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| <b>Subject/Grade: Science 8</b> | <b>Lesson Title: Building Animal/Plant Cells</b> | <b>Teacher: Halle Reimer</b> |
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**Stage 1: Identify Desired Results**

**Outcome(s)/Indicator(s):** *(List all of the Outcomes and Indicators that will be addressed during the lesson; when you do this for real, just using the codes will work BUT for the purpose of this assignment, I need you to cut and paste the full words for the indicators – this will help me during the assessment process!)*

- CS8.1 - Analyze the characteristics of cells, and compare structural and functional characteristics of plant and animal cells.**
- CS8.1 (g)  
Observe and identify cell structures (e.g., cell wall, cell membrane, vacuole, nucleus, cytoplasm, mitochondria, and chloroplast) and identify which are found in plant cells and which are found in animal cells.
- CS8.1 (h)  
Explain the function of cell structures (e.g., cell wall, cell membrane, vacuole, nucleus, cytoplasm, mitochondria, and chloroplast), including how each structure contributes to the health of plant and animal cells.
- CS8.1 (i)  
Use appropriate scientific terminology to communicate plans, ideas, and results related to the study of plant and animal cells.
- CS8.1 (j)  
Work cooperatively with team members to develop and carry out a plan to construct a representation (e.g., model, drawing, sculpture, or dance) of the structures and functions of plant and animal cells.
- CS8.1 (k)  
Analyze the strengths and weaknesses of various representations of the structure and function of plant and animal cells.

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| <p><b>Key Understandings: ('I Can' statements)</b><br/><i>(Put the key learnings into student-friendly language that begin with 'I can...'. These should reflect the identified indicators. The students should know what these are at the beginning of the lesson. An example is: I can control how I throw a ball overhand. Doing this helps students engage in the learning since they know what it is that they will/need to learn).</i></p> <p>I can identify cell structures and if they belong to a plant cell or animal cell. (g)<br/>I can explain the function of cell structures and how each structure contributes to the health of the cell. (h)<br/>I can use appropriate scientific language and terminology to communicate my thoughts, ideas and understandings related to the study done on plant/animal cells. (i)<br/>I can work cooperatively with my partner to develop and complete a representation of the structures and functions of plant and animal cells. (j)<br/>I can analyze strengths and weaknesses of peers' representations of structures and functions of plant/animal cells. (k)</p> | <p><b>Key Questions:</b><br/><i>(What are three to four deeper learning questions that you want to make sure you ask during the lesson – write them out here – this will support you in asking purposeful questions during the lesson)</i></p> <ul style="list-style-type: none"> <li>- What are the functions of each cell structure?</li> <li>- What cell structures belong to plant cells?</li> <li>- What cell structures belong to animal cells?</li> <li>- How does each structure contribute to the health of the cell?</li> </ul> |
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**Prerequisite Learning:**  
*(What are some concepts, facts, and/or skills that students must already know/understand/be able to do in order to 'learn' what you expect of them today?)*

Students must have previous knowledge (from the class(es) prior to this) of what plant and animal cells are, processes of diffusion and osmosis, etc.)  
Must understand vocabulary such as: organisms, cell structure, cell wall, cell membrane, vacuole, nucleus, cytoplasm, mitochondria, and chloroplast; other scientific terminology and correlating synonyms.

**Stage 2: Determine Evidence for Assessing Learning**

*(Identify your plans as either Formative and/or Summative and provide a brief description of what you will do to gain some form of evidence towards the O's and I's above, towards the 'I can' statements, towards the Key Questions. ALL of these should all connect and reflect each other! Strategy/process for how you will gather and retain this information should be briefly explained)*

- Formative Assessment:**  
Observations:
- observing their participation in
  - observing their work with partners (are they working well with others? Are they putting in equal amounts of effort? Are they being productive).
- Formative Assessment:**  
Understanding and Participation While Creating and Presenting:
- it is clear they understood the material they have learned or researched
  - they are all taking part in the representation project; equal roles in the work.
  - are students able to explain functions of cell structures and how they contribute to the health of the cell?
- Formative Assessment:**  
Compliment Sandwich and peer assessment
- students will be tasked with individually writing a compliment sandwich for another group's representations (Example: Group A marks Group B, B marks C, C marks A.)
  - one thing they think could be improved sandwiched between two things they liked about the representation (Example: "I liked the materials used in the representation (pipe cleaners, candy, felt, etc.), you could have been clearer in your wording for the written and spoken portion, but you made good use of the material to represent structures in the plant/animal cell, it was creative and well put together!")
  - Students will also fill out a rubric for the group they have been given to mark
- Summative Assessment:**  
Visual Representation - Diorama/Poster
- students will create a diorama or poster representation (If wanting to do a different representation it must be approved by me) using various materials to create a diorama/poster.

- Dioramas/posters (**DONE IN PAIRS**) must include a visual of the completed plant or animal cell as well as written or oral presentation of each structure's function, material used and why, and which cell (animal or plant) is being represented.

