Using STEM to Differentiate and Connect Through Hands-On Learning

Kate Drechsler
Academy of Whole Learning

Introduction

About Academy of Whole Learning (AOWL):

- K-12
- Focus on autism spectrum and other learning differences
- Between 6-9 students per classroom
- Grouped by social and academic ability

About me:

- Going into my 4th year at AOWL
- Love using STEM as a platform for learning

Group Introductions

- Pick a “feeling fish” card that describes how you feel about:
  - Your summer
  - The coming school year
  - Teaching STEM
- Share your name, grade/teaching role, and feeling card with your group

Background

Innovation Grants at AOWL:

- Run “mini-labs” using STEM Kits
  - Implemented throughout the whole school
  - Crosscutting concepts
  - Hands-on learning
  - Versatile – multiple topics and standards
  - Saves time on planning
  - Build resources - Makerspace

Goals/Objectives

- Making learning as meaningful as possible with STEM
- Using hands-on learning as a tool for differentiation
- Helping students make connections

Meaningful Learning

- Engaging students through STEM
- Creating cross-curricular opportunities
- Skills that students will use

Differentiation

- Open-ended tasks
- Multiple entry points
- Provide scaffolding and structure

Making Connections

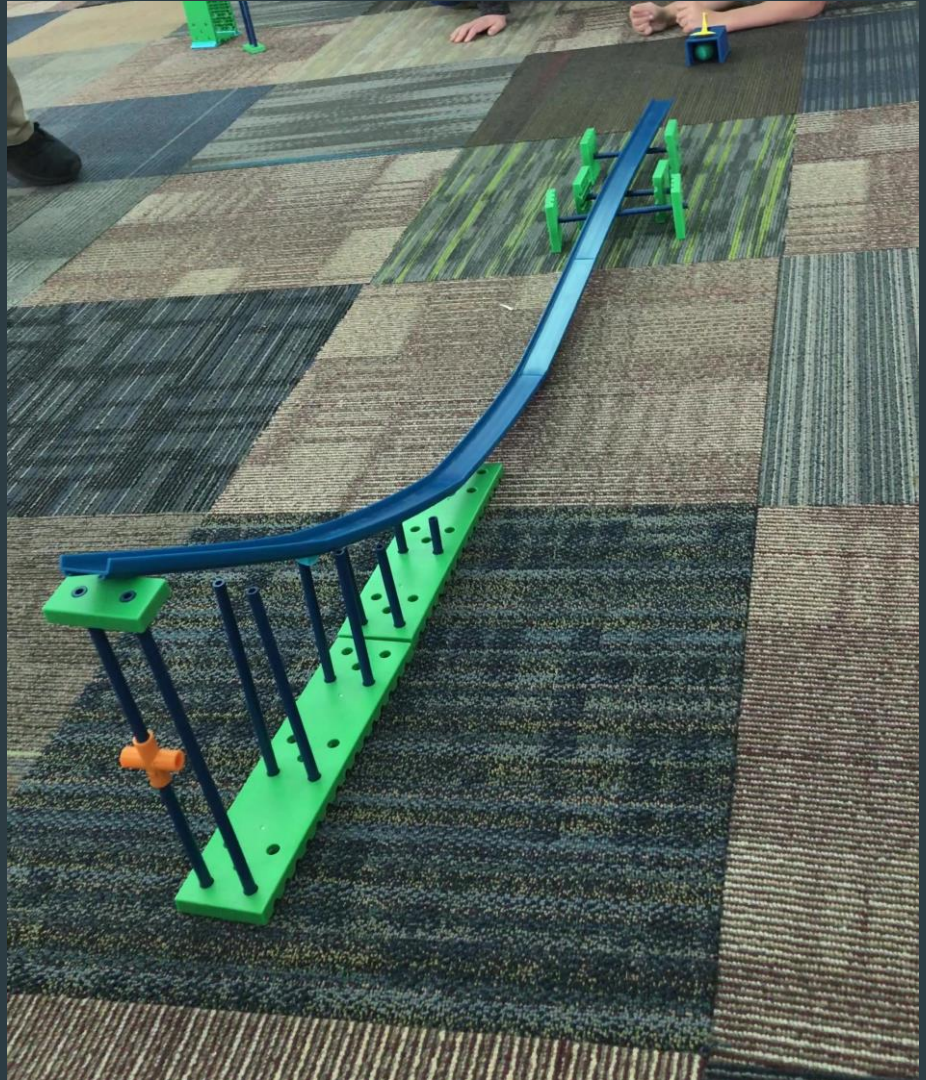
- Incorporating crosscutting concepts (NGSS)
- Strong cross-curricular links
- Apply skills in other contexts

Example – Weather

- Identify NGSS Standard(s)
- Cross-curricular connections:
  - Writing – Information report
  - Reading – Compare and contrast, cause and effect
  - Math – Tallying, graphing, data analysis, patterns
- Crosscutting concepts
  - Patterns
  - Cause and effect

Example – Forces and Interactions

- Balanced and unbalanced forces
- Simple machines
- Newton's Laws



Your Turn…

- With each kit, consider:
  - NGSS Standards that you could explore
  - Cross-curricular links you could make
  - Crosscutting concepts

Questions