Lumination Learning Lab

Lesson Bytes
Teaching ideas for immersive learning

Exploring the Cell:
It's Structure and Functions

Learning Area
Science

Year Level
Year 8

Introduction

This lesson will take students on an immersive journey inside the human body using virtual reality. By utilising The Body VR app and additional VR videos, students will explore the circulatory system, learn how blood cells work, and understand the processes inside the heart. They will also create their own models to illustrate their understanding of the human circulatory system.

Application

The Body VR: Journey Inside a Cell
An educational VR experience that offers an interactive dive into the microscopic world of human biology. Users can explore cellular structures and functions in vivid detail, gaining a deeper understanding of how cells operate. The experience's 'Anatomy Viewer' allows users to interact with various body systems which will engage learners of all ages.

Lesson Overview

Lesson Objectives

- Recognise and describe the structure and components of an animal cell.
- Understand the functionality of cell structures and organelles.
- Created detailed 3D models of an animal cell.

VR/AR Resources

- Chapter 1: Introduction to the Animal ... (5:31)
- Virtual Plant Cell: Cell Explore, 2018. V... (5:58)
- Object Viewer (free version)
- 3D Model of Animal Cell
- Tinkercad / CoSpaces

Developed by Zeinab Jafari

Lesson Outline

Before the Immersive Learning Journey

- Teachers and students should familiarise themselves with the IMVR experience using The Body VR Essential Guide.
- Ensure all VR equipment and resources are properly set up and functioning.
- View all suggested resources to ensure their suitability for the cohort.
- Students should have a basic understanding of cell biology or have been introduced to the topic.

During the Immersive Learning Journey

IMVR Station: Students will use The Body VR: Journey Inside a Cell to explore the inner workings of an animal cell. The full experience takes under 12 minutes per student. If enough time is not available, deselect necessary "levels" from the home screen before pressing "start". Group members can scribe specific terms/concepts (i.e. nucleus, mitochondria, ribosomes) that can aid the creation of their 3D model.

HHVR Station: Students watch the VR video using HHVR headsets and headphones: Chapter 1: Introduction to the Animal Cell . They will draw a detailed and annotated diagram of an animal cell, listing their understanding of the functionality of the organelles. *Optional: to view the Virtual Plant Cell: Cell Explore, 2018. VPC 360° video by Plant Energy … video and compare the two cell structures.*

Merge Cube Research Station: Using Object Viewer (AR App) on devices, students study the "Plant Cell" item with Merge Cubes. They will compare the cell structure and components of a plant cell with an animal cell. They can use this 3D model of an animal cell or google "animal cell" and scroll down to the "Interactive Diagrams" section. On laptops, students can 'Test their knowledge' with the 'Play' button in the top right corner of the interactive diagram.

Creation Station: Students create their own 3D models of a cell structure on programs such as Tinkercad. They can import their finished model into CoSpaces and add informational panels to show their understanding of cell structures and functionality.
This station can be run as a secondary lesson to provide students with ample time to create detailed 3D models.

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After the Immersive Learning Journey

Students present their models and explain their annotations to the class/peer groups.

Discuss the cells as a class, focusing on what students found most interesting or challenging.

Discussion Questions:

1. What are the main differences between plant and animal cells?
2. Which cell structure did you find most fascinating, and why?
3. How do the various organelles work together to keep the cell functioning?