper, mixed media (suggestions on media include acrylic or tempera paint), paint brushes, cups, water and pallet for mixing colors*

REFLECTION

Reflective Strategies
Students will partner up with one another to reflect on what they saw. Students will swap drawings with their partner and hypothesize what the image represents. They will then take turns explaining to their partner what their drawing represents. Teacher will allow students reflection time using the following prompts that students can either discuss or provide feedback using the **Written Reflection Form** (see Downloads). **Specific reflection questions for class discussion:** ● When you drew your sketch, how did the microscope help you? ● Why is perspective important when turning your cell into a piece of art? ● How is the artistic process of creating a piece of art similar to the scientific process of examining a specimen? ● Tell me about your cell organelles. How did you know this was the cell wall? Cell membrane? Nucleus? Chloroplasts? ● What do you notice about the shapes of these organelles? ● Do you notice any similarities between the job of a scientist and the job of a visual artist?

DIFFERENTIATION

Below Grade Level:
- Students will view prepared slides online to accommodate individual differences as needed. Students will be in heterogeneous groups so peer tutoring will be available for students who need further assistance. Also, teacher will be available to assist students as needed.

Above Grade Level:
- Students create detailed drawings of two different specimens and compare and contrast the two specimens. Students will write about their observations.

EL Students:
- Throughout this lesson, pair EL students with high achieving students. They will work together instead of individually. The pair will continually converse with one another. This allows for reinforcement of the science vocabulary terms, as well as extended discussions to take place. Furthermore this partnership will assist in a deeper understanding of the concepts being taught.

Small Group Instruction
Students will rotate through 5 stations set up with microscopes or slide viewers to observe prepared slides of various cells. Students will choose one of the cells they viewed to illustrate on their "microscope field of view" sheets.

APPENDIX

- Field of View handout
- Written Reflection Sheet Project 1

CREDITS

U.S. Department of Education
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