Lumination Learning Lab

Lesson Bytes
Teaching ideas for immersive learning

Exploring Circuits

Learning Area
Science

Year Level
Year 6

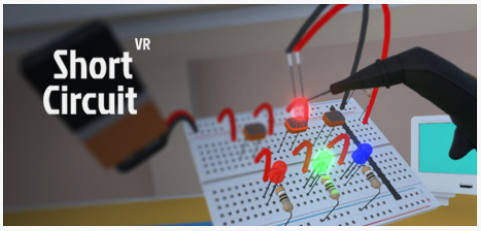
Introduction

In this lesson, students will explore the principles of energy transfer and transformation through hands-on and virtual circuit-building activities. By engaging with *Short Circuit VR*, they'll experiment with virtual components and complete electronics challenges, enhancing their understanding of circuits in an immersive environment. Simultaneously, students using Tinkercad will practice building digital circuits, gaining foundational knowledge of how energy flows through various components.

Application

Short Circuit VR

An electronics lab simulator in Virtual Reality. You can build your own electronic circuits with the components provided, learn basic electronics by completing challenges and just have fun while experimenting and making awesome projects!



Lesson Overview

Lesson Objectives

- Understand the basics of electrical circuits, including energy transfer and transformation.
- Identify the roles of key circuit components, including conductors and insulators.

Resources

- Tinkercad Circuits (and their inbuilt tutorials)
- VR App Tutorial and Introduction to Electronics video (14:05) *jump to required sections

Developed by Zeinab Jafari

Lesson Outline

Before the Immersive Learning Journey

- Ensure that all VR equipment (headsets, controllers, sensors) and software/applications are properly set up and functioning.
- Introduce the concepts of energy transfer, conductors, and insulators, along with basic circuit components.
  Note: Video in resources can assist this
- Ensure students are familiar with Short Circuit VR. If not, show students this Features Trailer and desired sections from the Introductions Video.
- Ensure students are familiar with Tinkercad Circuits. If not, they can follow various Circuit Tutorials prior to the session or during their Tinkercad station.
- Half your students for the two stations, and place students in further small groups for the IMVR stations.

During the Immersive Learning Journey

IMVR Station
Students will work through designated circuit challenges in *Short Circuit VR (please watch video provided in resources to show students how to access challenges)*, focusing on building complete circuits and observing how energy flows through each component. Encourage students to experiment with different circuit configurations and note any transformations in energy. Other students in a group should assist the student in IMVR to complete the challenge before their turn is up, otherwise the next student will continue where they left off.

Creation Station
Students will create simple circuits in Tinkercad, testing components like resistors, LEDs, and batteries. They can document the energy transfer process for each configuration they design. If students are unfamiliar with the software, they are recommended to complete the circuit tutorials to build their understanding of circuit boards.

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After the Immersive Learning Journey

Discussion Questions:

1. How does energy move through the circuits you built?
2. What did you notice about the differences between the virtual and digital circuits?
3. How do conductors and insulators impact the flow of energy in your circuits?

Additional Activities (optional):

1. Design a real-world circuit project using actual components if available.
2. Research a famous invention that relies on electric circuits and present findings.
3. Create a circuit guide for younger students, explaining the basics of how circuits work.

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