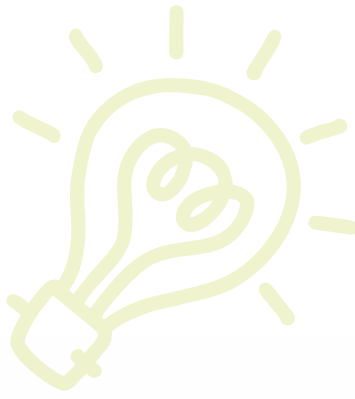


Maker Teacher Guide

For Preschool

LEGO® Education
Preschool

SO MANY WAYS TO
LEARN, TOGETHER

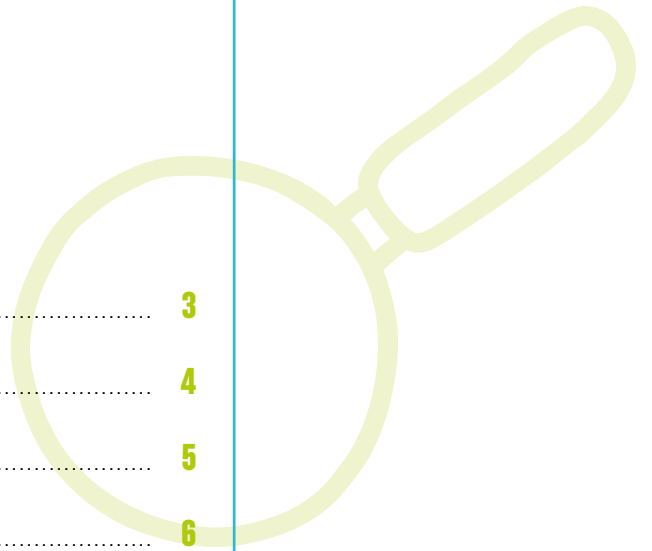


- with STEAM Park



Table of Contents

| | |
|---|-----------|
| Introduction | 3 |
| The LEGO® Education Maker (Design) Process | 4 |
| Classroom Poster | 5 |
| Maker Assessment | 6 |
| Standards | 8 |
| Lessons | |
| Mr. Bear and the Stairs | 10 |
| Maker Connect | |
| Maker Example | |
| The Great Cannon | 13 |
| Maker Connect | |
| Maker Example | |
| Additional Maker Briefs | 16 |





Introduction

The LEGO® Education Preschool Maker Lessons have been developed to engage and motivate children in early making, piquing their interest in learning design, technology and engineering.

Each lesson provides an initial brief as a starting point. The open ended prompts allow for unlimited answers and enable children to express a wide range of creative solutions as they sketch, build, and test prototypes of the designs they create.

The teacher's role in these lessons is to provide children with the tools and necessary freedom to connect with and define a problem, make a solution, and share what they have made. Use your creativity to adapt these activities to suit the needs of your children.

“The role of the teacher is to create the conditions for invention rather than provide ready-made knowledge.”

– Seymour Papert

The LEGO® Education Maker (Design) Process

What can you see?

It is important that children work towards solving a problem from the start. The Maker Connect illustration can help the children reflect on possible problems and brainstorm on solutions. Brainstorming is an active part of making. Sometimes great solutions will come to the children when the LEGO® bricks come out. There you might want to consider allowing the children to explore their thoughts through tinkering with the bricks.

It is important that you do not show examples of a final or sample solution as this will restrict the children's creative process.

Go Make

The children must make one of the ideas using the LEGO set, and can use other materials if needed. If they are finding it hard to build their idea, encourage them to break problems down into smaller parts. Explain that they do not have to come up with the whole solution from the start.

Show and Tell

Let the children explain their solution by presenting their work in front of the class. Ideas, process, execution and presentation are all important parts of making and they should all be praised. To help children develop their critical thinking and communication skills, you may wish to have children from one group observe and critique the solution from another group's solution. Receiving positive peer review and formative feedback helps both the children giving and the children receiving the feedback to improve their work.