### Stage 3: Build Learning Plan

#### Set (Engagement):

**Length of Time: 20 minutes**

*(Get their attention! And then tell them what you are going to learn through this lesson)*

**Task One:** 20 minutes

Discussion/Developing Ideas

- Class will start with a discussion. We will review and discuss plant and animal cells as well as their corresponding structures.
- We will create an anchor chart as a class, using our discussion to develop a deeper understanding of what plant and animal cells are.
- We will decipher the difference between plant and animal cells, go over vocabulary words, and discuss corresponding structures for each cell (plant or animal).
- I will provide information and show examples of different cells to help better students' understanding
- We will discuss how each structure functions and contributes to the health of the whole cell.
- I will then move our anchor chart off to the side so we can reference it later if needed

#### Development:

**Length of Time: 40 minutes**

*(Remember, everything you do here needs to align with the identified O's and I's and support the students in answering the key questions as well as reaching the 'I can...' statements).*

**Task Two:** 10 minutes

Planning Through Anchor Charts

- Task two will prepare students for their third task.
- Students will get into partners and decide if they would like to make a representation of a plant or animal cell.
  - They will begin by creating an anchor chart to plan out their representation
    - Students will think about/take note of:
      - The different components or structures of their cell
      - The functions of each cell
      - What material they chose to represent each structure and why
      - Assigning jobs (who is going to do what)
      - If they choose to create a diorama or a poster

**Task Three:** 30 minutes

Presentation Preparation

- Students will gather materials from the various items I have collected for them to use.
  - If they choose to use other materials they will be responsible for obtaining them
- Students will create a visual representation of their cell, that demonstrates different structures found in their cell
  - Students must create either a diorama or poster.
  - Presentations of their representations should be about 4-7 minutes
- Dioramas
  - Examples of dioramas and posters will be provided.
  - Students will create a written explanation of what each structure is, how they function, how they contribute to the health of the entire cell, what material was used for each structure and why they chose these materials.
    - This can be printed out and posted next to diorama or poster with a legend, labels or arrows pointing to each structure (must be clearly indicated and clean) and used as a guide when presenting
    - This can also be used as a script when presenting their representation and students can read off of them
- Students will have 30 minutes to do their preparation for their representation, if they require more time they will have to do so on their own time unless given permission to work on it during free-time or work periods in other classes.

#### Learning Closure:

**Length of Time: 115 minutes (2 class periods)**

*(Do some form of 'check for understanding' and tell them or have them tell you what they learned. This can be done using a variety of strategies).*

**Learning Closure will take place over the course of the next two class periods..**

**Task Four:** 105 minutes

Presentations

- Students will be given 5-7 minutes to present their representations
- During their presentation, students will orally and visually present their plant or animal cells
  - They will visually and orally demonstrate what structures belong to their plant or animal cell, and how each structure functions.
  - Students will also clearly explain (written and orally) how the functions of the structures contribute to the health of the entire cell.
  - The cell should be clearly stated on the diorama or poster, and structures should be clearly labelled.

**Task Five:** 10 minutes

Compliment Sandwich and Peer Assessment

- Students will be tasked with writing a compliment sandwich for another group's presentations (Groups will be assigned; Example: pair A marks pair B, pair B marks pair C, pair C marks pair A.)
  - 1 thing they think could be improved sandwiched between two things they liked about the presentation
    - (Example: "I liked the materials used in the representation (pipe cleaners, candy, felt, etc.), you could have been clearer in your wording for the written and spoken portion, but you made good use of the material to represent structures in the plant/animal cell, it was creative and well put together!")
- Students will fill out a rubric for the group they have been given to mark

#### Instructional Strategies:

- I will make time for class discussions and group work
- I will encourage lots of participation.
- I will observe students while they work independently on partner or group work as well as their compliment sandwiches.
- I will set aside plenty of time for us to display and present our animal/plant cells and their corresponding structures.

#### Materials/Resources:

- Anchor Chart Paper
- Various Materials for Creating Representations (Pompoms, Pipe Cleaners, Tissue Paper, Etc.)
- Markers/Pencil
- Crayons/Crayons/Pencils/Paint
- Access to Technology for Visuals
- Open Space
- Projector
- PowerPoint
- [Compliment Sandwich Feedback](#)
- [Diorama Examples](#)
- [Poster Examples](#)

#### Possible Adaptations/

##### Differentiation:

- We could take the class outside to present
- Students may choose to work in groups of three
- We may need to move desks to create more space or find an open space outside the classroom (gymnasium, outside)

#### Management Strategies:

- I will provide clear expectations for our presentations
- I will provide clear instructions where I (the teacher) will clap my hands in a pattern and the students will repeat that pattern back to me.
- I will check for understanding after discussions and explanations of the topic.
- I will observe my students as they complete their Compliment Sandwiches.
- If a hand is raised or I notice someone is having a hard time during their partner/group work or while writing out their Compliment Sandwich, I will make my way over to them and answer any questions they may have.
- I will orally acknowledge that students have X amount of time left to finish their Compliment Sandwich before we move on.
- I will orally acknowledge when we will be moving on from one task to another

#### Safety Considerations:

- I will make sure that if we are outside that there are no safety concerns such as holes, or things for students to get injured on while we do our representations.
- Offer help when needed.
- I will be aware of actions and movements, and observe my class frequently and consistently to make sure everyone is respectful, kind and most importantly safe.

