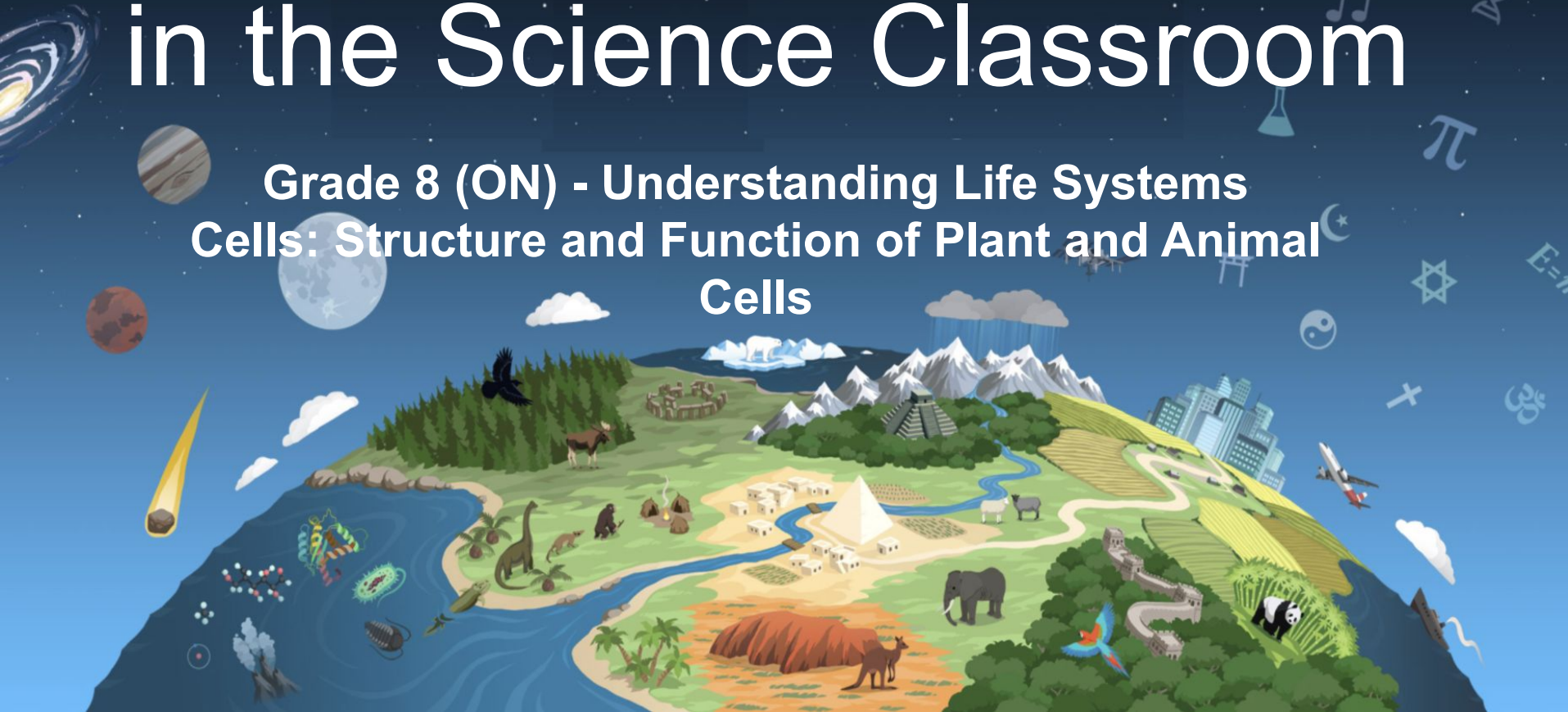


Strategies for Using Binogi in the Science Classroom

Grade 8 (ON) - Understanding Life Systems
Cells: Structure and Function of Plant and Animal
Cells



Supported by



Resource Guide for Teachers

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Please visit:

<https://escapeprojects.ca/> for additional resources and information

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Grade 8 Cells & Structures - Learning Objectives and Big Ideas

Overall Expectation

B2. Exploring and Understanding Concepts: demonstrate an understanding of the basic structure and function of plant and animal cells and cell processes

Specific Expectation

2.3 Compare the structure and function of plant and animal cells ([ON Science Grade 8 Curriculum](#), p. 2)

Learning Objectives

Identify the differences between animal and plant cells.