Share It

We encourage you to share your students' brilliant projects on the appropriate social media platforms using the hashtag #LEGOMaker.



#LEGOMaker

The LEGO® Education Maker (Design) Process

What can you see?



Defining the Problem



Brainstorm



Defining the Design Criteria

Go Make



Go Make



Review and Revise Your Solution

Show and Tell



Communicate Your Solution

Maker Assessment

What learning goals are assessed?

Use the Maker Assessment rubric to evaluate and reflect on the children's process, what they created and what went well. The rubric includes four levels of achievement, following a 'Four Bricks Scale' in which the biggest brick represents the highest rating.

Emerging

The children is at the beginning stages of development in terms of knowledge, ability to understand and apply content, and/or demonstration of coherent thoughts about a given topic.

Developing

The children is able to present basic knowledge only, and cannot yet apply content knowledge or demonstrate comprehension of the concepts being presented.

Proficient

The children has concrete levels of comprehension of the content and concepts, and can demonstrate adequately the topics, content, or concepts being taught. The ability to discuss and apply concepts outside of the required assignment is lacking.

Accomplished

The children can take concepts and ideas to the next level, apply concepts to other situations, and synthesize, apply, and extend knowledge to discussions that include extensions of ideas.



Maker Assessment

Student Name: _____

Date: _____

| | |
|--|--|
| <p>Creatively uses a variety of art materials to solve the challenge</p> | |
| <p>Clearly explains the purpose and function of the solution</p> | |
| <p>Experiments and has clear strategy to solve the challenge</p> | |
| <p>Participates and stays engaged throughout the lesson</p> | |
| <p>Helps, takes turns and cooperates with 1 or more children</p> | |

Standard alignment to the 21st Century Skills Early Learning Framework

Creativity and Innovation:

- Uses a wide range of idea generation and creation techniques (e.g. brainstorming)
- Elaborates, refines, analyzes, and evaluates their own ideas in order to improve and maximize creative efforts
- Demonstrates originality and inventiveness in work
- Develops new ideas and communicates them to others
- Is open and responsive to new and diverse perspectives

Critical Thinking and Problem Solving:

- Uses various types of reasoning (inductive, deductive, etc.) as appropriate to the situation
- Synthesizes and makes connections between information and arguments
- Solves different kinds of non-familiar problems in both conventional and innovative ways
- Identifies and asks significant questions that clarify various points of view and leads to better solutions

Communication:

- Uses communication for a range of purposes

Collaboration:

- Demonstrates the ability to work effectively with diverse teams
- Exercises flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assumes shared responsibility for collaborative work



Flexibility and Adaptability:

Adapts to varied roles, jobs responsibilities, schedules, and contexts
Works effectively in a climate of ambiguity and changing priorities
Incorporates feedback effectively
Deals positively with praise, setbacks, and criticism

Initiative and Self-Direction:

Utilizes time and manages workload efficiently
Monitors, defines, prioritizes, and completes tasks without direct oversight
Reflects critically on past experiences in order to inform future progress

Social and Cross-Cultural Skills:

Knows when it is appropriate to listen and when to speak
Conducts themselves in a respectable, professional manner

Productivity and Accountability:

Sets and meets goals, even in the face of obstacles and competing pressures

Leadership and Responsibility:

Uses interpersonal and problem-solving skills to influence and guide others toward a goal
Leverages strengths of others to accomplish a common goal

Information Literacy:

Evaluates information critically and competently
Applies information accurately and creatively to the issue or problem at hand



Mr. Bear and the Stairs

Make a machine or contraption that helps Mr. Bear get up the stairs.

Duration

20 -30 minutes

Materials needed:

STEAM Park set (45024), Maker Connect illustration, craft materials (e.g., construction paper, string, rubber bands, feathers, glitter, sticky tape).

What can you see

Show the children the Maker Connect illustration of Mr. Bear in the wheelchair.

