We Make Physics Fun!!!

Tasked with transforming University worksheets into **web-based physical simulations**, our team was able to utilize Java Script to make the end product.

Why Bother Doing This?

- Universities often lack resources to visually show physical and mechanical interactions in the classroom
- Students grasp a better understanding of difficult concepts by learning through **interactive environments**

Concept Warehouse

- Educational website focusing on creating interactive learning opportunities for classrooms.
- Uses our 2D pendulum simulations, along with others, to replace in-class experiments.
- Allows teachers to see the knowledge retention of their students, through online quizzes.

Oregon State University

INTERACTIVE 2D MECHANICAL SIMULATIONS

Supporting **inquiry based learning** in Mechanical Engineering

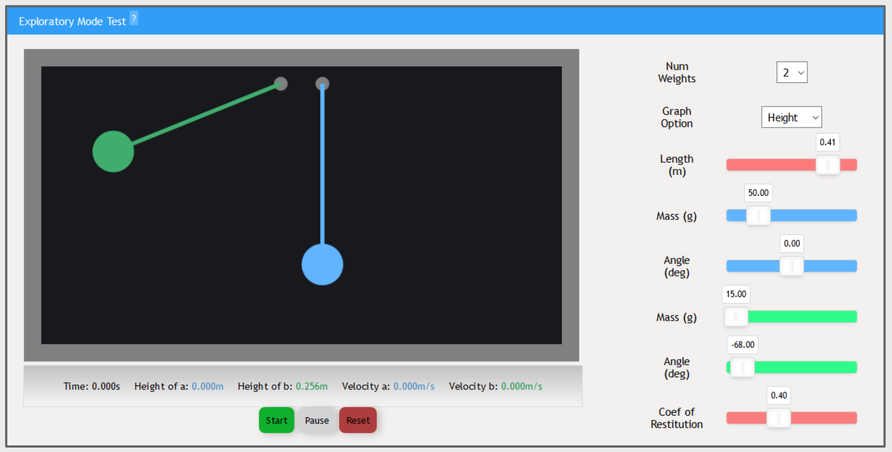

Figure 1: Exploratory Mode – Sandbox version of pendulum simulation

Key Features:

- Animations based on **actual physics** of a pendulum
- **Modifiable parameters** from user
- Real-time, measurement feedback.
- Real-time, graphical feedback.

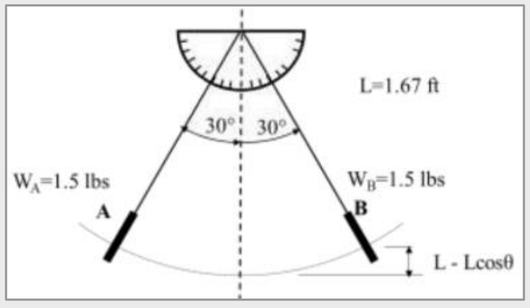

Figure 2: Given physics problem (Paper Version)

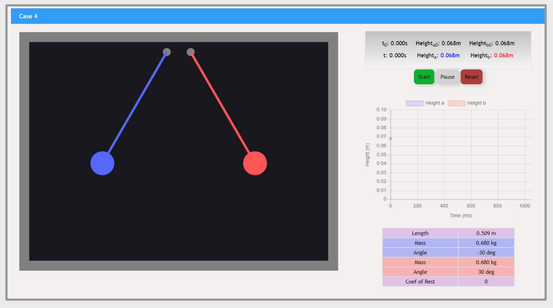

Figure 3: Conversion to a digital simulation (Online Version)

IMPLEMENTATION

The project utilizes different Java Script libraries for ease of completion

Matter.js – open source 2D physics engine for webpages

- Quick way to create physics animations

Gulp.js - toolkit for automating build tasks

Chart.js – JavaScript library to create automated interactive charts or graphs

- Prebuilt responsive graphs to easily integrate charts into webpage

HTML/CSS/Java Script – base used to create webpages

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