

LEGO Coding Express



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LEGO Coding Express

The LEGO Education Coding Express introduces early learners to foundational coding concepts through hands-on train play. Using color-coded action bricks placed on the tracks, students can make the motorized train stop, change direction, play sounds, and more—no screens or programming experience needed. As students build and experiment, they begin to understand sequencing, cause and effect, and problem-solving, all while engaging in storytelling and creative exploration that supports math, science, and literacy development.



Grade Level

PreK - 2nd

Group Size

2 - 4 students

Time Duration

20 - 40 minutes per activity

Content of Kits

Components

- 1 complete set of LEGO Coding Express



Usage

Getting Started

1. **Introduce the Color Action Bricks** - Show students each color-coded action brick (e.g., red = stop, blue = sound) and demonstrate how placing them on the track changes the train's behavior.
2. **Start with a Simple Track Layout** - Build a basic circular or figure-eight track and encourage students to experiment with just one or two action bricks to explore cause and effect.
3. **Use the Story Starters** - Begin with a simple scenario (e.g., "The train is going to the zoo") to combine imaginative storytelling with hands-on coding exploration.
4. **Let Students Explore Freely** - Before giving structured tasks, allow time for students to freely test the train and see how it reacts to different track setups.
5. **Assign Easy Roles** - Use rotating roles like "track builder," "brick placer," and "train operator" to ensure collaboration and inclusive participation.

Storage

- **Use the Provided Storage Bin** - Keep all parts in the included labeled LEGO Education bin. Sort train parts, tracks, and action bricks into smaller containers or bags inside the bin.

Troubleshooting

- **Train Not Moving** - Make sure the train is turned on and has fresh batteries. Check that all wheels are properly aligned on the track.
- **Action Bricks Not Working** - Ensure bricks are placed with the color side facing up, flat on the track, and spaced far enough apart for the train's sensor to read each one.
- **Sound Not Playing** - Check battery strength and verify that the blue sound brick is clean and correctly positioned.
- **Track Not Staying Together** - Use a flat surface and press track joints firmly together. Consider placing a tray or mat underneath for stability.



Activity Guide

Beginner

Train Stops at the Station

Students build a simple loop track and place a red “stop” brick in front of a LEGO station or figure. They observe how the train halts at the station, reinforcing how one action (brick placement) leads to another (train behavior). They can then move the brick and test again.

Intermediate

Delivery Route Adventure

Students design a delivery route for the train using multiple action bricks (e.g., stop, reverse, and sound). They plan the order of deliveries (e.g., zoo, bakery, school) and program the route with action bricks in the correct sequence. Students then narrate what the train is doing and why.

Advanced

Create a Smart Train System

Students are challenged to create a system where the train automatically reacts to track conditions (e.g., stops before a blocked path, turns at the fork, plays a sound near animals). They’ll test different arrangements of action bricks and revise their setups to improve consistency and timing.

Extension Activities:

STEAM City Story Challenge

In teams, students build a themed city (e.g., “Construction Town” or “Animal Island”) using DUPLO figures, tracks, and buildings. They create and tell a story where the train plays a central role, placing action bricks to trigger events and transitions as the story unfolds.



Learning Extensions

STEAM Connections: Computer Science - Communication

Learning Objectives:

- Understand basic sequencing, cause and effect, and early programming logic using action bricks.
- Develop spatial awareness, planning, and fine motor skills through track construction and train control.
- Strengthen storytelling and communication by combining narrative with hands-on exploration.
- Practice observation, prediction, and testing through experimentation with train behavior.
- Foster collaboration and turn-taking through group-based building and coding activities.

Career Connections:

- **Transportation Planner** – Designs routes and systems for public transport using logic and efficiency.
- **Rail Systems Engineer** – Develops safe and efficient rail networks and controls.
- **Computer Programmer** – Writes sequences and conditional instructions to control real-world machines.
- **Early Childhood Educator** – Uses tools like Coding Express to develop foundational logic and play-based learning.

Essential Employability Skills:

- Problem-Solving
- Communication
- Creativity
- Teamwork
- Initiative





Resources and Accessibility

Safety Guidelines

- **Supervise Battery Use** – Always ensure an adult inserts and replaces batteries in the motorized train unit.
- **Keep Track Clear** – Encourage students to keep hands, clothing, and other objects off the track while the train is running.
- **Avoid Rough Handling** – Remind students not to force tracks or snap bricks together too hard to prevent breakage or pinched fingers.
- **Use on Flat Surfaces Only** – Run the train on clean, flat tables or mats to prevent tipping and tripping hazards.

Accessibility

- **Use Visual Icons and Color Prompts** – Reinforce learning by pairing action bricks with matching color charts or icons for students with language or processing delays.
- **Flexible Participation Options** – Allow students to act as storytellers, train announcers, or observers if they cannot physically build.
- **Adjust Activity Pacing** – Give additional time or reduced steps for learners who benefit from a slower, more structured process.

Library Catalog



Library Resources



Feedback

QR to feedback survey