Discuss the things that you can see and how you might help Mr. Bear get up the stairs.

Ask the children if they have ever noticed how buildings or areas have secured wheelchair access.

Talk about the different LEGO® bricks and other materials you could use to help Mr. Bear get up the stairs.

Go Make

Encourage the children to think with the elements to see if any one sparks their interest and creativity.

Consider asking questions like:

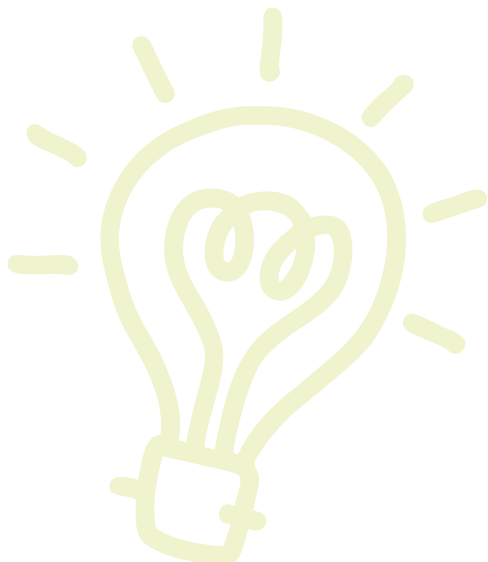
- How can you make it safe for Mr. Bear?
- Is it easy for Mr. bear to get up the stairs using your model?
- What would make it fun for Mr. Bear?
- What would happen if Mr. Bear needed to get down the stairs?

Show and Tell

Ask the children to take turns telling about the models they have made.

Consider asking questions like:

- What do you call the model you have built?
- What does Mr. Bear do when he needs to go up the stairs?
- How have you made it safe and fun for Mr. Bear?



Learning Outcomes

Children will:

- Approach tasks, activities, and play in ways that show creative problem solving.
- Use multiple means of communication to creatively express thoughts, feelings, or ideas.
- Use imagination with materials to create stories or works of art.

