

CODING EXPRESS

TEACHER GUIDE

45025

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CODING EXPRESS

Teacher Guide Introduction

Who is the material for?

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

Watch Video

What is it for?

Designed for early years and foundation stage children, the Coding Express Set uses a relevant theme that naturally incorporates early coding skills. Working with the set, children 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 children think like digital age learners as they build train tracks of various shapes. Most importantly, the physical and digital lessons will help children to become problem-solvers by enhancing their creativity, collaboration, and communication skills.



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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 children 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.



Download on the App Store

GET IT ON Google Play

How are the learning objectives achieved?

In each lesson, strategic questions guide the children 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 children understand the key concepts of early coding: sequencing, looping, and conditional statements (if…then…)
- In the app-based lessons, children apply the knowledge they've gained from the physical lessons and practice these skills in a more engaging way, specifically targeting many of the prime and specific learning areas of the EYFS Framework.

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Watch Video

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 is most relevant and appropriate for your children. The mini videos in each lesson give a good overview of each lesson and should help you to easily prepare and facilitate the lessons.

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 summarises the specific learning skills covered in each lesson.

Engage

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

Explore

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

Explain

During the Explain phase, children 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 children learned previously in the lesson. These extension activities enable children to apply their newly-acquired knowledge, reinforcing what they have learned.

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Evaluate

The Coding Express lessons have been developed based on the science, mathematics, and technology guidelines from the National Association for the Education of Young Children (NAEYC), Head Start, and the 21st Century Early Years Learning skills.

The lessons in this teacher guide have been localised using the Statutory Framework for the Early Years Foundation Stage and the Early Years Foundation Stage Profile 2019 Handbook.

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 child is developing the relevant skills. These bullet points target specific skills or pieces of information that are practiced or presented during each lesson.

The statements below, taken from the Statutory Framework for the Early Years Foundation Stage, highlight the importance of planning and implementing the kind of play-based, exploratory learning found in this guide:

* *Each area of learning and development must be implemented through planned, purposeful play and through a mix of adult-led and child-initiated activity. Play is essential for children's development, building their confidence as they learn to explore, to think about problems, and relate to others. Children learn by leading their own play, and by taking part in play which is guided by adults.*

In planning and guiding children's activities, practitioners must reflect on the different ways that children learn and reflect these in their practice. Three characteristics of effective teaching and learning are:

- *playing and exploring - children investigate and experience things, and 'have a go'*
- *active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements*
- *creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things*

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CODING EXPRESS LEARNING GRID

(Statements taken from the Statutory Framework for the Early Years Foundation Stage)

			LESSONS							
			First Trip	Train sound	O Shaped Track	Y Shaped Track	Character	Music	Journey	Mathematics
			Beginner		Intermediate				Advanced	
The Prime Areas										
COMMUNICATION & LANGUAGE	Listening & Attention	Children listen attentively in a range of situations	●	●	●	●	●	●	●	●
	Understanding	Children follow instructions involving several ideas or actions	●	●	●	●	●	●	●	●
		They answer 'how' and 'why' questions about their experiences and in response to stories or events	●	●	●	●	●	●	●	●
	Speaking	Children express themselves effectively, showing awareness of listeners' needs				●	●	●		
		They develop their own narratives and explanations by connecting ideas or events	●	●	●					
PHYSICAL DEVELOPMENT	Moving & Handling	Children show good control and co-ordination in large and small movements	●	●	●	●				
		They move confidently in a range of ways, safely negotiating space	●	●	●	●				
		They handle equipment and tools effectively	●	●	●	●	●	●	●	●
PERSONAL, SOCIAL & EMOTIONAL DEVELOPMENT	Self-confidence & self-awareness	They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities	●	●	●	●	●	●	●	●
	Managing Feelings & Behaviour	Children talk about how they and others show feelings					●			
	Shape, space & measures	Children play co-operatively, taking turns with others					●	●	●	
		They show sensitivity to others' needs and feelings					●			

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CODING EXPRESS LEARNING GRID

(Statements taken from the Statutory Framework for the Early Years Foundation Stage)

			LESSONS							
			First Trip	Train sound	O Shaped Track	Y Shaped Track	Character	Music	Journey	Mathematics
			Beginner		Intermediate				Advanced	
The Specific Areas										
MATHEMATICS	Numbers	Children count reliably with numbers from 1 to 20								●
	Shape, space & measures	Children use everyday language to talk about position, distance								●
		They recognise, create and describe patterns			●					
UNDERSTANDING THE WORLD	People & Communities	Children talk about past and present events in their own lives and in the lives of family members	●	●						
	The world	Children know about similarities and differences in relation to living things						●		
		They make observations of animals						●		
	Technology	Children recognise that a range of technology is used in places such as homes and schools		●					●	
		They select and use technology for particular purposes	●	●	●	●	●	●	●	●
EXPRESSIVE ARTS & DESIGN	Exploring & using media & materials	Children sing songs, make music .... and experiment with ways of changing them						●		
	Being imaginative	They represent their own ideas, thoughts and feelings through design and technology, role-play and stories	●	●	●	●	●	●	●	●

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21 ST CENTURY SKILLS EARLY LEARNING

● – fully covered
◐ – partially covered

	LESSONS							
	First Trip	Train Sound	O-Shaped Track	Y-Shaped Track	Character	Music	Journey	Mathematics
	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.

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Beginner – First Trip

For up to six children

Materials Needed: Coding Express Set (45025)

Vocabulary: Action brick, stop (as a noun), destination, most, train station, journey

Engage

Ask the children if they have ever travelled on a train, underground train or tram.
Where did they go?
Tell them they're going to play the choo choo train game!

- Have the children line up and put their hands on the shoulders of the person in front of them.
- Explain that when you say, "go" they will move around the classroom like a choo choo train, and when you say, "red light" they will slow the train down and stop.
- Play a few rounds of the choo choo train game.

Explore

- Have each group pick a building card and build one of the models shown in the sidebar.
- When the children have finished building, ask them to work together to build a double-ended track.
- Make sure the track is long enough to fit the train station and the destination (using eight track pieces is recommended).
- Start at the train station and use a LEGO® DUPLO® figure as a passenger.
- Tell the children that the passenger would like to go fishing at the harbour.
- Can you help them get to the harbour?

Tip: The children can take any buildng card and build any of the models to sit alongside their track.

The children don't have to build what's on the building cards. They can build any feature they would like.

LEARNING OBJECTIVES

Children will:

- Understand the function of action bricks
- Understand how to use the different types of bricks
- Use action bricks to complete tasks

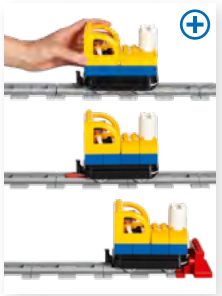
Watch Video



Continued >

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The children are likely to stop the train one of three ways:
• By hand, which they've learned in the getting started activities
• Using the red action brick
• Using the red end points

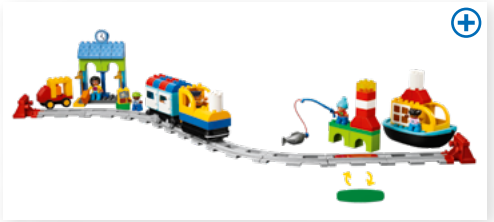


Explain

Show the three different ways of stopping the train.
Talk to the children about the red action bricks.
Ask questions like:
• How many red action bricks did you use?
• Where did you place the red action brick(s) and why?
• Where did the train stop?

Elaborate

Encourage the children to build a longer track and to create more stops.
Pique their interest in using the green action bricks on the track.
Ask questions like:
• What did you see when the train went over green action bricks?
• How can we help the train get back to the station?



Continued >

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Evaluate

Evaluate the children's skills development.

Can the following areas of learning be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- They develop their own narratives and explanations by connecting ideas or events.
- Children show good control and co-ordination in large and small movements.
- They move confidently in a range of ways, safely negotiating space.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children talk about past and present events in their own lives and in the lives of family members.
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

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Beginner – Train Sound

For up to six children

Materials Needed: Coding Express set (45025)

Vocabulary: Approach, refill, petrol / service station, react, describe

Coding Concept: Sequencing – the order in which commands are executed by a computer

Engage

Ask the children if they have ever been to a train station.
Talk with the children about what they might have seen.
Ask questions like:

- How did you know when a train was approaching? (different trains will signal this in different ways. For example, a steam train will make a whistle sound, more modern trains may signal their arrival via a station announcement etc.)
- What made the trains move? (Trains use different sources of energy to move, such as wood, electricity, diesel / petrol, etc.)

Tell the children that they're going to play another choo choo train game!
Have the children line up and put their hands on the shoulders of the person in front of them, just like they did last time.
Explain that when you say, "yellow light" they'll make a "choo choo" sound and walk around the classroom.
When you say, "blue light" it means the train needs fuel; they should stop and make a "bloop bloop" sound to refill the train with fuel.

