Sphero Blueprint Build

Mid-Valley
STEM-CTE HUB

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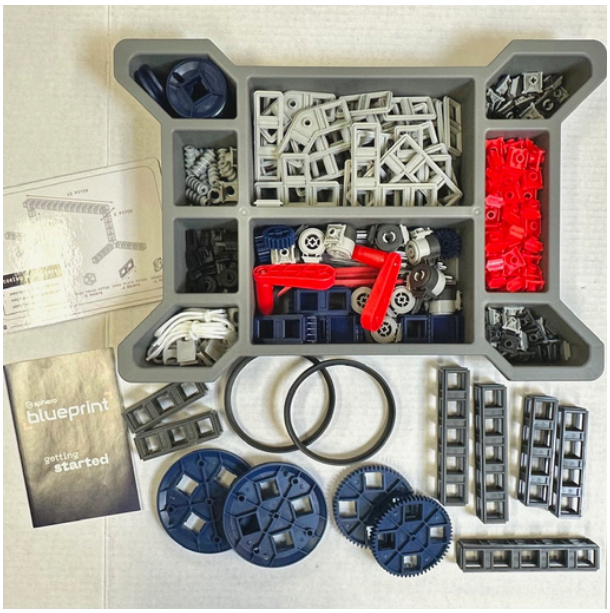

The Sphero Blueprint Build STEAM Kit utilizes creative design, CAD concepts, and engineering principles, allowing students to explore structural and mechanical engineering, and problem-solving in a fun and interactive way. Using the Sphero Blueprint, students can design, customize, and program their own builds, learning about structural design, mechanical design, and the engineering process. This kit promotes creativity, collaboration, and technical skills through interactive challenges.

Grade Level

6th - 12th

Group Size

1 - 3 students per group

Time Duration

30 - 90

Content of Kits

Components

- 4 Sphero Blueprint Build sets

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Usage

Getting Started

1. **Unbox and Inspect Components -** Start by carefully unboxing the Sphero Blueprint Build kit and verifying that all parts are present and undamaged. This includes, building components, and any necessary tools for assembly.
2. **Get Familiar with Sphero Lesson Plan Resources-** Visit https://edu.sphero.com/blueprint/collections to get lesson plans, challenges, tips, and more using Sphero Blueprint Build in your classroom.
3. **Download the Sphero Edu App -** On your tablet or smartphone, download the Sphero Edu app from the app store. This app will be used to program and control the robot once it is built. This is recommended but not required.
4. **Test Out Components -** Try using the connectors and tools to ensure you unstand how the mechanical pieces work with one another.

Storage

- **Disassemble -** Store the disassembled parts in a protective box to prevent damage. Ensure that small components are kept in a compartmentalized container to avoid loss.

Troubleshooting

- Visit https://edu.sphero.com/blueprint/resources if you need to troubleshoot the Blueprint Build kit.

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Activity Guide

Beginner

Explore and Build
Students will spend time exploring how the kit's pieces work together. Allow time for free building after providing an overview tools and components provided. Finish the lesson by asking students to build a simple structure to demonstrate their understanding.

Intermediate

Try Challenge Cards
Students will use either the challenge cards in the kit or the Sphero Edu app in small groups to independently build structures and mechanisms.

Advanced

Design a Unique Machine
Students will design and build an original structure or mechanism using the knowledge of building and blueprints they have learned thus far. Allow the students to work in small groups and have them complete each step of the design process from concept to prototype.

Extension Activities:

Classroom Collaborative Builds
In this activity, students will utilize all Sphero Blueprint components to work collaboratively to design individual machines and mechanisms that work together to accomplish a specific task. This activity encourages creativity, engineering design, and iteration.

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Learning Extensions

STEAM Connections: Engineering - Tech - Science

Learning Objectives:

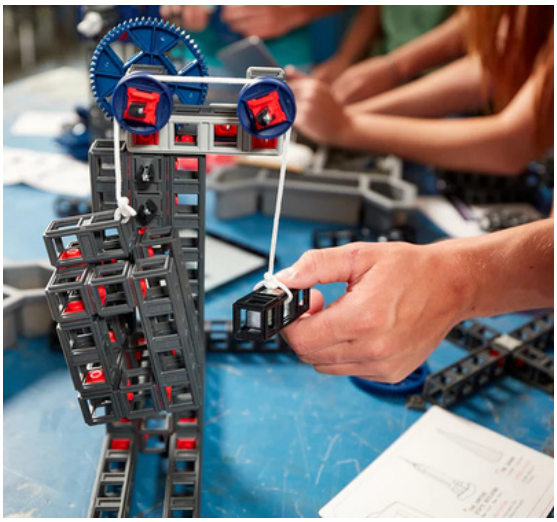
- Understand the basic principles of structural and mechanical design.
- Develop skills in reading and understanding engineering plans.
- Apply mathematical concepts like geometry and measurement to real-world tasks.
- Enhance critical thinking and problem-solving skills through hands-on activities.
- Foster collaboration and teamwork while building and testing structures and mechanisms.

Career Connections:

- **Structural Engineer -** Designs structual elements of things like buildings, automobiles, and more.
- **CAD Technician/ Draftsperson -** Creates detailed design models and drawings using CAD software.
- **Mechanical Engineer -** Designs mechanical systems and components, including robots and automated machines.
- **STEM Educator -** Teaches robotics, programming, and engineering concepts to students at all levels.

Essential Employability Skills:

- Critical Thinking
- Collaboration
- Communication
- Creativity
- Adaptability



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Resources and Accessibility

Safety Guidelines

- Supervise students when using tools to assemble parts to prevent injury.

Accessibility

- Allow extended time for students with motor challenges to complete assembly.
- For students with cognitive disabilities, provide step-by-step instructions and visual aids for easier comprehension.

Library Catalog

Library Resources

Feedback

QR to feedback survey