

**FIRST
LEGO
LEAGUE**

DISCOVER

CLASS PACK GUIDE



education™

Welcome to the Program

Welcome to *FIRST*® and the *FIRST*® LEGO® League program. *FIRST* LEGO League captures children's curiosity and directs it toward discovering the wonders of science and technology. The program was created through a partnership between *FIRST* (For Inspiration and Recognition of Science and Technology) and LEGO® Education. *FIRST* LEGO League has three divisions: Discover, Explore, and Challenge. Your students will take part in the Discover Class Pack!

Thank you for participating in this innovative STEM program for students. Your students join a global community across more than 110 countries. Its impact is profound and leads to a further progression of STEM exploration, skills, and experiences even after students complete the program.

The Class Pack provides schools with the tools to implement *FIRST* LEGO League Discover in daily classroom lessons or as a structured after-school program. As the teacher, your role is to facilitate learning for your students and organize your implementation of the program. The guide is designed to help you do this.

This guide also contains information on how students can share their experiences and what they have learned throughout their journey – from highlighting your students' hard work in a classroom showcase to putting on your own school or organization-based *FIRST* LEGO League Discover event.



Getting Started Checklist

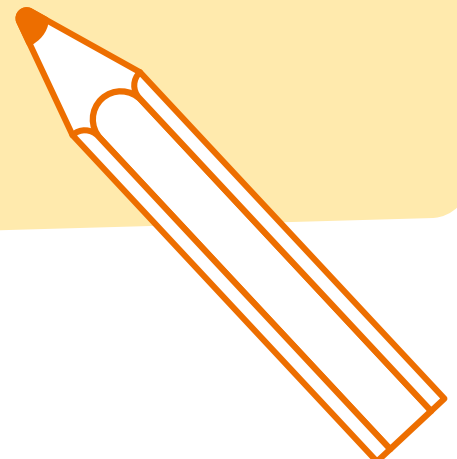
Thank you to all the teachers and youth leaders who will be delivering the *FIRST*® LEGO® League Discover Class Pack to your students.

Please read the *Engineering Notebook* (this guidebook is given to the students) and the *Team Meeting Guide*. They are full of very useful information to guide you through the program. After completing the sessions, your students will be prepared to participate in a celebration that recognizes the magnificent achievements made by the teams.



We've created a checklist to guide you toward success. Use this to help you get started.

- ☐ Ensure you have received all materials needed to implement *FIRST* LEGO League Discover.
- ☐ Identify the space where you will complete the sessions and store materials between the sessions. Or a place to keep assembled builds between sessions if desired.
- ☐ Think about the final celebration event. Will you have it in your classroom and invite the children's families?
- ☐ Create a plan. How often during the week will you do the program? Will you complete a whole session at once or split the tasks across different meetings?
- ☐ Be sure all materials are unpacked and organized before starting Session 1. You may want to place the pieces into durable plastic storage bins. Get your children familiar with all materials.
- ☐ Encourage family and home engagement. Send the Discover More sets home with the children with the Discover More game letter.
- ☐ After completing the sessions, have the children participate in an event to celebrate their achievements.



Family Engagement

Families play a critical role in children's success in life. In *FIRST*® programs, families support their children by providing transportation, snacks, cheering at events, and more. *FIRST* is looking to expand the ways families engage together in *FIRST* programs.



Family Engagement Resources



Discover More Set

As part of Discover Class Pack, every student is provided

a Discover More set that includes two sets of Six Bricks. Developed by The LEGO® Foundation, the sets are a tool for children and their families to practice their memory, movement, creativity and more through short, fun, playful activities using six LEGO® DUPLO® bricks.

Discover More Game

The Discover More game provides families with all the instructions to play together. To get started, they will need the Discover More Game instructions, a Discover More set, a dice, and a token for each player.



Family Engagement Night

We encourage all schools to hold a class meeting in which families can hear more about the program, complete family engagement activities, and receive their Discover More sets. You could host the family engagement meeting in the evening and offer snacks and additional activities for families and their children to do.

A family engagement meeting could cover:

- What the program is
- What the habits of learning are
- The celebration event at the end of the program
- The opportunities provided by the program
- The Discover More set and how to support at home



Families who participate together in *FIRST*® LEGO® League discover the power of curiosity, creativity, and problem solving, building the foundation for life-long confidence in STEM learning.



Classroom Implementation

Flexible Implementation

First and foremost, use your professional judgment to augment this program to meet the needs of your students, class space, class timing, and additional curricular requirements. Set student expectations for participation in the program based on the student growth mindset of holistic and STEM skills.

Working in Teams

The sessions in the guidebooks have guided tasks for each student team. Here are the reasons behind this design:

- It ensures an equitable experience for every student in all aspects of the program.
- It provides additional opportunity for collaboration and communication.
- Small groups promote deeper learning of content and build holistic skills to share out learning with other team members.
- Fewer materials are needed, and they can be used by more students.
- Having smaller groups allows for students to get hands-on time with building and exploration.

How to Run Differentiated Groups

- Physically split the space to facilitate working in small groups.
- Establish norms for movement and talking in small groups.
- Be comfortable with talking and movement within groups.
- Orient students to daily goals for learning using the student outcomes for each session listed in the *Team Meeting Guide*.
- Have individual check-ins with each team at the start of class.
- Determine the length of time for daily tasks ahead of class and share with students.
- End each class with whole group sharing using the guiding questions outlined in the *Team Meeting Guide* as inspiration.



CLASS PACK EVENT GUIDANCE

**All you need to know
about running a
celebration in your
school.**



**Follow the advice and teacher tips in
this section as you prepare to host
your exciting celebration to recognize
all the students' achievements at the
end of their experience.**





WHAT IS THE CELEBRATION EVENT?