Tip: If the children are ready for a challenge, make the game more difficult by adding the red and green actions from the choo choo train game you played in the previous beginner lesson.

Explore

Have each group pick a building card and build one of the models shown in the sidebar (e.g., a picnic area, petrol station, and train).
When the children have finished building, ask them to work together to build a double-ended track (using eight track pieces is recommended).

Continued >

LEARNING OBJECTIVES

Children will:

- Understand the function of action bricks
- Use action bricks to complete tasks
- Define the train's journey (sequencing)

Watch Video



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Let's start the train!
Use some LEGO® DUPLO® figures as passengers.
Tell the children that the passengers would like to go from the picnic area to the petrol station.
Can you help them get to the gas station?

Explain

Talk to the children about the action bricks.
Ask questions like:

- Where did you place the blue action brick(s) and why?
- Where did you place the yellow action brick(s) and why? (Try to tie this back to the Engage discussion; a steam whistle sound is a warning.)
- Can you describe the train's journey? (i.e., the train started from…. and passed… and stopped at…)

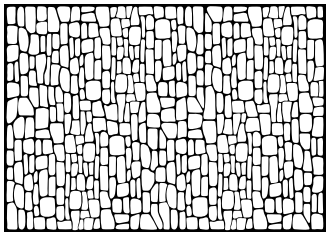
Elaborate

Encourage the children to build a longer track and to create more stops.
Pique their interest in using all of the action bricks in appropriate places.
Ask questions like:

- What happened when the train went over the white brick?
- Think about how you placed the action bricks and models along the track. Can you describe the train's journey?

The white action brick turns the train's light on and off. Print out the tunnel image and position it over the track (see sidebar for an example). Place the white action bricks on both sides of the tunnel and ask the children to observe what happens when the train goes through the tunnel.





Continued >

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Evaluate

Evaluate the children's skills development.

Can the following areas of learning be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- They develop their own narratives and explanations by connecting ideas or events.
- Children show good control and co-ordination in large and small movements.
- They move confidently in a range of ways, safely negotiating space.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children talk about past and present events in their own lives and in the lives of family members.
- Children recognise that a range of technology is used in places such as homes and schools.
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

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Intermediate – O-Shaped Track – Looping

For up to six children

Materials Needed: Coding Express set (45025)

Vocabulary: During, daily, weekly, often, usually

Coding Concept: Looping – repeating a portion of code a set number of times until a process is complete

Engage

Ask the children if there's anything they do many times a day or week (e.g., brushing their teeth, showering, cleaning their room).
Tell the children that they are going to play another game!
Model a sequence of hopping, jumping, running, walking backwards, dancing, spinning, or other actions in a circle.
Ask the children to copy what you have just done and to repeat (i.e., loop) the sequence at least twice.

Tip: For younger children and beginners, limit your loop to just one or two actions.

Explore

Ask the children to combine curved and straight track pieces to make an O-shaped train track (six curved and four straight pieces is recommended).
Using the building cards, have the children build two or three places they would like to visit on the train (see sidebar for an example).
Let's go on a day trip!
Use some LEGO® DUPLO® figures as passengers.
Tell the children that the passengers would like to have a picnic in the forest and then visit the beautiful castle.
Can you help the passengers take the train to the forest and then to the castle?

Tip: Remind the children to use action bricks to make sure that the train will be able to stop at each location. Encourage them to use the blue action bricks for any stops with drinks, water, or fuel.

Continued >

LEARNING OBJECTIVES

Children will:

- Understand use of the O-shaped track for repeating sequences
- Be able to compare different train track shapes and their uses

Watch Video



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Explain

Tell the children that the passengers enjoyed their trip so much that they would like to do it again!
Talk with the children about how they could help make this happen.
Ask questions like:

- Will you be able to help the passengers take the same trip again? How? (The O-shaped track creates loops.)
- Which action bricks will you use and why?

Elaborate

Encourage the children to build a double-ended track next to the O-shaped track.
Talk about the difference between the two types of tracks.
Ask questions like:

- What are the differences between these two types of tracks?
- Will you be able to repeat the same journey on the double-ended track? Why or why not?

Evaluate

Evaluate the children's skills development.
Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- They develop their own narratives and explanations by connecting ideas or events.
- Children show good control and co-ordination in large and small movements.
- They move confidently in a range of ways, safely negotiating space.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- They recognise, create and describe patterns.
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

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Intermediate – Y-Shaped Track – Conditional Statements

For up to six children

Materials Needed: Coding Express set (45025)

Vocabulary: If-then statement, conductor, signal, indicate, switch

Coding Concept: Conditional Statement – if-then statements that modify how code is executed

Engage

Tell the children that they are going to play the "coloured tickets game". Choose at least three spots around the classroom to be "train stops."
Let the children help to name them after their favorite places (e.g., playground, amusement park).
Place different colour bricks at each stop and use the same colour bricks as "tickets."
You can act as the conductor, giving the children tickets according to where they would like to go.
As you hand out the tickets, introduce the use of if-then statements (e.g., if you have a red ticket, then you go to…).
Ask the children to walk to their destinations and check whether the brick's colour is same as their "ticket" colour.

Explore

Now the children are going to build their own coloured tickets game!
Show them the Y-shaped track and the part of the track with a switch.
Ask them to build a similar Y-shaped track and at least two stops along the track (see sidebar for an example).
Explain that they should use different colour bricks to indicate the stops they have built; just like in the game they have just played.
Choose one child to be the conductor who passes out bricks to be used as "train tickets."

Continued >

LEARNING OBJECTIVES

Children will:

- Understand that the Y-shaped track provides options
- Design and optimise solutions
- Be able to compare different train track shapes and their uses (i.e., sequencing, looping and conditional statements)

Watch Video



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Have each child put a LEGO® DUPLO® figure on the train, sending it to the destination matching their "ticket."
Don't forget to ask each child where their figure is going.

Tip: Remind the children that they have to guide the train by moving the red switch on the track. Also remind them to use action bricks to make the train stop. Use the term "if-then" after each child is given their ticket.

Explain



Tell the children that trains give signals to indicate where they want to go.
Explain that this is not very much different from how they have just used coloured tickets to tell where they wanted to go.
Talk to the children about how trains give signals.
Ask questions like:
- What signals can trains give? (Make a "choo choo" sound.)
- Can trains give signals without making sounds? (e.g., by flashing their lights, giving a colour signal, or by how they are decorated)
- Which type of signal do you think is best? Why?

Elaborate

Encourage the children to use both track switches to build a three-ended or Q-shaped track.
Talk about the logistics of running a train on this type of track.
Ask questions like:
- How will you give signals now that you have more destinations?
- How will you help the train to go back and visit other stops? (By using the green action brick.)

Continued >

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Evaluate

Evaluate the children's skills development.

Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- Children express themselves effectively, showing awareness of listeners' needs.
- Children show good control and co-ordination in large and small movements.
- They move confidently in a range of ways, safely negotiating space.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

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Intermediate – Character – Caterpillar

For up to four children

Materials Needed: Coding Express set (45025), Coding Express App

Vocabulary: Sad, angry, sneeze, dress, healthy, peek-a-boo

Engage

Read the children this story about a little caterpillar:

There was a caterpillar who loved all kinds of colours and she always dressed in lots of colours. She went to nursery / reception, just like all of you! Her favorite thing to do at nursery / reception was to play hide-and-seek, and she loved to eat snacks with her friends. But sometimes, she got upset because she was very tired after playing for a long time. The best way to make her happy again was to let her nap for a little while. In the winter, sometimes the caterpillar got sick. Her teacher always took good care of her, wiping her nose and giving her water to drink.

Tip: Feel free to adapt this story to make it more relatable for your class.

LEARNING OBJECTIVES

Children will:

- Understand that the behaviour of the action bricks is different when using the app
- Recognise and understand different emotions
- Be able to use the app to create stories

Watch Video



Continued >

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Explore

Say to the children:
I'd like to know more about this little caterpillar, wouldn't you? Let's build her!
Build a caterpillar and a train track.
Now experiment with the app.
Put the caterpillar on the track and allow the children to explore the different functions of each button.
Place one action brick of each colour on the track.
Have the children take turns using the app to control the caterpillar.
What happens to the catterpillar on the screen after the LEGO DUPLO caterpillar passes each action brick?



Explain

Talk to the children about the emotions they have seen the caterpillar show in the app.
Ask questions like:

- What emotions did you see on the caterpillar's face?
- Why was she sad, angry, happy, or playful?
- Can you create something using LEGO® bricks or other things to make the caterpillar feel happy or cheerful?

