VR Physics Lab using CoSpaces Edu

Assignment Overview

In this interactive assignment designed for middle and high school students, learners will use CoSpaces Edu to build a virtual reality (VR) physics lab. Students will create immersive VR environments that simulate and demonstrate key physics concepts such as gravity, motion, and forces. Instead of programming in C#, students will use block-based coding within CoSpaces or JavaScript to develop interactive elements in their simulations. They will document their design process and results in an accompanying digital project journal or website.

Learning Objectives

- Explore and demonstrate key physics concepts through virtual simulation.
- Apply computational thinking by designing interactive elements using block coding or JavaScript.
- Develop problem-solving skills through iterative design and testing.
- Collaborate with peers to refine and present their VR simulations.
- Create digital documentation that explains the physics behind the simulation.

Materials Needed

- CoSpaces Edu account (with access to MERGE Cube or VR mode)
- Computer or tablet with internet access
- Headphones and optional VR headset (for immersive testing)
- Notebook or digital tool for documenting the process (e.g., Google Docs, website builder)

Steps and Instructions

1. Choose a physics concept (e.g., Newton's laws, kinetic/potential energy, projectile motion).

2. Design a virtual scene in CoSpaces that visually and interactively demonstrates the concept.

3. Use block-based coding or JavaScript to make elements respond to input or simulate behavior (e.g., objects falling, bouncing, or moving).

4. Test the scene using MERGE Cube or VR preview.

5. Document your process: include concept explanation, screenshots, code snippets, and challenges faced.

6. Share your final project and documentation with the class or on a digital portfolio site.

VR Simulation Planning Table

Physics Concept	Simulation Plan	Interactivity (Code or Action)	Expected Outcome

ISTE Standards Addressed

1.3.d – Knowledge Constructor: Students build knowledge by actively exploring real-world issues through VR.

1.5.c – Computational Thinker: Students develop logical solutions using block coding or JavaScript.

1.7.c – Global Collaborator: Students contribute to group work and share their simulation with others for feedback.

Assessment Rubric – CoSpaces VR Physics Lab

Criteria	Beginning (1 Point)	Developing (2 Points)	Proficient (3 Points)
Physics Concept Representation	Concept is unclear or inaccurately represented in the simulation.	Concept is somewhat clear but lacks depth or scientific accuracy.	Physics concept is clearly demonstrated, accurate, and aligns with grade-level expectations.
Simulation Design	Scene is minimal, with limited or no interactive elements.	Scene is complete but contains basic interactivity or minimal visual storytelling.	Scene is immersive, engaging, and includes interactive elements that reinforce the concept.
Coding & Interactivity	No coding or coding is incomplete or non-functional.	Basic block coding or JavaScript used with partial functionality.	Effective and creative use of block coding or JavaScript to create interactive elements.
Digital Documentation	Limited documentation, missing key elements (e.g., explanation, screenshots, reflection).	Documentation includes most required elements but lacks detail or clarity.	Thorough documentation with clear explanations, visuals, and thoughtful reflections.
Collaboration &	Limited participation in group work or sharing.	Moderate collaboration with some evidence of	Strong collaboration and active sharing or

Communication		peer input or shared effort.	presentation of final project.

Total: /15