

CODING EXPRESS

TEACHER

GUIDE

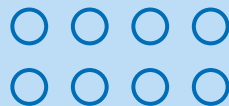
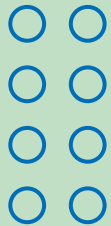


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LESSONS

Find all lessons on legoeducation.com/lessons

[Beginner – First Trip](#)

Exploring the red and green action bricks

[Beginner – Train Sound](#)

Exploring sequencing and the blue, yellow, and white action bricks

[Intermediate – O-Shaped Track](#)

Exploring loops with the O-shaped track

[Intermediate – Y-Shaped Track](#)

Exploring conditional statements with the Y-shaped track

[Intermediate – Character – Caterpillar \(App\)](#)

Exploring storytelling and social emotional development

[Intermediate – Music – Animal Concert \(App\)](#)

Using digital tools to design and express ideas

[Advanced – Journey – Troubles on the Road \(App\)](#)

Practicing problem-solving

[Advanced – Math – Distance \(App\)](#)

Making predictions and measuring distances



CODING EXPRESS

Teacher Guide Introduction

Who is the material for?

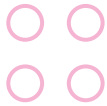
The Coding Express Teacher Guide is designed to help kindergarten teachers develop students' understanding of cause and effect relationships, and early coding concepts, such as sequencing, looping, and conditional statements. Using these lessons, you'll support the children's learning, helping them to practice early coding skills, like problem-solving, computational thinking, and using digital tools to design and express ideas. At the same time, they'll be developing early literacy and language skills.

What is it for?

Designed for kindergartners, the Coding Express Set uses a relevant theme that naturally incorporates early coding skills. Working with the set, students will intuitively use computational thinking to develop designs and express ideas as they build a train and tracks, and position action bricks to affect the train's behavior.

The Coding Express Teacher Guide provides fun and engaging opportunities for exploring early coding-related concepts. Using the Teacher Guide, you can facilitate engaging early coding lessons in which students think like digital age learners as they build train tracks of various shapes. Most importantly, the physical and digital lessons will help students to become problem-solvers by enhancing their creativity, collaboration, and communication skills.





What is it?

The Coding Express includes 234 bricks and the following support materials.

1. A “Getting Started” activity card

Use these five quick steps to introduce students to the unique elements of the set, including the train engine, train tracks, and action bricks.

2. An Introduction Guide

A complete overview of the Coding Express solution, the app, the building cards, how to start the train engine, and where to download the Teacher Guide.

3. A Coding Express poster

An overview of the action brick's behaviors and inspiration for different ways of setting up the train tracks.

4. Six Building Cards

These two-sided cards show a variety of inspiration models; the green-sided cards show simple models and the blue-sided cards show more challenging models.

Additionally, the Coding Express App is available to download free of charge from the App Store and Google Play.

How are the learning objectives achieved?

In each lesson, strategic questions guide the students through the process of applying early coding concepts and skills, while the LEGO® DUPLO building activities reinforce creativity, inquiry, and exploration.

The Coding Express Teacher Guide includes four lessons to be used with the physical set and four app-based lessons.

- The physical lessons are designed to help students understand the key concepts of early coding: sequencing, looping, and conditional statements (if...then...)
- In the app-based lessons, students apply the knowledge they've gained from the physical lessons and practice these skills in a more engaging way, specifically targeting the learning areas of music, character, journey, and math.





The table of contents gives a brief description of the topics covered in each lesson. The lessons are labeled as *beginner*, *intermediate*, or *advanced*, based on the skills and knowledge necessary to complete them. Feel free to select and adapt the lessons according to what's most relevant and appropriate for your kindergartners.

Lesson Structure

Each lesson is structured according to a natural learning flow, which promotes successful learning outcomes. The Engage, Explore, and Explain phases, which are the first three phases of each lesson, can be done in one session. The Elaborate phase is more challenging and can be completed during a later session. The Evaluate phase summarizes the specific learning skills covered in each lesson.

Engage

During the Engage phase, physical games, short stories, and discussions will spark students' curiosity and activate their existing knowledge while preparing them for a new learning experience.

Explore

In this phase, the students will participate in a hands-on building activity. As their hands create models of people, places, objects, and ideas, their minds will organize and store new information related to these structures.

Explain

During the Explain phase, students will have the opportunity to reflect on what they have done, and to talk about and share insights they have gained during the Explore phase of the lesson.

Elaborate

New challenges in this phase build upon the concepts students learned previously in the lesson. These extension activities enable students to apply their newly-acquired knowledge, reinforcing what they've learned.