Elaborate

Encourage the children to create models to match each of the caterpillar's emotions.
Combine all of the models to make a story!
Talk to the children about being a good friend.
Ask questions like:

- When our friends are sad, how can we help them to be happy again?
- How can we take care of our friends when they are sick?
- How can you be a good playmate and friend?

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Evaluate

Evaluate the children's skills development.

Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- Children express themselves effectively, showing awareness of listeners' needs.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children talk about how they and others show feelings.
- Children play co-operatively, taking turns with others.
- They show sensitivity to others' needs and feelings
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

More Ideas

Use this lesson's format to create lessons for the **Troll** and the **Robot** in the app. Create your own stories for the characters in the Engage phase and explore more interesting emotions with your children.





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Intermediate – Music – Animal Concert

For up to four children

Materials needed: Coding Express (45025), Coding Express App

Vocabulary: Animal sounds, compose, concert, melody, safari

Engage

Ask the children if they know what sounds different animals make.
Have them try to imitate some of these sounds.
Pick a song about animals that is well-known to your class and sing and/or dance to it.
Tell the children that the safari bus is full of children from nursery / reception today.
They are going to a concert performed by forest animals!
Would you like to join them and meet all of the animal singers?

Explore

Build the safari bus and a train track (an O-shaped track is recommended).
Now experiment with the app.
Put the safari bus on the track and allow the children to explore the different functions of each button in the app.
Place one action brick of each colour on the track.
Have the children take turns using the app to "drive" the bus.
What happens after the bus passes each action brick?

Explain

Talk to the children about the sounds they have just heard.
Ask questions like:
• What did you hear when the bus went over the action bricks?
• Did you know those animal sounds?
• What animals did you hear? (Ask the children to build the animals they've named.)
Ask the children to place each animal next to its action brick.
Use the app to see if the sound matches the animals they have built.

LEARNING OBJECTIVES

Children will:

- Understand that the behaviour of the action bricks is different when using the app
- Be able to recognise different animal sounds
- Be able to compose a simple melody using digital tools

Watch Video



Continued >

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Elaborate

Tell the children that they are going to make their own animal concert!
Have the children place the action bricks in any order on the track to compose their own music!
Talk to the children about their composition.
Ask them what they would like to express with their music (e.g., happiness, excitement, nice weather).
Encourage the children to sing and dance to their music.
Stuffed animals or similar toys can be used as props for their performance.

Evaluate

Evaluate the children's skills development.
Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- Children express themselves effectively, showing awareness of listeners' needs.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children play co-operatively, taking turns with others.
- Children know about similarities and differences in relation to living things.
- They make observations of animals
- They select and use technology for particular purposes.
- Children sing songs, make music …. and experiment with ways of changing them.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.





Continued >

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More Ideas

Use this lesson's format to create lessons for the **Music Band** in the app. Involve different instruments in the Engage phase discussion and explore more interesting sounds with your children.

For a more challenging music lesson, try **Are you sleeping Brother John?** to the tune of Frère Jacques

1. Investigate the melody of each action brick.
2. Sequence the action bricks to match the song.
3. Compose a new song by remixing the action bricks.

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Advanced – Journey – Trouble on the Road

For up to four children

Materials Needed: Coding Express set (45025), Coding Express App

Vocabulary: Remind, police officer, traffic sign, potential, avoid

Engage

Talk to the children about traffic rules.
Ask questions like:
• Do you know any traffic rules? What are they?
• Why do we need to follow traffic rules?
Tell the children that everybody needs to follow the traffic rules.
Explain that traffic signs are one way of reminding people of the rules.
Show the four traffic signs from the set and ask the children if they can guess what they mean.
Tell them they are going to play a game!
Place the traffic signs around the classroom and ask the children to pretend they are each driving their own high-speed train.
Explain that they should slow down or stop when approaching marked areas.
Act as a police officer controlling the flow of traffic, or ask one of the children to do it.

Explore

Have each group of children pick a building card and build the model shown.
Have the children work together to build a Y-shaped track and place their models alongside it.
Place the action bricks in random places along the track.
Now experiment with the app.
Put the train on the track and allow the children to explore the different functions of each button.
Let's start the train!
Have the children take turns using the app to "drive" the train.
What happens after the train passes each action brick?

Continued >

LEARNING OBJECTIVES

Children will:
- Understand that the behaviour of the action bricks is different when using the app
- Understand various traffic signs
- Be able to solve common problems on the road

Watch Video





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Explain

Talk to the children about the problems they've seen in the app.
Ask questions like:

- What did you see after the train passed each stop?
- How will you solve the problem?
- Which traffic sign do you need in order to solve each problem?

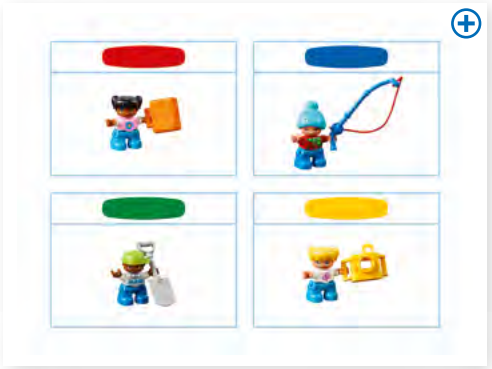
Elaborate

Encourage the children to play and to use all of the traffic signs.
Ask if they can think of any other important things to keep in mind in order to stay safe in traffic.
Encourage the children to create their own traffic signs or models to help keep them safe in traffic.
Have them place their creations along the track and explain why they placed them where they did.

Evaluate

Evaluate the children's skills development.
Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children play co-operatively, taking turns with others.
- Children recognise that a range of technology is used in places such as homes and schools.
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.





Continued >

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More Ideas

Use this lesson's format to create lessons for the **Passengers** and the **Four Seasons** in the app. In the Engage phase, talk about the passengers' accessories and how the seasons should look; explore more interesting destinations with your children.

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Advanced – Mathematics – Distance

For up to four children

Materials needed: Coding Express set (45025), Coding Express App

Vocabulary: Measure, distance, step, compare, vehicles, reverse

Engage

Talk to the children about distance.
Ask questions like:
• How did you get to school today?
• Why do you think some people walk or cycle while others take the bus?
Would you like to play a game?
Choose two or three spots around the classroom to be "train stops."
Name the stops.
Ask the children to walk from one stop to the next and count how many steps they have walked.
Compare the number of steps between each of the stops.
Talk about which distance is longer and why.

Explore

Have the children pick building cards and work together to build the models shown (three models are suggested).
Ask them to build a double-ended track and place their models alongside it.
Now experiment with the app.
Let's start the train!
Ask the children how many numbers they have seen in the app. Can they count from the smallest number to the biggest?
Press each number and see how far the train moves.
Have the children pick the number(s) that will help the train reach each stop

Tip: Make sure the engine is connected to the app before experimenting with the different numbers.

LEARNING OBJECTIVES

Children will:
- Understand how to measure distance
- Be able to compare distances
- Be able to do simple mathematics

Watch Video



Continued >

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Explain

Talk to the children about distance.
Ask questions like:

- Why do people use different vehicles like bikes, cars, and airplanes?
- When do people take airplanes or buses?
- When do they walk or cycle?

Elaborate

Encourage the children to build more stops and decide the distance between them.
Ask questions like:

- Which distance is the shortest/longest between the stops and how long is it?
- Can you describe the path of the train's journey? (e.g., it started from…, stopped or passed…, and ended at…)

Evaluate

Evaluate the children's skills development.
Can the following areas of learning can be observed?:

- Children listen attentively in a range of situations.
- Children follow instructions involving several ideas or actions.
- They answer 'how' and 'why' questions about their experiences and in response to stories or events.
- They handle equipment and tools effectively.
- They are confident to speak in a familiar group, will talk about their ideas, and will choose the resources they need for their chosen activities.
- Children count reliably with numbers from 1 to 20.
- Children use everyday language to talk about position, distance
- They select and use technology for particular purposes.
- They represent their own ideas, thoughts and feelings through design and technology, role-play and stories.

More Ideas

Use this lesson's format to work with **Longer Distances** and explore more numbers with your children!



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GETTING STARTED

CODING EXPRESS

45025 | AGES 2-5 | FOR 3-6 CHILDREN

This Getting Started activity card will help you introduce the Coding Express set to your early years and foundation stage (EYFS) children. The activities are designed to familiarise children with the unique elements of the set, which include a train engine and action bricks. After completing some or all of these activities, you can download the Teacher Guide for more in-depth activities related to early coding skills.



LEARNING OBJECTIVES

Early Technology & Science

- Exploring and using simple technology
- Understanding cause and effect
- Making predictions and observations
- Developing computational thinking
- Developing spatial thinking

Download the teacher guide:
LEGOeducation.com/preschoolsupport



Five steps to a great start:

1 Demonstrate how to lay the track pieces. Let the children discover the different shapes the tracks can make. Encourage them to experiment with the track switches and red rail stoppers. Have them build a track with three or four different end points.