| Assessment Rubric                   |  |  |  |   |
|-------------------------------------|--|--|--|---|
| Summative Rubric for Representation | Exceeding  | Meeting  | Progressing  | Beginning   |
| <b>Cell and Structures</b>          | The structures are relevant to the chosen cell that is being represented. The cell is clearly stated and is represented correctly. The structures are labelled or communicated verbally (cell wall, cell membrane, vacuole, nucleus, cytoplasm, mitochondria, and chloroplast) and correctly.  | The structures are relevant to the chosen cell that is being represented. The cell is clearly stated and is represented correctly.   | The structures are not relevant to the chosen cell that is being represented. The cell is stated and is represented fairly.  | The structures are not relevant to the chosen cell that is being represented. The cell is not clearly stated and is not represented correctly.  |
| <b>Representation</b>               | The representation is clearly related to the chosen animal or plant cell and corresponding structures. The representation is creative and visually appealing.  | The representation is clearly related to the chosen animal or plant cell and corresponding structures. The representation is visually appealing.   | The representation is not clearly related to the chosen animal or plant cell and corresponding structures. The representation is somewhat visually appealing.  | The representation is not clearly related to the chosen animal or plant cell and corresponding structures; it may also be messy and/or unfinished.  |
| <b>Presentation</b>                 | The presentation is clear, creative, and represents the cell and corresponding structures thoughtfully.<br><br>Both the representation and written or oral explanations are accurate for the chosen subject.<br><br>Students visually and orally demonstrate what structures belong to their plant or animal cell, and how each structure functions. Students clearly explain (written and orally) how the functions of the structures contribute to the health of the cell. | The presentation is clear and represents the cell and corresponding structures thoughtfully.<br><br>The representation and written or oral explanations are somewhat accurate for the chosen subject.<br><br>Students visually or orally demonstrate what structures belong to their plant or animal cell, and how each structure functions. Students describe (written or orally) how functions of structures contribute to the health of the cell. | The presentation is somewhat clear but the cell and corresponding structures are not represented clearly.<br><br>The representation and/or written or oral explanations are inaccurate for the chosen subject.<br><br>Students somewhat demonstrate what structures belong to their plant or animal cell, and how each structure functions. Students somewhat describe how functions of the structures contribute to the health of the cell. | The presentation is not clear and the cell and corresponding structures are not represented.<br><br>The representation and/or written or oral explanations are incomplete or missing.<br><br>Students poorly/do not demonstrate what structures belong to their plant or animal cell, and how each structure functions. Students poorly/do not describe how functions of the structures contribute to the health of the cell. |
| <b>Participation</b>                | Students make an equal effort throughout the entire project.<br><br>Students actively work together to create a cohesive and well put together visual representation.  | Students make an equal effort throughout a majority of the project.<br><br>Students work together to create a visual representation.   | Students take part in the project and have somewhat equal roles during the process.<br><br>Students somewhat work together to create a visual representation.  | Students do not participate equally in the creation of their representation and the effort put into their project is not satisfactory.  |

Throughout this lesson I will be providing guidance to students throughout the discussion and idea development, giving them opportunities to come together as partners and create their own plans for their projects, offering creative liberties (as long as it compliments and connects to the assignment), setting expectations, and peer assessment.

My guidance will consist of not only teaching and discussing cells, their structures and the importance and functions of the structures, but also which structures belong to which type of cell, and how they might contribute to the health of the entire cell. I may also guide them throughout their own planning if they have any thoughts, questions, or concerns they feel need to be addressed.

In saying this I am giving them opportunities to create an anchor chart which will encourage them to create a thoughtfully planned out cell representation. Students will have to come to an agreement with their partner to decide which cell, an animal or plant cell, they want to do. They will also have to work together to make note of the different structures of the cell, if they are going to create a diorama or poster, and what materials or colours they will be using for each component.

I have given students two options, creating a poster or a diorama, which opens up many creative opportunities. Beyond that, I have given them the chance to come to me with proposals for other types of creative representations. If I had been able to do this lesson in the classroom, I would have asked them a few questions about their proposal, such as: how they plan to prepare themselves and their representation, how would their idea connect to the assignment, and would their visual representation be able to meet the criteria listed in the rubric.

Students will also be given copies of the rubric as a tool to assess if their work will meet the expectations that I have set for this project. Students will be asked to refer back to this rubric throughout their progress. I have implemented peer assessment by creating a “compliment sandwich” assessment tool along with the general rubric for each partner group to assess the group they were given to mark. This builds their critical thinking skill and encourages them to further understand what might be worth a good grade, what meets expectations, and how hard work is rewarded.

I believe that in combining all these components of the assignment together, it not only gives students who are more hands-on and creative learners a chance to feel comfortable and empowered in their learning, but also strays away from pencil and paper testing which I find is more often used for assessment in sciences and maths. Not only is this assignment going to teach students and further their understanding, but it gives them the chance to be

creative during the progress stage, knowledgeable during the presenting stage, and critical when they assess their peers' work and while referring to the rubric throughout their progress stage.