Digital Cell Models

SCIENCE Age 6-12

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Learning Aims:

- Students will apply their knowledge of cells to create 3D models using digital software.
- Students will convert their files (.stl to .glb) and test their cell models using the headsets.

CONTEXT

This lesson can be done as enrichment or as a technology extension within the science curriculum. It is used to support the visual and conceptual understanding of cells and their organelles while adding a tech and design element. Students should have or receive background information on cells, plant and animal, as well as the organelles. The quantity of organelles and functions can be chosen according to the curriculum. Students should also have a basic understanding of CoSpaces or Tinkercad in order to design the cell digitally.

PRACTICAL SESSION

CoSpaces App

I outlined the objective of creating a digital 3D model of a plant or animal cell with five identifiable organelles. Next, I led a digital software tutorial, in which I gave a brief demonstration of how to use the digital design software, including how to add shapes, remove sections and modify size. We focused on 3D cell model creation, whereby the students used the digital software to create their individual cell models that meet the project requirements.

Following on from the students submitting their .stl files, I converted them to .glb format and then uploaded the files to the ClassVR playlist. I was able to provide an AR/VR 'cell experience', where the students viewed their completed cell models using the ClassVR headsets. The students were able to then identify any imperfections in their models in order to make modifications/edits to their original files. As an extension, students could then send edited .stl files to a 3D printer, as well as adding informational tags to the organelles when clicked (which can be done in CoSpaces).

IMPACT ON LEARNING

This lesson allowed students to gain a better understanding of the cell and its organelles. By applying their content knowledge to a digital format, they were solidifying their content understanding and gaining technological skills necessary for thriving in a 21st century environment.