Physics using CoSpaces Edu, Tinkercad and the MERGE Cube Lesson plan

Created by Open Source Lab

Education level: From elementary school

Subject: STEAM, mathematics, physics, computer science, coding

Format: Individual or in groups

Duration: Approx. 3 hours

Introduction and lesson objectives:

This lesson plan combines building a car in Tinkercad, bringing the car's 3D model into CoSpaces Edu and coding it using the physics blocks available in CoBlocks.

The complexity of the physics lessons can increase depending on the grade level. An additional step that can be added is to place the 3D content created in CoSpaces Edu onto the MERGE Cube. By doing this, students explore 3 different programs combined in one project.

Learning goals and student benefits:

- Practice prototyping and testing
- Learn coding skills
- Practice design thinking
- Learn movement skills in 3D
- Learn 3D creation skills
- Combine 3 platforms

Activity preparation:

Your students will need a Tinkercad account and a CoSpaces Edu Pro licence plan for this lesson. You can purchase CoSpaces Edu Pro for your class or use it for free for one month with the trial code COSMIKEPAGE.

A MERGE Cube and the CoSpaces Edu MERGE Cube add-on are also needed if you want to explore placing the content created onto the cube and viewing it in AR.

Teachers can APK (access prior knowledge) of car parts and what makes them move.

Extension idea:

Ask your students to share their creations with their classmates and exchange feedback in a constructive way.

Assessment and evaluation suggestions:

- Have your students managed to build their 3D model in Tinkercad and then upload it to CoSpaces Edu?
- Did your students go through the creation process in an organized and well thought-out manner?
- Did your students use all 3 platforms?
- Have your students managed to use Physics properties?
- Have your students managed to code with CoBlocks?
- Did your students manage to view their work on the MERGE Cube?

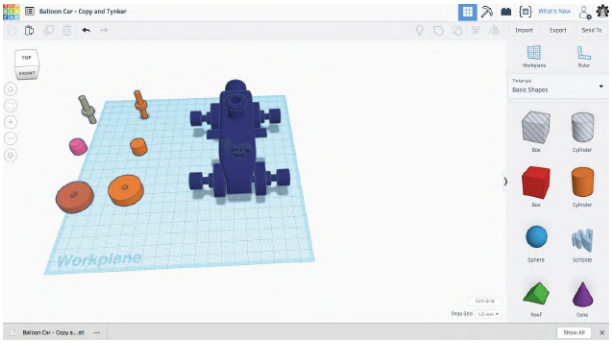
Creation guide

The video tutorials below will guide you through the creation process.

Click the thumbnails below to watch the videos. We recommend using headphones.

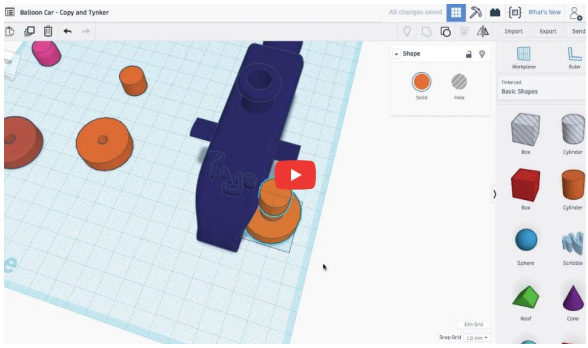
Video tutorial 1

youtu.be/nR56h7uxZYw



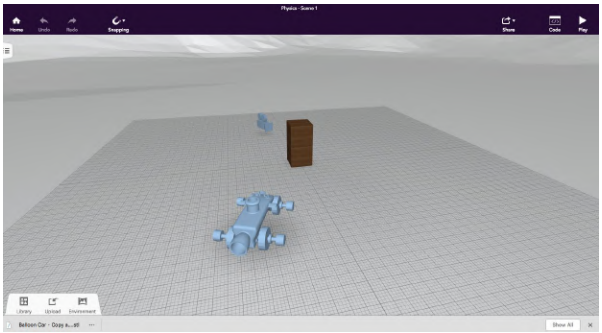
Video tutorial 2

youtu.be/5bmDNL04N6w



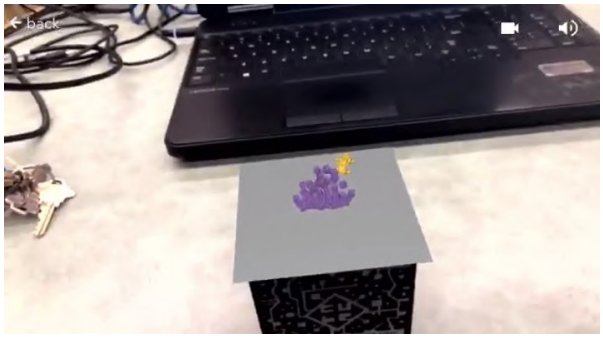
Video tutorial 3

youtu.be/kD6BK8dBNcw



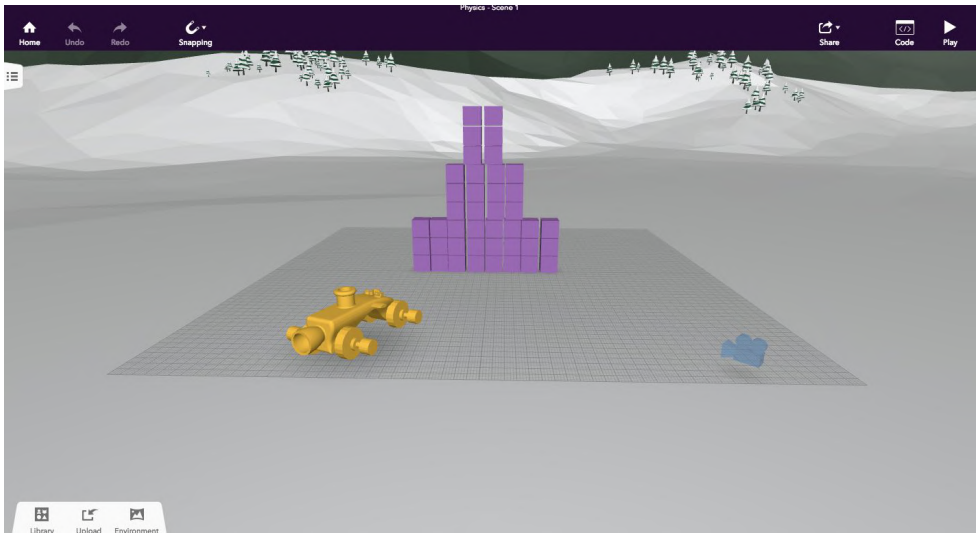
Video tutorial 4

youtu.be/AmESZVtYSB0



Example CoSpace

This is a minimalist example, but experiment and try out different pieces of code with various objects in the CoSpace you have built and get creative!



Physics

edu.cospaces.io/YZR-CVD

Here's a video with an example taken further. Click below to watch the video.

https://youtu.be/R61IxRlUjoM