Big Ideas

Understand the differences between plant and animal cells.

Assessment

1. Assessment FOR

Diagnostic questions, Minds On, Action, Consolidation

2. Assessment AS: Consolidation

Scientific Terms and Resources

Vocabulary

Plant cell, animal cell, organelles, nucleus, cell membrane, cell wall, cytoplasm, chloroplasts, vacuole, mitochondria, lysosomes, and photosynthesis.

Pair/Group Activities

Please follow your school's **Covid-19 safety protocols** for any pair/group activities.

Language Friendly Pedagogy

At the beginning of the lesson, students will be invited to add key terms in their [Concept Detective](#) and add any new words that they come across throughout the lesson.

Binogi Related Resources

[The plant cell](#)

[The animal cell](#)

Additional Binogi Videos Connected to this Unit

[Curriculum Mapping: Understanding Life Systems - Cells](#)

[Video: Cell domains](#)

[Video: Chromosomes and traits](#)

Other Resources

National Geographic. (n.d.). *Comparing plant and animal cells: Identify the differences between plant and animal cells and how these differences relate to their cellular functions.*

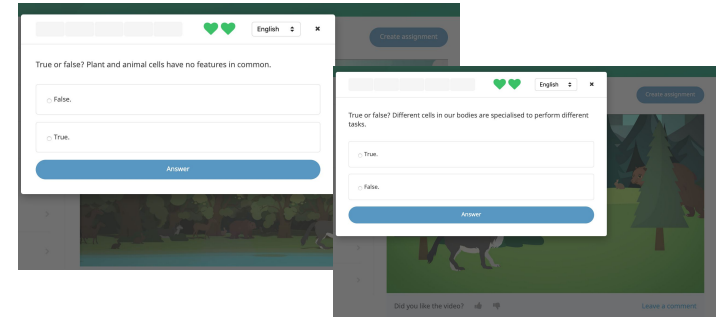
<https://www.nationalgeographic.org/media/comparing-plant-and-animal-cells/>

At the beginning of class... (5 ~ 10 min)

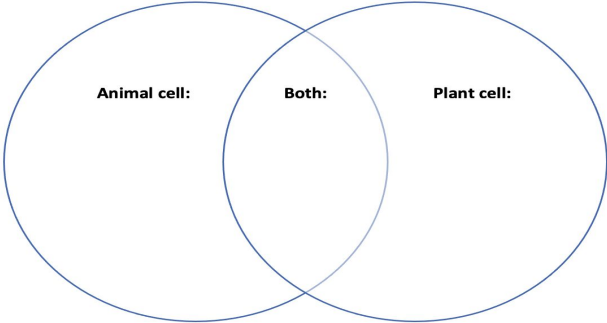
1. Share learning objectives - Identify the differences between animal and plant cells.
2. Co-create success criteria
 - Sample :
 - *I can explain the differences between plant and animal cells*
3. Ask the students to add the following words in their [Concept Detective](#) which they will fill in throughout the lesson:
Plant cell, animal cell, organelles, nucleus, cell membrane, cell wall, cytoplasm, chloroplasts, vacuole, mitochondria, lysosomes, and photosynthesis.
4. Diagnostic Questions: Teachers should systematically start with 2 or 3 diagnostic questions. Examples of diagnostic questions can be found:

a) using the previous year's specific expectations;


b) using [Binogi Animal Cell quiz](#) - level 1 and [Binogi Plant Cell quiz](#) - level 1