Vocabulary

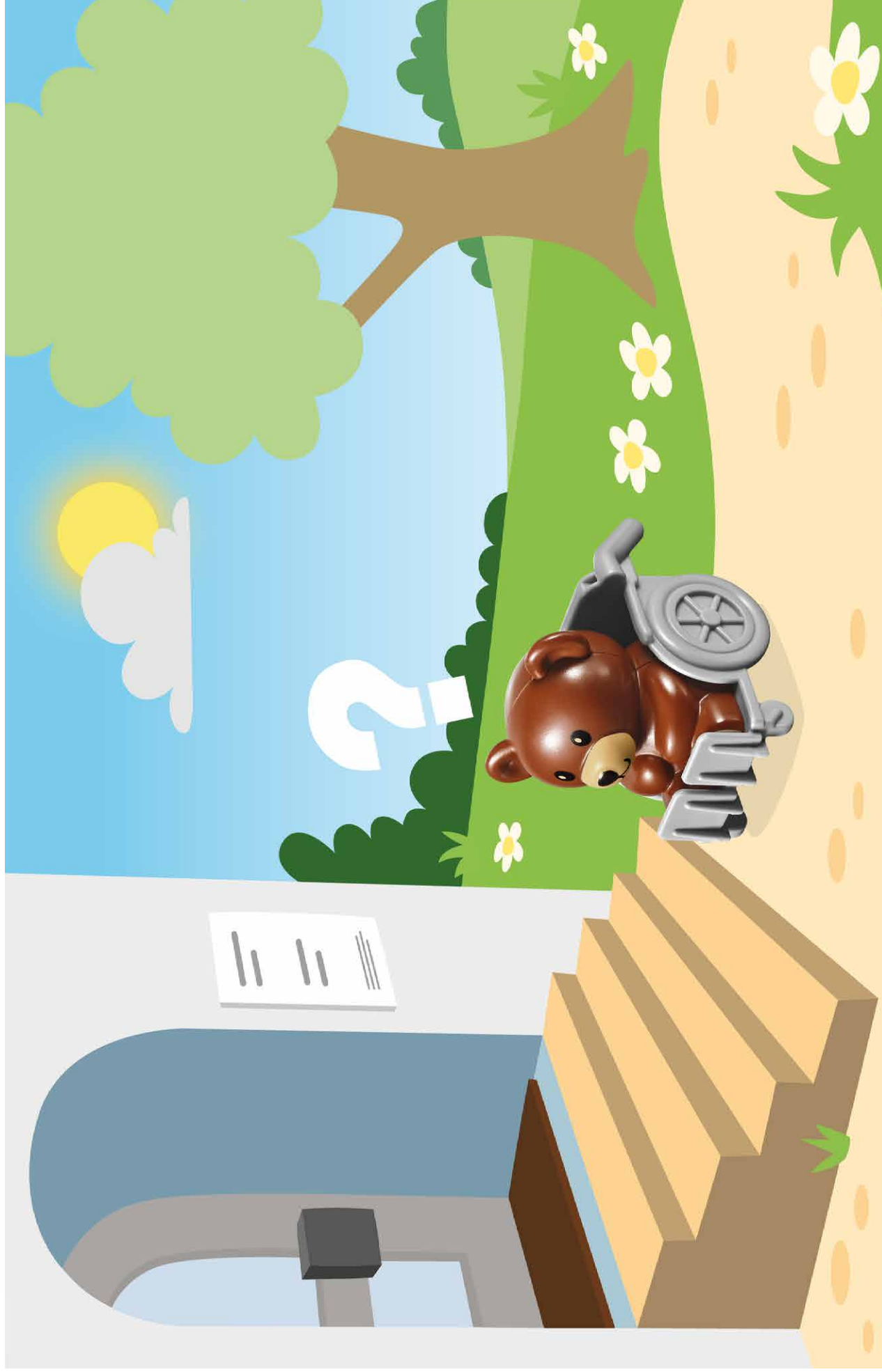
Safety, wheelchair, accessibility, creativity

