Block Coding Lesson

Lesson Title:	Tour of the Cell
Grade Level:	High School
Subject:	Biology
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Engagement:

- To engage the students, a captivating video about cells will be shown. This video includes a rap about the various organelles, that would engage the students. They can see how each organelle functions together and individually with the exciting background of a rap. Songs tend gain the attention of students, so this video will be more than enough for the engagement (https://www.youtube.com/watch?v=-zafJKbMPA8).

Exploration:

- In groups of four, students will create a 3D candy model of a eukaryotic animal cell using candies that best represent the shape of each organelle. Suggested candies for each organelle include lollipop - nucleus, fruit slices - mitochondria, nerds – ribosomes. The organelles will be labeled with toothpicks and sticky labels. This activity will set students up for the rest of the lesson. They will be able to initially build a 3D model of their cell, and further upon their project, and build a virtual 3D model later.

Source: https://www.pinterest.com/sonyalexanderia/animal-cell-model/

Explanation:

- Students will be presenting their candy cell model to the rest of the class. They will be asked to pick two organelles from their model, and why they chose that specific candy to correspond to their organelle. The educator will lead a small class discussion where students can compare their cell models.

Elaboration:

- With the introduction of physically building a model of a eukaryotic animal cell, students will be able to build upon their knowledge. Through CoSpaces, students will be able to build their own eukaryotic animal cell. Students will be working in groups of 4 to complete this project. Because CoSpaces have live editing features, all students in one group can participate simultaneously. The goal of this project is for the students to understand the various organelles within a eukaryotic cell. More specifically, students will understand the structure and function of each organelle, and how they work in conjunction with each other. Students will choose specific shapes that correspond to their specific organelle. For example, we used a sphere for the nucleus and the pill shape for the mitochondria - students can get creative with this, but also students should make sure to keep the general shape of the organelle in mind. They will have to label each organelle and include a small description regarding the function of that certain organelle. They should have between 5 - 7 organelles, and the description should include 2 facts. In their code, they should give more elaborate instructions for what each organelle do such as having the objects move around, have them state their specific facts when the cursor hovers over an item. Furthermore, they can display their creativity by changing colors of organelles and being creative in the way they describe the function of their organelle.

- **Link to CoSpaces: https://cospac.es/hYS1**
  - Note: This is a simplified diagram of what students would make. For this lesson, students would have to include all organelles that are necessary for an animal cell to function.

Source: https://cospac.es/hYS1
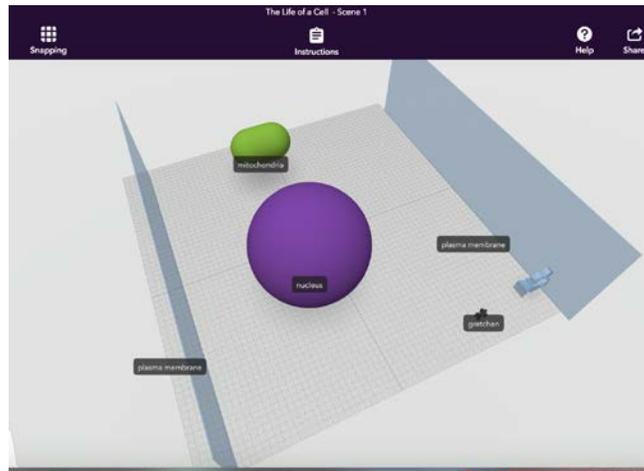
Evaluation:

- For the evaluation portion, students will be able to view their final product through Virtual Reality settings through CoSpaces. Given the resources are accessible, students will be able to walk through their own and the cells of their peers using Google Cardboard Glasses. By doing this, students can see their final product and take pride in what they have created. They will also improve their peer to peer interactions by working as a team to finish their final assessment.