2 Choo-choo! Introduce the train engine. Demonstrate how to start and stop the engine, then have each child take a turn starting and stopping it. Show them how to move the engine from one end of the track to the other so that everyone can have a turn.

3 Show the children how to position the action bricks along the train track. Ask them to lay one of the action bricks on the track and then start the engine. Have them describe what they observe when the engine goes over the action bricks. Repeat this for all of the action bricks and then let the children experiment with the bricks in free play.

4 Show the children the building cards one at a time and ask them to describe what they see. Ask whether they have been to any of the places shown on the cards and to recount their experiences. Have the children work together to build at least three of the places shown on the building cards.

5 Now put all of the pieces together! Ask the children to place their models along the track. Encourage them to use the engine and the action bricks to transport figures to and from the different destinations along the track.



TEACHER TIPS

- The building cards provide inspiration to help the children build their models.
  Green cards – less challenging models.
  Blue cards – more challenging models.
- They can also design and build their own unique models.

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DIGI-ZUG	KURZANLEITUNG
L'EXPRESS DU CODAGE	GUIDE D'INTRODUCTION
EXPRESSO DA PROGRAMAÇÃO	GUIDA INTRODUTTIVA
PROGRAM EXPRESSZ	GUÍA DE INTRODUCCIÓN
ĀTRĀ PROGRAMMĒŠANA	GUIA INTRODUTÓRIO
编程启蒙小火车	BEVEZETŐ ÚTMUTATÓ
デュプロ® プログラミングトレインセット	IEPAZĪŠANĀS CEĻVEDIS
ЭКСПРЕСС «ЮНЫЙ ПРОГРАММИСТ»	入门指南
	導入ガイド
	ВВОДНОЕ РУКОВОДСТВО

45025



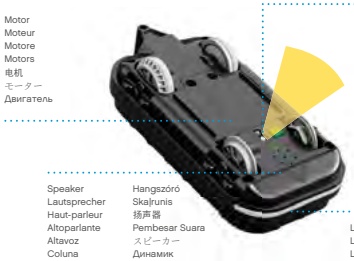
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On/off
Ein/Aus
Marche/arrêt
Encendido/apagado
Ligado/Desligado
Be/ki

Ieslēgt/izslēgt
开/关
Hidup/mati
Buka/Tutup
オン/オフ
Вкл./выкл.



Motor
Moteur
Motore
Motors
电机
モーター
Двигатель

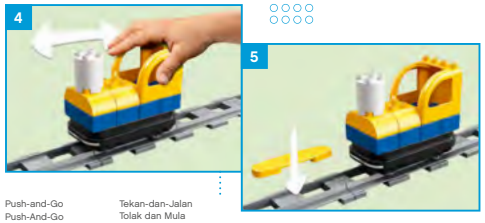
Speaker
Lautsprecher
Haut-parleur
Altoparlante
Altavoz
Coluna

Hangszóró
Skaļrunis
扬声器
Pembesar Suara
スピーカー
Динамик

Colour Sensor
Color Sensor
Farbsensor
Capteur de couleur
Capteur de couleurs
Sensore di colore
Sensor de color
Sensor de Cor
Színérzékelő
Krāsu sensors
色彩传感器
Sensor Warna
カラーセンサー
Датчик цвета

Light
Licht
Lumière
Luce
Luz
Fény

Gaisma
指示灯
Lampu
ライト
Свет



Push-and-Go
Push-And-Go
Push-and-Go
Iedarbināšana pastumjot
推动一 一让火车自动前行

Tekan-dan-Jalan
Tolak dan Mula
押すと動き出す
Инерционный двигатель

Action Bricks
Funktionsbausteine
Briques d'action
Mattoncini multifunzione
Ladrillos de acción
Peças de Ação
Interaktiv elemek

Aktivitātes kluciši
感应积木
Bata Aksi
Bata Tindakan
アクションブロック
Активные кубики



Stop
Anhalten
Arrêt
Parada
Parar
Apstāšanās
停止
Berhenti
停止する
Остановка

Change direction
Ändern der Fahrtrichtung
Changement de direction
Cambia direzione
Cambio de sentido
Mudar a direção
Irányváltás
Kustības virziena maiņa
改变火车运行方向
Ubah arah
造行方向を変える
Изменение направления движения

Refuel
Auftanken
Plein
Carburant
Rifornimento
Repostaje
Reabastecer
Uzemanyag feltöltés
Degvielas uzpilde
加油
Isi ulang
Isi Semula
燃料を入れる
Заправка

Light on/off
Licht ein/aus
Lumière allumée/éteinte
Luce accesa/spenta
Luz
Luz ligar/desligar
Fény kibe
Gaismu ieslēgšana/izslēgšana
灯光开/关
Lampu hidup/mati
ライトオン/オフ
Включение/выключение света

Sound
Geräusche
Son
Suono
Sonido
Som
Hang
Skaņa
声音
Suara
Bunyi
音
Звук

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Less challenging
Einfach
Moins difficile
Meno impegnativo
Más sencillo
Menor desafío
Kevésbé nehéz
Zema sarežģītības pakāpe
较低难度
難易度低め
Менее сложные

More challenging
Anspruchsvoll
Plus difficile
Più impegnativo
Más complicado
Maior desafío
Nagyobb kihívást jelent
Augsta sarežģītības pakāpe
较高难度
難易度高め
Более сложные













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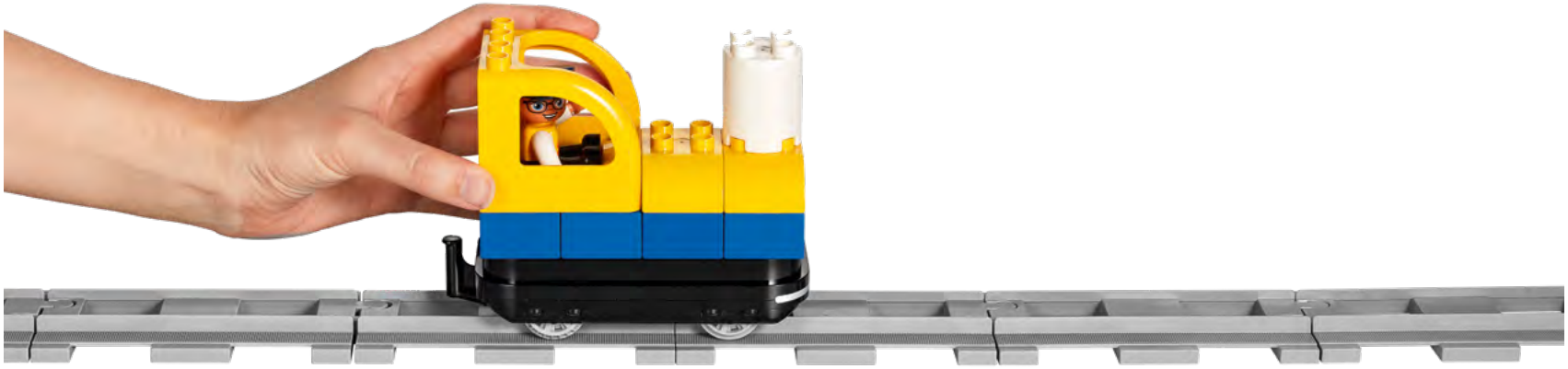
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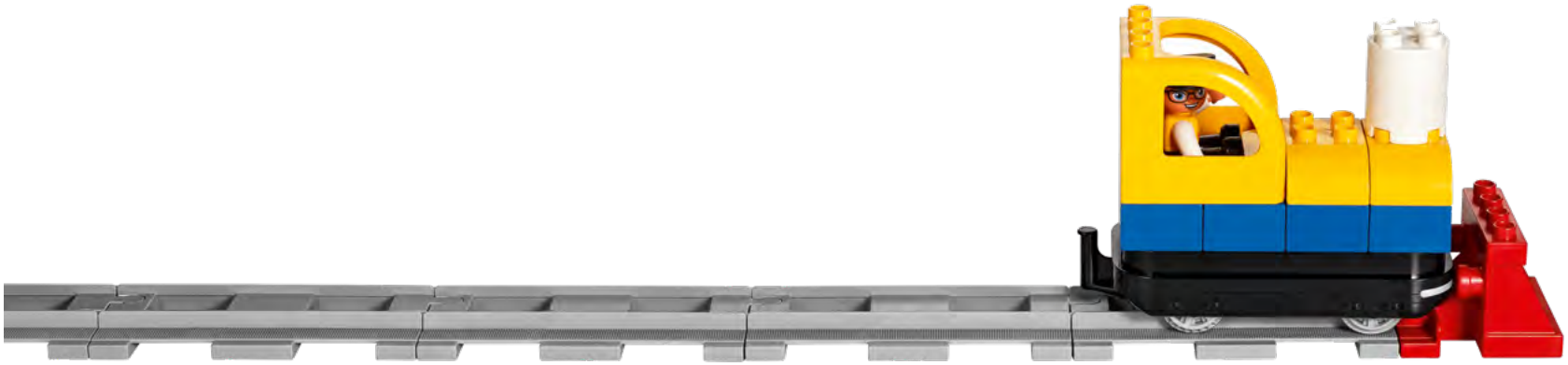