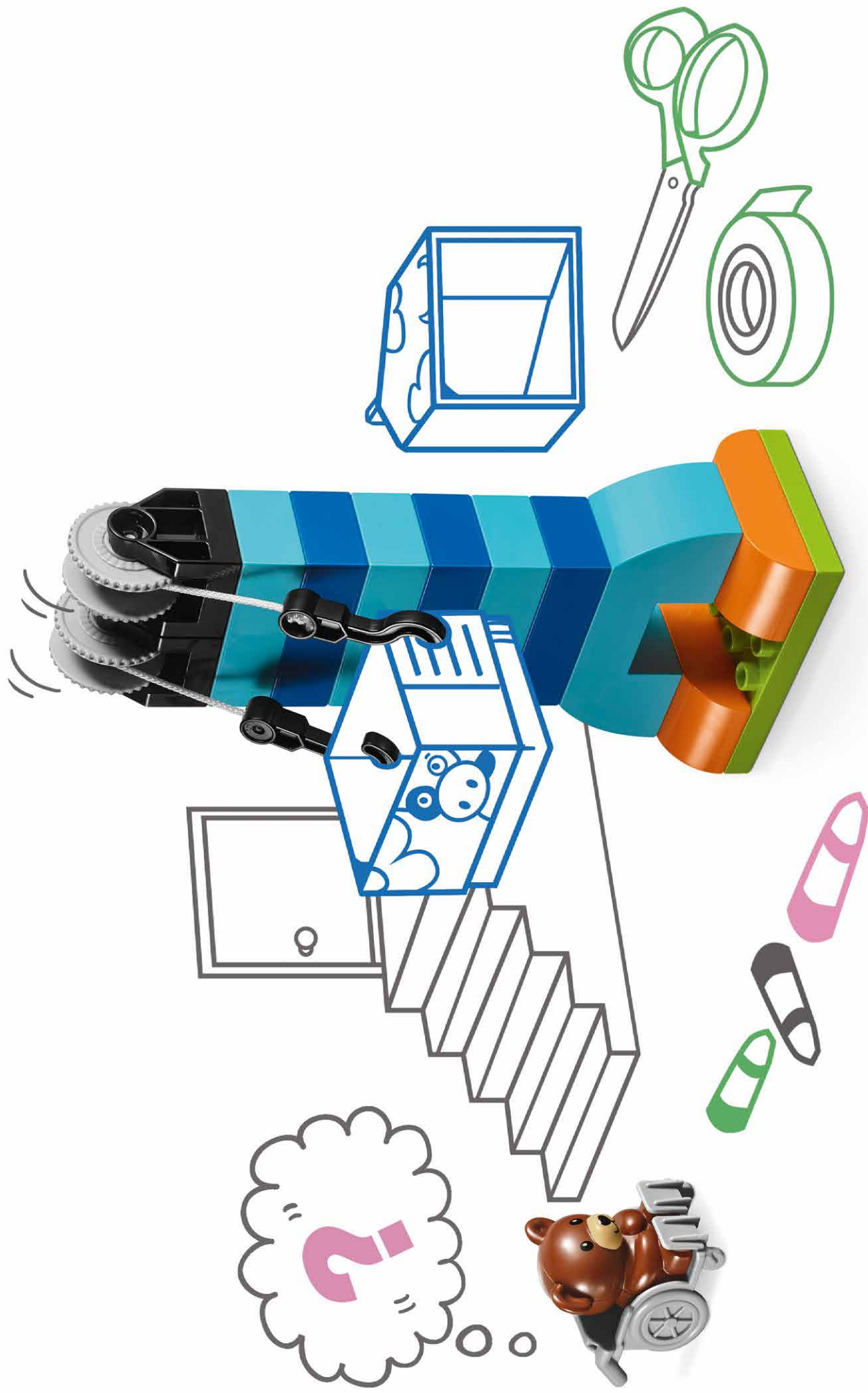


Maker Connect



Maker Example





The Great Cannon

Make a fun cannon game for Mr. Parker's booth.

Duration

20 -30 minutes

Materials needed:

STEAM Park set (45024), Maker Connect illustration, craft materials (e.g., construction paper, string, rubber bands, feathers, glitter, sticky tape).

What can your see

Show the children the Maker Connect illustration of Mr. Parker's cannon game booth.

Discuss the things that you can see and how you might help Mr. Parker make a fun cannon game for his booth.

Ask the children if they have ever see a cannon game booth (or shooting galleria)?

Talk about the different LEGO® bricks and other materials you could use to help Mr. Parker make a fun cannon game for his booth.

Go Make

Encourage the children to think with the elements to see if any one sparks their interest and creativity.

Consider asking questions like:

- How can you make it safe for Mr. Parker and the guests?
- Will some targets be easy and some more difficult to hit?
- Can guests score points or will they win a prizes?

Show and Tell

Ask the children to take turns telling about the models they have made.

Consider asking questions like:

- What do you call the model you have built?
- How does your cannon game work?
- What does Mr. Parker do when guests comes and tries the game?
- How have you made it safe and fun for Mr. Parker?

Learning Outcomes

Children will:

- Approach tasks, activities, and play in ways that show creative problem solving.
- Use multiple means of communication to creatively express thoughts, feelings, or ideas.
- Use imagination with materials to create stories or works of art.