Minds On

Task Component	Instruction	Assessment Focus Look Fors	Notes
<p>Before (Activation/ Review) ~5-10 mins</p> <p>Resources:</p>	<p>List all the similarities and differences between plant and animals (or plant and animal cells if this isn't the first lesson on them) in the following Venn diagram:</p> <p style="text-align: center;">Venn Diagram – Organelles in Plant and Animal Cells</p>  <p>The diagram consists of two overlapping circles. The left circle is labeled 'Animal cell:', the right circle is labeled 'Plant cell:', and the overlapping area in the center is labeled 'Both:'.</p>	<p>How do students represent their understandings and linkages between concepts?</p> <p>How does the activity connect to, and help prepare students for problem solving?</p> <p>How are you interacting with your students?</p>	<p>Teacher records answer / wonderings / understandings. Asks students to elaborate/explain their responses with the class.</p>

Action

Task Component	Instruction	Assessment Focus Look Fors	Notes
<p>During (Working on it) ~15-20 mins</p> <p>Materials:</p> <p>paper, markers, blocks, ruler, graph paper</p>	<p>Have the students watch Binogi videos on Animal Cell and Plant Cell: As they watch, have students write down:</p> <ol style="list-style-type: none">1. 3 interesting concepts or word that they learned;2. Go back to their original Venn Diagram and fill in any additional information they learned from watching the videos - use a different coloured pen. <div><p>The animal cell Create assignment</p><p>The plant cell Create assignment</p><p>Cell membrane</p></div>	<p>What role do I and my students play during the problem solving process?</p> <p>What strategies do we predict students will use to do the math?</p> <p>What strategies are students using to do the math?</p>	<p>Have your students watch the videos in the language of their choice.</p> <p>Record students' thoughts.</p> <p>Think-pair-share: student thinks on their own first, then they share with their partner, then with the class.</p>

Consolidation/Reflection- Gallery Walk

Task Component	Instruction	Assessment Focus Look Fors
<p>After (Reflecting/ Connecting/ Consolidating)~ 20- 25 mins</p> <p>Resources:</p>	<ol style="list-style-type: none"><li>1. Have a class discussion regarding what students wrote.<li>2. Assignment: If you could be any organelle, which one would it be and why? <p>Ask students to choose one organelle and using any method that they would like (ie. powerpoint, notes, prezzi, model, etc.) and create a persuasive argument on why that this the best organelle and why they chose it. Students will then get into small groups and present their findings to their peers. (<i>Extension: research the selected organelle either online or using books. This research activity can be cross-curricular and link with Literacy</i>).</p> <ol style="list-style-type: none"><li>3. Students complete their Concept Detective.	<p>How are you consolidating student learning? Which strategy was used (Congress, Gallery Walk, Bansho, etc.) and why?</p> <p>How do you determine what should be highlighted? How is it connected to the learning goal/expectations? How is student thinking annotated?</p> <p>What roles do you and your students take on during the consolidation?</p>

Extensions & Differentiation/Modifications

Extension/Homework - In order for students to create the best possible presentations, some questions that teachers can ask the students throughout the lesson or as homework are the following:

- What are the functions of structures and organelles in animal and plant cells? For example:
- What is the function of the cell membrane?
- What is the function of the nucleus?
- How do animal and plant cell structures relate to their function (e.g., plant cells have chloroplasts that allow them to perform photosynthesis for energy, but animal cells do not)?
- Why do plant cells need a cell membrane and a cell wall?
- Students create a Venn diagram to compare and contrast structure and organelles in animal and plant cells.

Parent and Community Connection

Home Assignment

[Concept Detective](#) - students can complete any terms they did not complete and add any mathematical terms they wish to include in their glossary with their parents.

EXAMPLE of parent/community activity:

Students can either watch the Binogi videos or they can work together on the "Which Organelle Would you like to be and Why?" assignment or answer the follow up questions together. The aim is to consolidate the student's learning further by engaging in math talks, as well as increasing parental involvement and raising awareness of what they are learning in school.

Some of the questions parents can ask as they watch the video together...

- Can you identify the differences between plant and animal cells? What makes these differences special?