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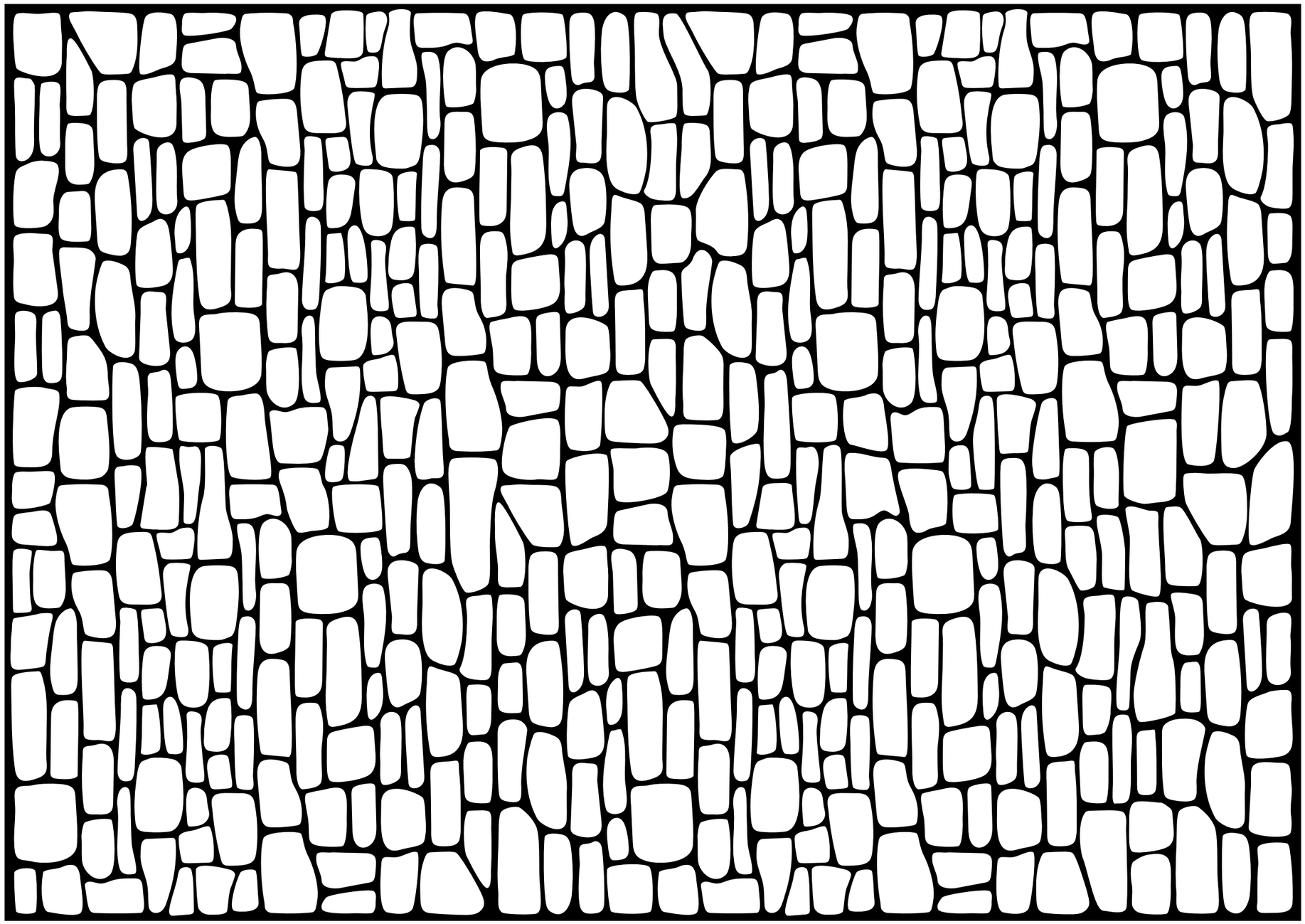
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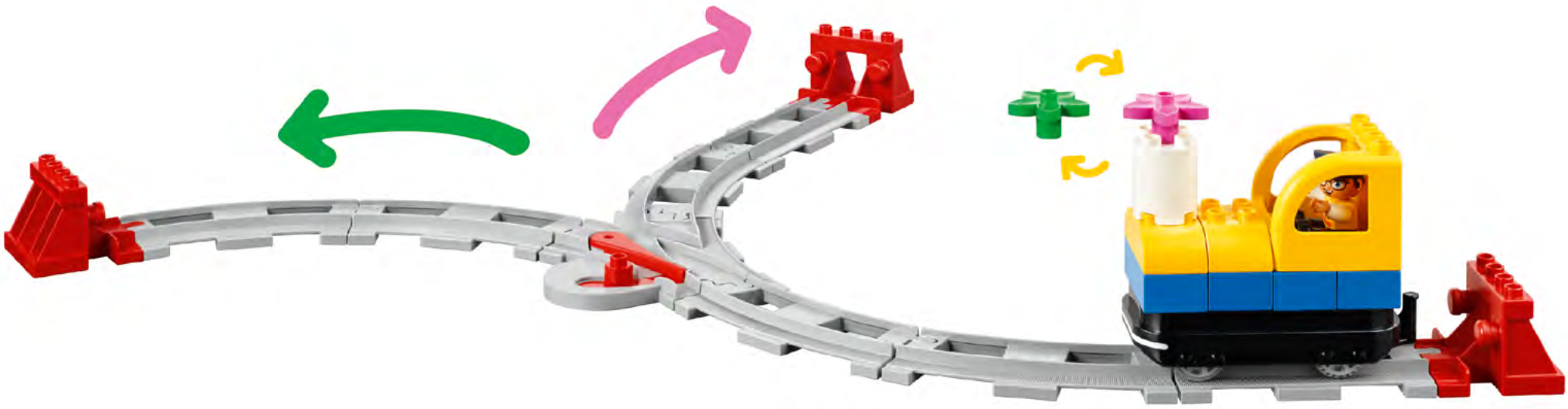
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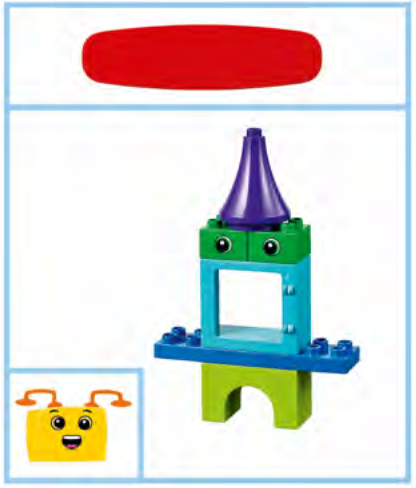
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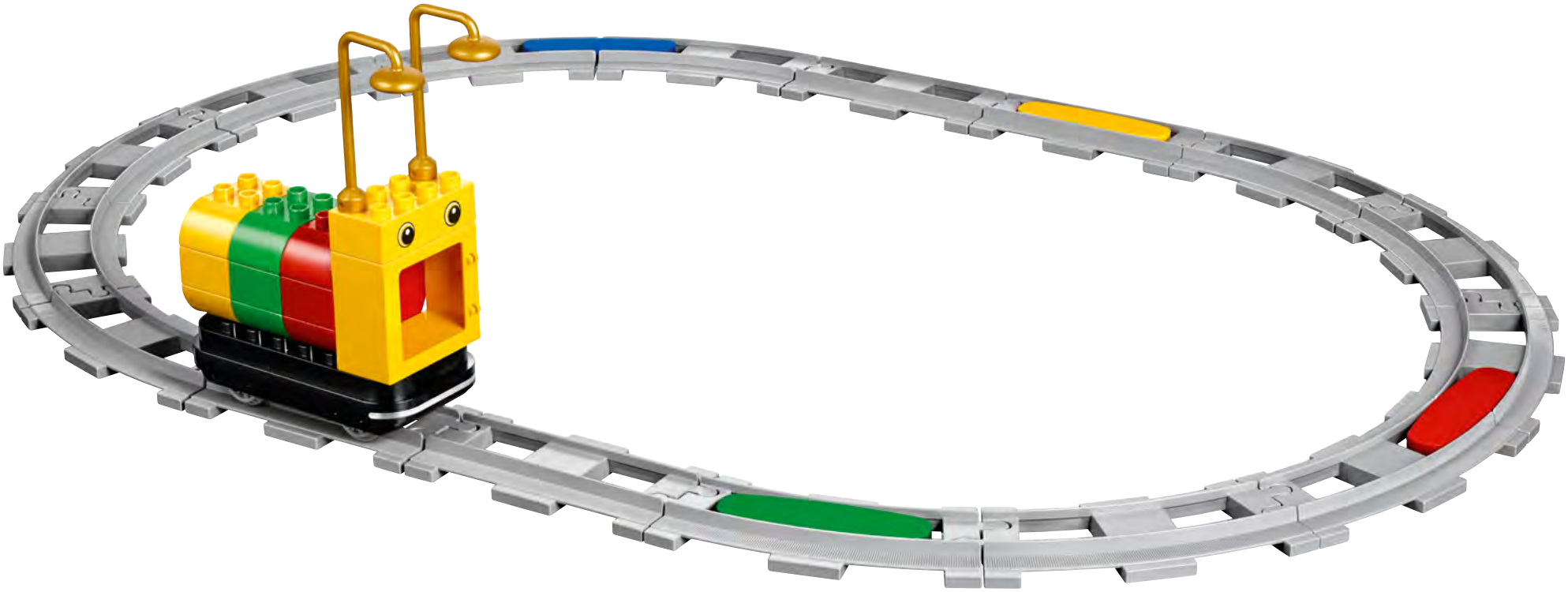