Vocabulary

Safety, cannon, fair booth, games, creativity

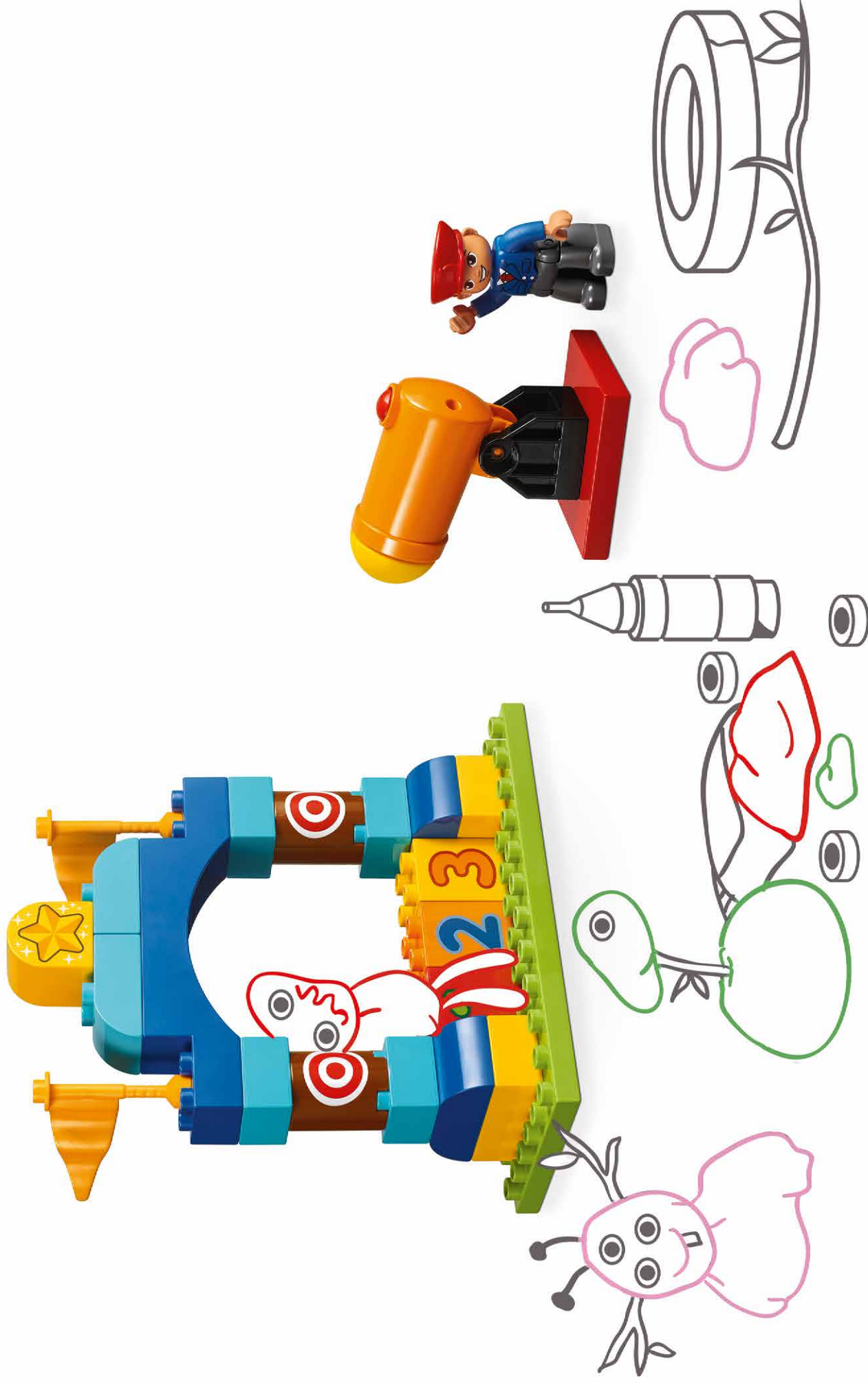


Maker Connect



Maker Example





Additional Maker Briefs

Use the Maker design process to try out one or more of the lessons listed below.

Thinking Hat

Make a wearable Inventor hat? A hat that helps you and everyone else coming up with great ideas.

Animal Shelter

Make a safe animal shelter. Choose your animal and create a place that shelters from the rain or provides a safe place to sleep. Is it waterproof?

