Lumination Learning Lab

Lesson Bytes
Teaching ideas for immersive learning

Energy in Motion

Learning Area
Science

Year Level
Year 9-10

Introduction

In this lesson, students will explore the concept of energy efficiency and the law of conservation of energy through immersive virtual reality experiences. They will use the "All-in-One Sports VR" app to observe different physical activities and their energy dynamics, and watch a VR video on how kinetic energy can recharge a car's battery. This hands-on approach will help students understand energy inputs, outputs, transfers, and transformations.

Application

All-in-One Sports VR

This app provides a variety of sports activities in a virtual environment, allowing students to engage in and observe the physical dynamics and energy transfers involved in sports like basketball, archery, and more.

Lesson Overview

Lesson Objectives

- Understand the law of conservation of energy.
- Analyze system efficiency in terms of energy inputs, outputs, transfers, and transformations.
- Apply theoretical concepts to real-world scenarios.

VR/AR Resources

- Kinetic Energy Can Recharge A ... (3:25)

Developed by Jolanta Stephens

Lesson Outline

Before the Immersive Learning Journey

- Ensure that all VR equipment (headsets, controllers, sensors) and software (applications, simulations) are properly set up and functioning.
- Teachers are encouraged to provide reflective tasks with each station.
- Review the basic principles of the law of conservation of energy.
- Discuss different forms of energy and how they can be transferred or transformed.

During the Immersive Learning Journey

IMVR Station: Students will participate in different sport activities, observing and noting the energy transfers and transformations involved. Teachers can also limit this to 2-3 sports if particular movements are desired.

HHVR Station: Students will watch the 360° video and take notes on how kinetic energy is used to recharge a car's battery. They will complete a see-think-wonder thinking routine:

- **See - Prompt:** What did you see in the video? Describe any key scenes, facts, or demonstrations that stood out to you.
- **Think - Prompt:** What do you think about the process of using kinetic energy to recharge a car's battery? How does this relate to the law of conservation of energy?
- **Wonder -Prompt:** What do you wonder about this process? Are there any aspects you are curious to learn more about? How might this technology be improved or applied in other contexts?

Research and Reflection Station: Students will research additional examples of energy transfers and transformations in sports and transportation, and reflect on the efficiency of these systems. They can create an infographic poster using Canva or CoSpaces to present their learnings. OR: Investigate how different sports equipment is designed to optimize energy efficiency.

Developed by Jolanta Stephens

After the Immersive Learning Journey

Discussion/Reflection Questions:

1. How did the sports activities demonstrate the law of conservation of energy?
2. What were the main energy transformations observed in the video about kinetic energy and car batteries?
3. Can you think of other everyday examples where energy is transformed and conserved?