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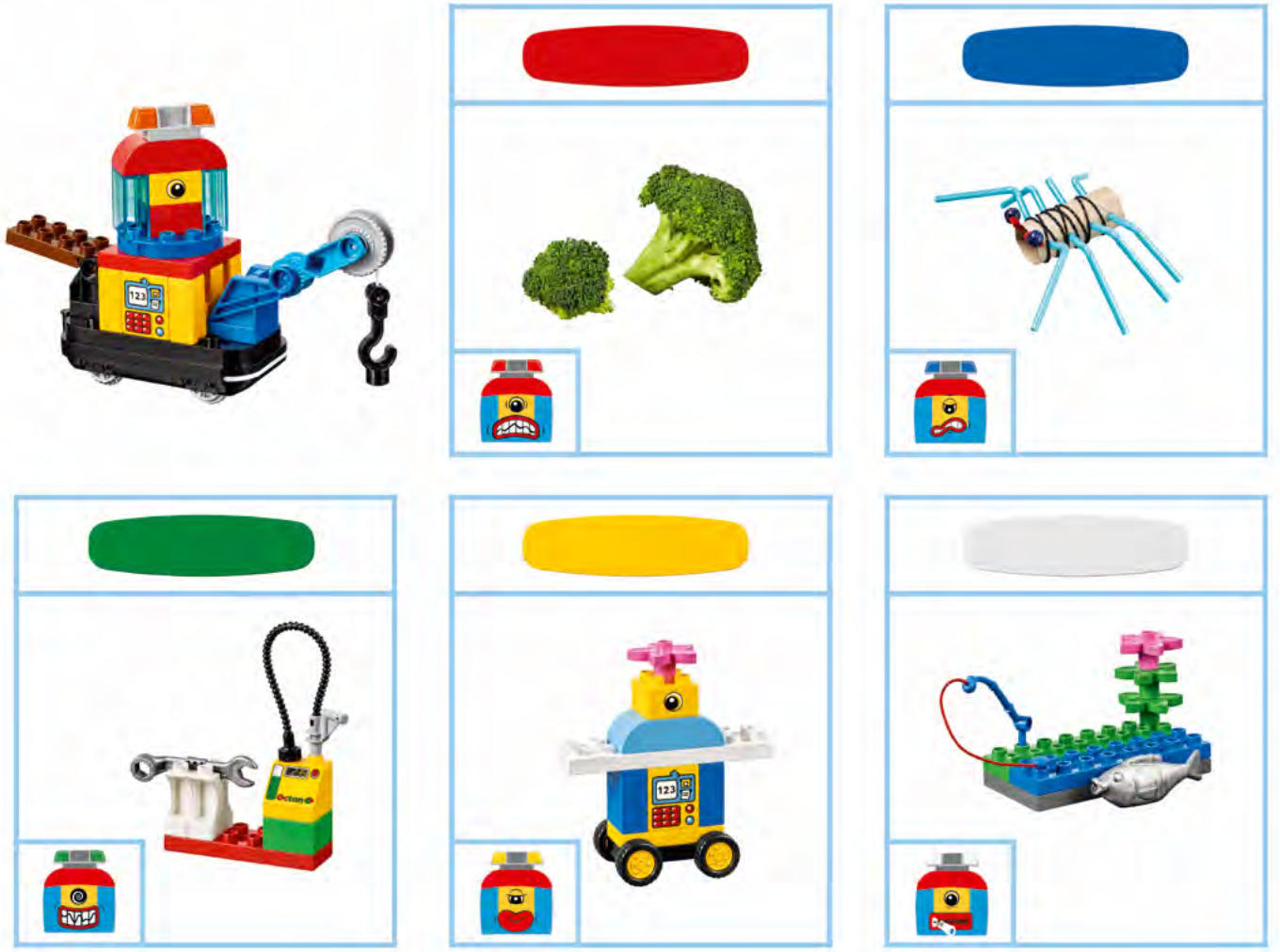
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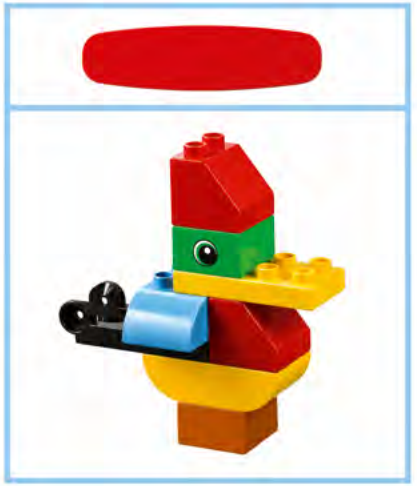
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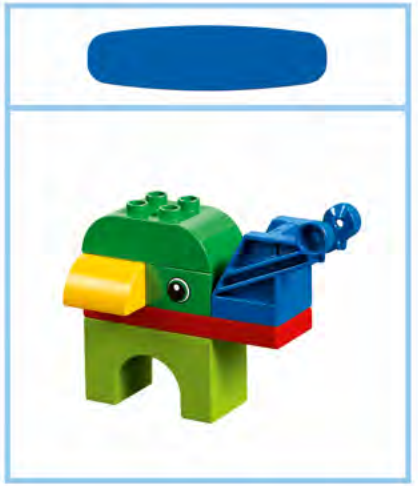


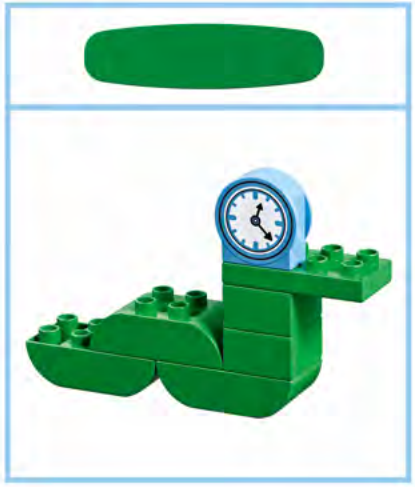
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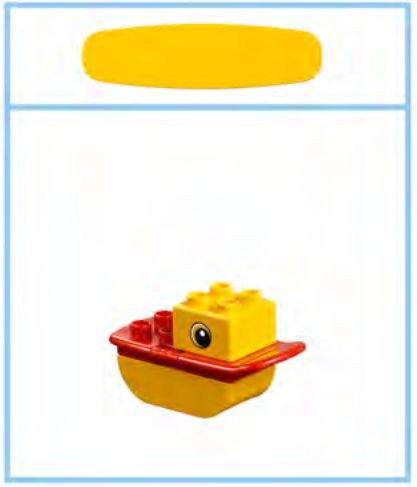
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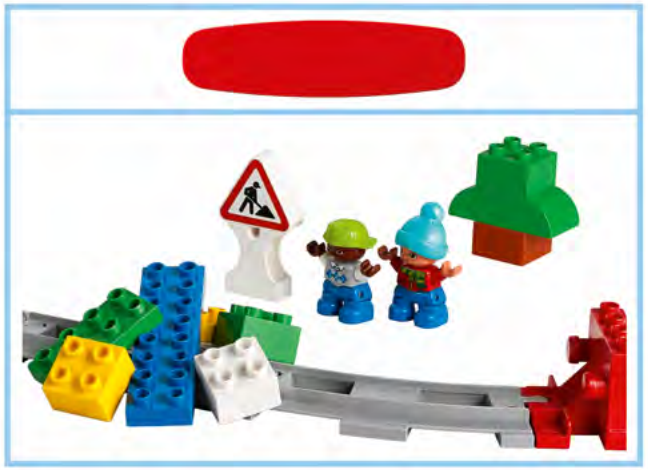
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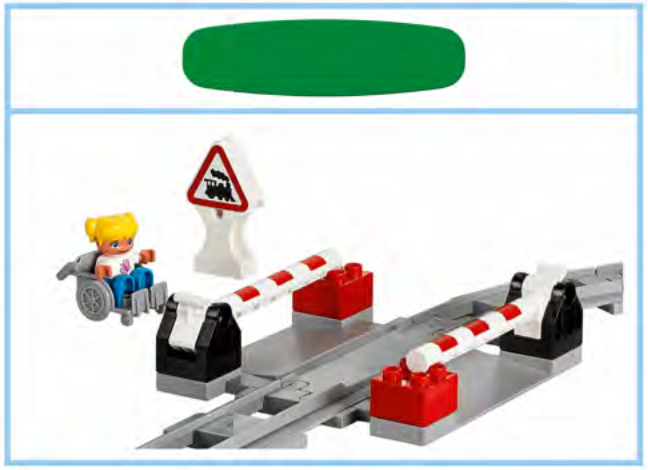