Evaluate

The Coding Express lessons have been developed using the K–12 Standards from the Computer Science Teachers Association and Common Core State Standards. They also support the science, math, and technology guidelines from the National Association for the Education of Young Children (NAEYC), the 21st Century Early Learning framework (P21), and the Head Start Early Learning Outcomes Framework.

The learning grid and the 21st century learning skills framework give an overview of the learning values that are mentioned throughout this Teacher Guide. The learning goals listed at the end of each lesson can be used to determine whether each student is developing the relevant skills. These bullet points target specific skills or pieces of information that are practiced or presented during each lesson.





CODING EXPRESS

LEARNING

GRID

LESSONS

	First Trip	Train sound	O Shaped Track	Y Shaped Track	Character	Music	Journey	Math
	Beginner	Intermediate				Advanced		
CSTA 1A-AP-08 Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks	●							
CSTA 1A-AP-09 Model the way programs store and manipulate data by using numbers or other symbols to represent information					●			
CSTA 1A-AP-10 Develop programs with sequences and simple loops, to express ideas or address a problem			●	●		●	●	
CSTA 1A-AP-11 Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions		●						
CSTA 1A-AP-12 Develop plans that describe a program's sequence of events, goals, and expected outcomes								●
CCSS ELA-LITERACY.SL.K.1 Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups	●							
CCSS ELA-LITERACY.SL.K.4 Describe familiar people, places, things, and events and, with prompting and support, provide additional detail			●	●				
CCSS ELA-LITERACY.SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail.							●	
CCSS ELA-LITERACY.L.K.5.A Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent		●						
CCSS ELA-LITERACY.L.K.5.B Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms)						●		
CCSS ELA-LITERACY.SL.K.6 Speak audibly and express thoughts, feelings, and ideas clearly					●			
CCSS MATH.CONTENT.K.CC.C.7 Compare two numbers between 1 and 10 presented as written numerals								●



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	First Trip	Train Sound	O-Shaped Track	Y-Shaped Track	Character	Music	Journey	Math
	Beginner		Intermediate				Advanced	
Creativity and innovation	●	●	●	●	●	●	●	◐
Critical thinking and problem-solving	◐	◐	●	●	●	◐	●	●
Communication	●	●	●	●	●	●	●	●
Collaboration	●	●	●	●	●	●	●	◐
Flexibility and adaptability	◐	◐	●	●	●	●	●	●
Initiative and self-direction	●	●	●	●	●	●	●	●
Social and cross-cultural	◐	◐	●	●	●	●	●	◐
Productivity and accountability	◐	◐	●	●	●	●	●	●
Leadership and responsibility	◐	◐	●	●	●	●	●	●
Information and media literacy	◐	◐	◐	◐	●	●	●	●

For more information, visit the 21st century skills website.

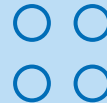
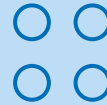


CURIOUS

CREATE

CONFIDENT

CONNECT



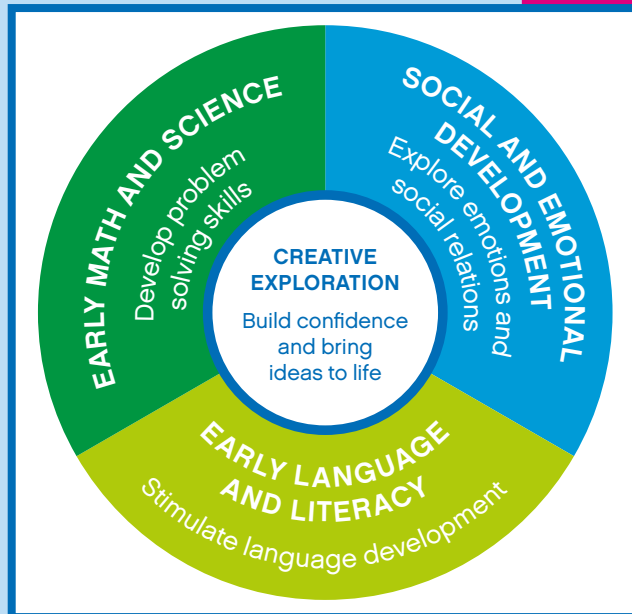
Help your kindergartners develop important skills

LEGO® Education solutions stimulate students' natural curiosity to explore together and learn through play. Our Early Learning solutions will support you in developing your kindergartners in the following ways:

- give them social skills to collaborate and communicate with the world around them
- let them discover their own capabilities and acquire fundamental life skills
- develop crucial skills for elementary school readiness focusing on four key learning areas essential for early childhood development: Creative Exploration, Social and Emotional Development, Early Math and Science, and Early Language and Literacy

Find out more...

LEGOeducation.com



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