Scary Creatures

Make a scary monster or scarecrow to keep the birds away from your strawberry patch/vegetable garden.

What makes it look scary? What does it do to scare the cheeky birds?

Helping Robot

Make a robot that can help your teacher or in your classroom. What does it need to be able to do? Water the plants? Tell the children to be quiet? Take things to the bins?

My Dream Car

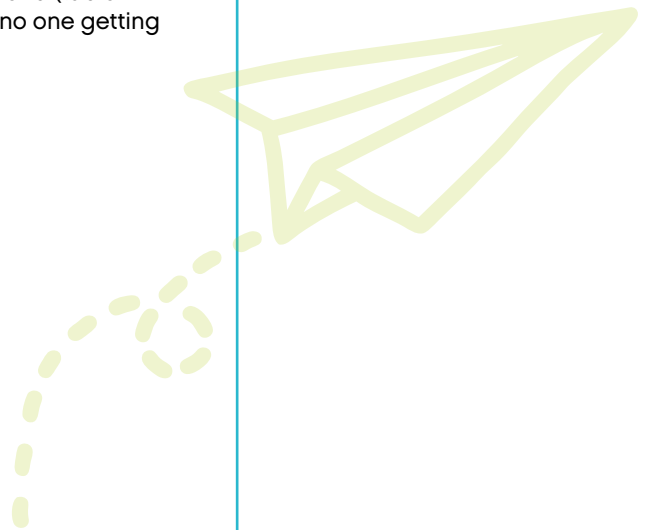
Make the car of your dreams. What will make your car special and fun? Maybe it has a special feature or can drive all by itself? How is it powered?

Windpowered Machine

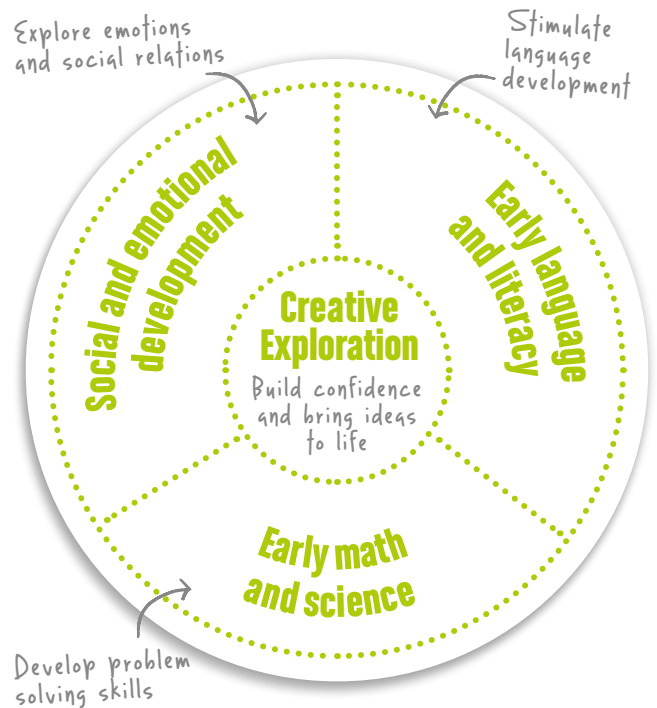
Make a machine that is powered by the wind or when you blow at something? Think of a helpful purpose for the machine, what does it do?

Across the pond

Make something that can carry 3 animals/figures or items across a pond (tub of water). Can you get it across the water without touching it? And with no one getting wet ...



Help your preschoolers develop important skills



LEGO® Education Preschool solutions stimulate children's natural curiosity to explore together and learn through play. Our preschool solutions will support you in developing your preschoolers 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 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

LEGOeducation.com

LEGO, the LEGO logo and DUPLO are trademarks of the/son des marques de commerce du/son marcas registradas de LEGO Group. ©2018 The LEGO Group. 20171018V2



education