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CURIOUS

CREATE

CONFIDENT

CONNECT



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Help your EYFS children develop important skills

LEGO® Education Preschool solutions stimulate children's natural curiosity to explore together and learn through play. Our early years solutions will support you in developing your children in the following ways:

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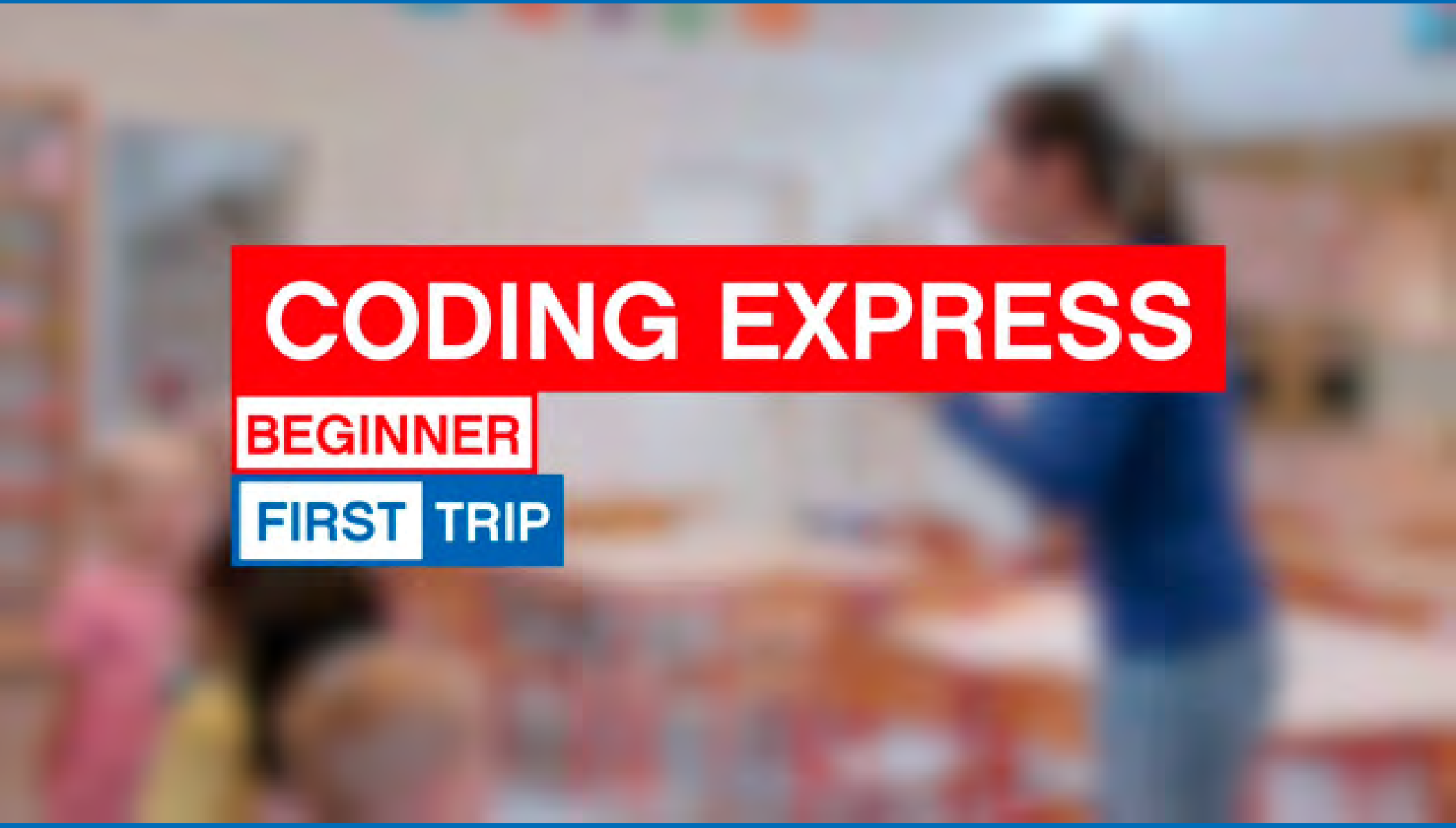
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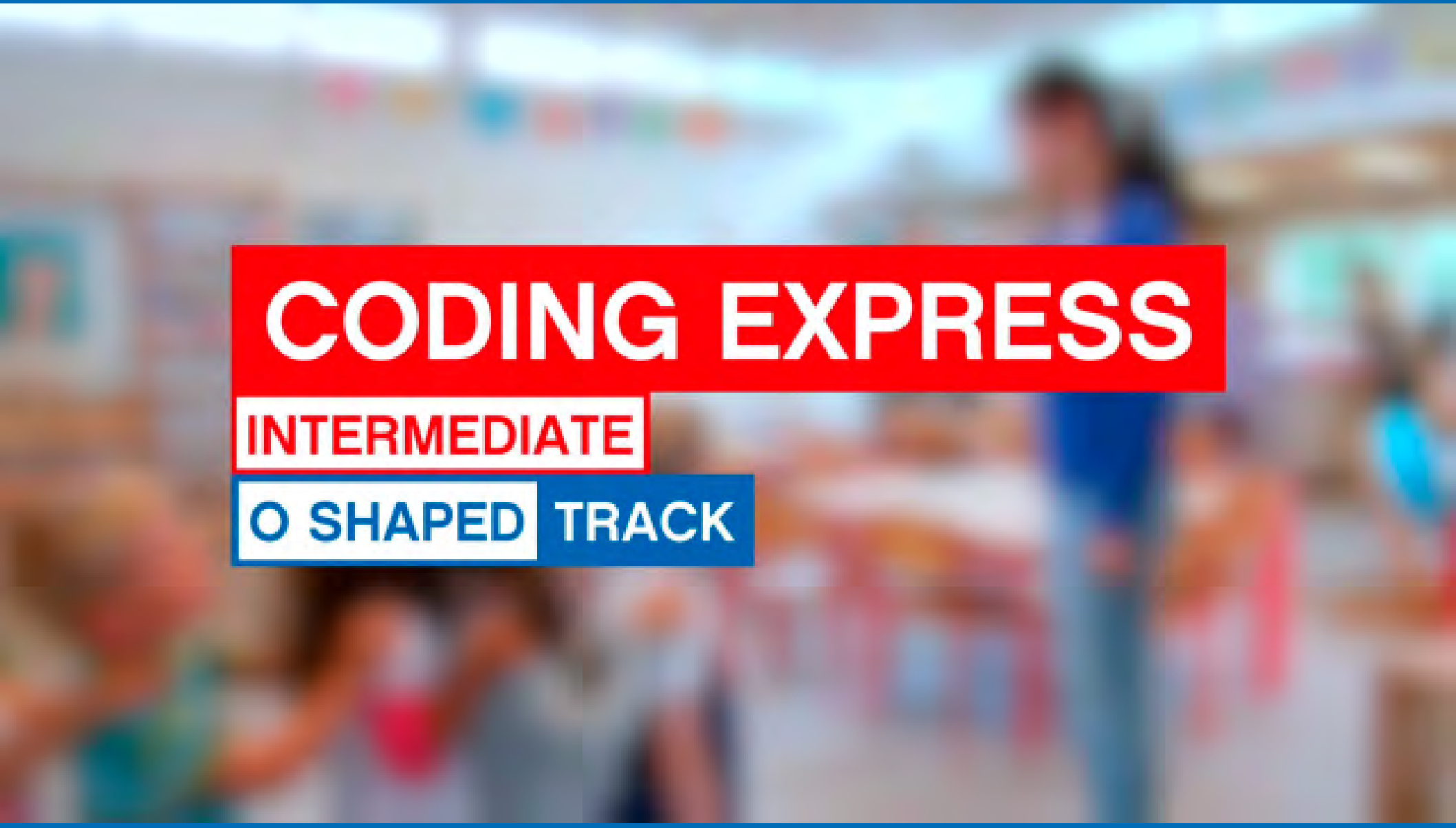
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CODING EXPRESS
SEQUENCING

