

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



Project Essential Questions

- What is the relationship between each organelle?
- How do the 3-D sculptures of the animal cells compare and contrast to the 3-D sculptures of the plant cells?
- What new discoveries have you made about the composition of a cell when constructing a three-dimensional sculpture?

PROJECT DESCRIPTION

Students will create a three-dimensional sculpture of an animal or plant cell. They will use various objects and mixed media to work as a group and construct a model. Students will then explore what they notice when they examine a cell from a 3D lens.

LEARNING TARGETS

“I Can...”

- Create a model of a plant/animal cell and label the organelles
- Explain the function of each organelle within the cell

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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

| Project Description | Learning Targets |
|--|--|
| <p>Students will create a three-dimensional sculpture of an animal or plant cell. They will use various objects and mixed media to work as a group and construct a model. Students will then explore what they notice when they examine a cell from a 3D lens.</p> | <p>“I Can...”</p> <ul style="list-style-type: none"> • Create a model of a plant/animal cell and label the organelles • Explain the function of each organelle within the cell |

ESSENTIAL QUESTIONS

| |
|---|
| <ul style="list-style-type: none"> • What is the relationship between each organelle? • How do the 3-D sculptures of the animal cells compare and contrast to the 3-D sculptures of the plant cells? • What new discoveries have you made about the composition of a cell when constructing a three-dimensional sculpture? |
|---|

STANDARDS

| Curriculum Standards | Arts Standards |
|--|--|
| <p>S5P1. Students will verify that an object is the sum of its parts</p> <p>S5L3. Students will diagram and label parts of various cells (plant, animal, single-celled, multi-celled)</p> <p>b. Identify parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus)</p> | <p>VA5PR.1. Creates artworks based on personal experience and selected themes</p> <p>VA5PR.3. Understands and applies media, techniques, and processes of 3 dimensional works of art using tools and materials in a safe and appropriate manner to develop skills</p> <p>VA5PR.4. Plans and participates in appropriate exhibitions of artworks</p> |

KEY VOCABULARY

| Content Vocabulary | Arts Vocabulary |
|--|---|
| <ul style="list-style-type: none"> • Cell • Cell wall • Cell membrane • Chloroplast • Cytoplasm • Nucleus • Organelle | <ul style="list-style-type: none"> • Media • Model • Sculpture • Techniques • Three-dimensional • Title |

TECHNOLOGY INTEGRATION

- Students can use the interactive cell activity to review their knowledge available from:
http://www.cellsalive.com/cells/cell_model.htm

ASSESSMENTS

| Formative | Summative |
|---|--|
| <ul style="list-style-type: none">• Teacher observations and questioning while students are working on constructing their cell sculptures | <ul style="list-style-type: none">• Completion of a model of a cell with organelles correctly labeled• 3D Cell Model Self-Assessment Checklist (see Downloads) |

MATERIALS

Suggested Materials (not limited to these):

Colored modeling clay or play dough, cotton balls, various size beads, dry beans, dry pasta (various types, colors, sizes), aluminum foil, string, yarn, various sized ribbons, paper clips, markers, pipe cleaners, various size colored pom-poms, toothpicks, toothpick flags with cell organelle names (both plant and animal cells)

Activating Strategy (5-10 min)

- Review student knowledge of plant and animal cells and their organelles using diagrams:

Plant Cell:

<https://confluence.crbs.ucsd.edu/download/attachments/25821655/Plant+Cell.jpg?version=1&modificationDate=1297160683000>

Animal Cell:

<https://confluence.crbs.ucsd.edu/download/attachments/25821655/Animal+Cell.jpg?version=1&modificationDate=1297160683000>

Main Activity

Part 1:

- Students begin the artistic process of creating their sculpture/3-D model by first sketching and labeling their plant cell on drawing paper.
- Students are placed in groups, and students share their sketches with their group members.
- Students discuss the sketches and together collaborate and create a plan for their group's sculpture/3-D model.

Part 2:

- The students will work in groups using the materials provided to create their model of a cell and label the organelle's parts.
- Students will use the **Self-Assessment Checklist** (see Downloads) individually.
- Students will take a picture of their cell using a class camera or iPad to upload to the class website and email to teacher.

REFLECTION

Reflective Strategies

“3-D Cell Model” Self-Assessment Checklist (see Downloads):

Students will be required to reflect on their own process of learning and justifying decisions for both science content/artistic decisions.

DIFFERENTIATION

Option:

- Teacher will group students accordingly and will also assist groups as needed to ensure models are correct.

Below Grade Level/EL Students:

- Before students begin designing their sculpture or 3-D model, students can practice locating and identifying plant cell organelles using an interactive cell activity available from http://www.cellsalive.com/cells/cell_model.htm

Above Grade Level:

- Students will have to make a 3-D model for both the plant and animal cell and label them.

Small Group Instruction

Students will work in small groups to create and label a model of a cell.
(Groups can be homogeneous OR heterogeneous according to teacher discretion based on student population.)

APPENDIX

- **“3-D Cell Model” Self-Assessment Checklist**

CREDITS

U.S. Department of Education
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