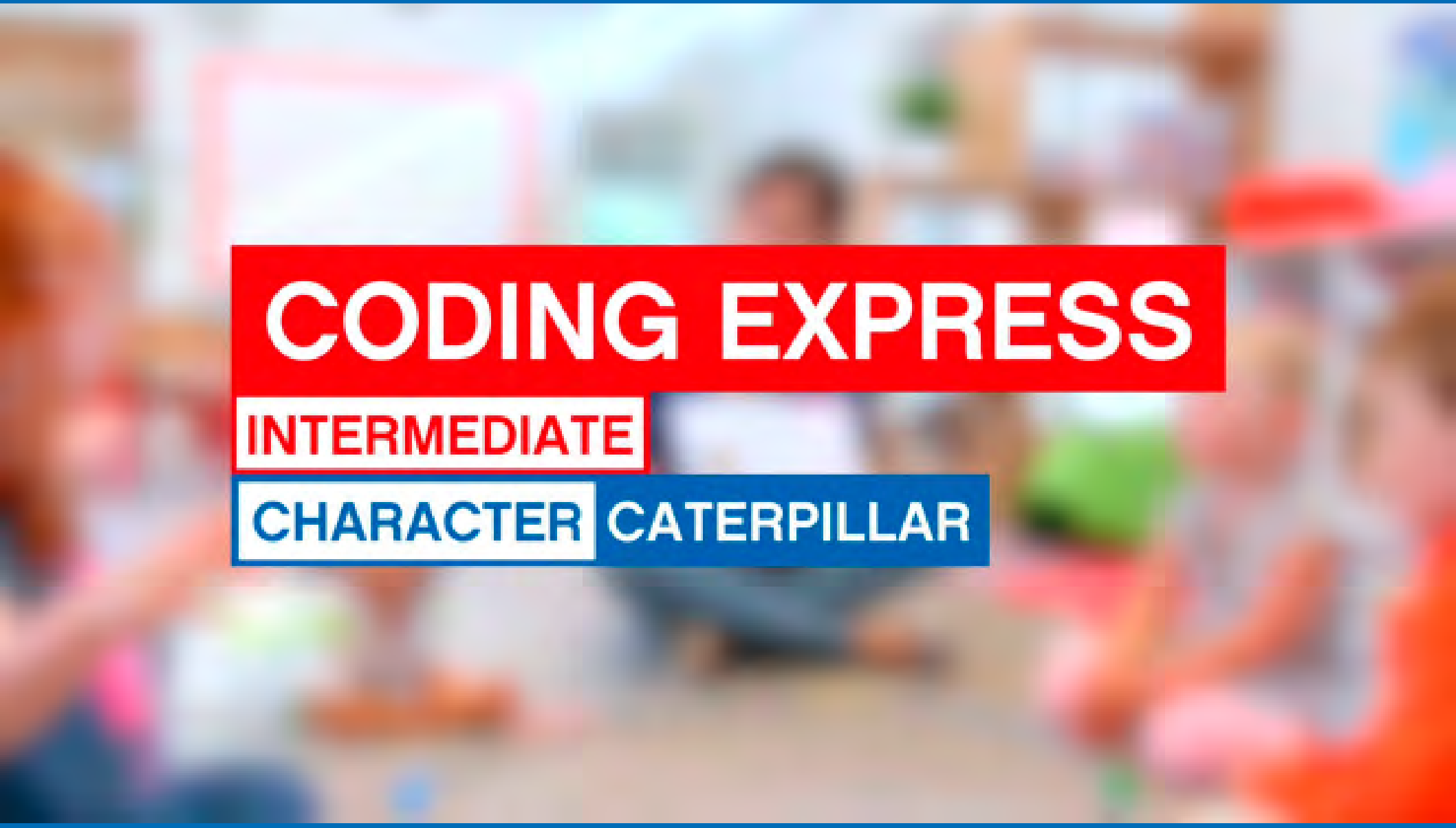

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FOR FIRST TIME USE


CODING EXPRESS
BEGINNER
FIRST TRIP


CODING EXPRESS
BEGINNER
TRAIN SOUND

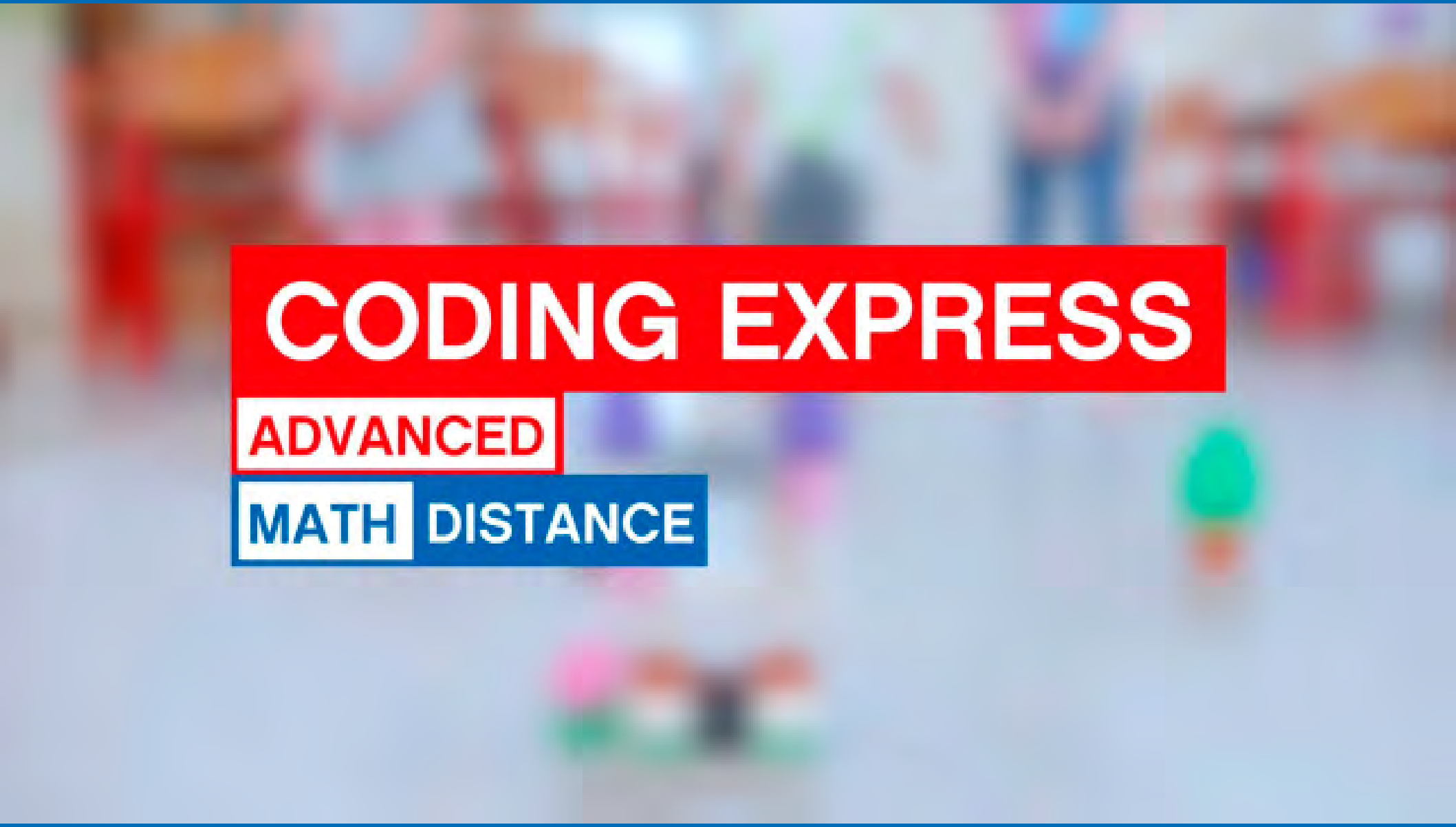

CODING EXPRESS
INTERMEDIATE
O SHAPED TRACK


CODING EXPRESS
INTERMEDIATE
Y SHAPED TRACK


CODING EXPRESS
INTERMEDIATE
CHARACTER CATERPILLAR


CODING EXPRESS
INTERMEDIATE
ANIMAL CONCERT


CODING EXPRESS
ADVANCED
TROUBLES ON THE ROAD


CODING EXPRESS
ADVANCED
MATH DISTANCE