At the end of their experience, all teams should participate in a celebration event. The children will love sharing with others what they have built and learned. It could be held in your usual session meeting space, a classroom, a library, or anywhere else that has appropriate room for the teams to spread out, build, and have fun.

BEFORE THE EVENT:

- Choose a good space.
- Invite families, caregivers, teachers, and friends.
- Find volunteer reviewers.
- Print reviewing questions.
- Read through the celebration event session information.

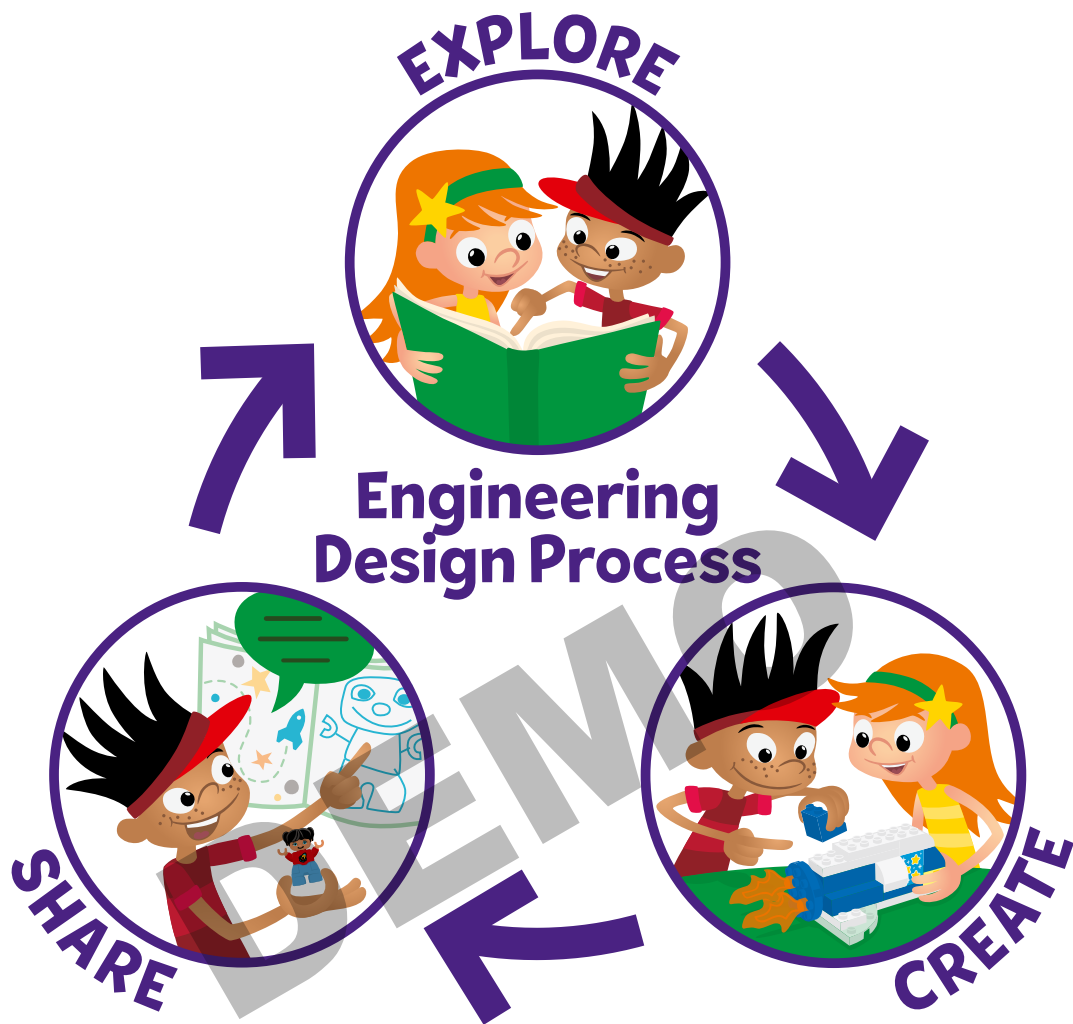
DURING THE EVENT:

- Lay out the mats so two teams can work together.
- Assign at least one reviewer with each pair of teams.
- Get the kids excited for the final challenge.
- Ensure the reviewers talk with the children.
- Hand out certificates at the end.
- Have fun and celebrate children's achievements.

AFTER THE EVENT:

- Teach the other STEAM Park lessons.
- Continue to teach other STEM activities related to the theme.
- Find opportunities to use the vocabulary learned through the experience.
- Have the children use their teamwork skills in other sessions.





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DISCOVER

TEAM MEETING GUIDE

「MASTER
PIECE」



Welcome!

In *FIRST*® LEGO® League Discover, children are introduced to the fundamentals of STEM while working together to solve fun challenges and building models using LEGO® DUPLO® bricks. Students gain habits of learning, confidence, and teamwork skills along the way.

FIRST LEGO League Discover is one of three divisions by age group of the *FIRST* LEGO League program and serves the youngest children. This program inspires young people to experiment and grow their confidence, critical thinking, and design skills through hands-on STEM learning. *FIRST* LEGO League was created through an alliance between *FIRST*® and LEGO® Education.



FIRST® IN SHOWSM and MASTERPIECESM

Welcome to the *FIRST*® IN SHOWSM season presented by Qualcomm. This year's *FIRST* LEGO League challenge is called MASTERPIECESM. Children will learn about how people's passion for the arts are shared through STEM.

Children are encouraged to work with their teammates, listen to each other, take turns, and share ideas and pieces.

Children work together in teams using DUPLO pieces from STEAM Park by LEGO Education and the Discover set. Children should



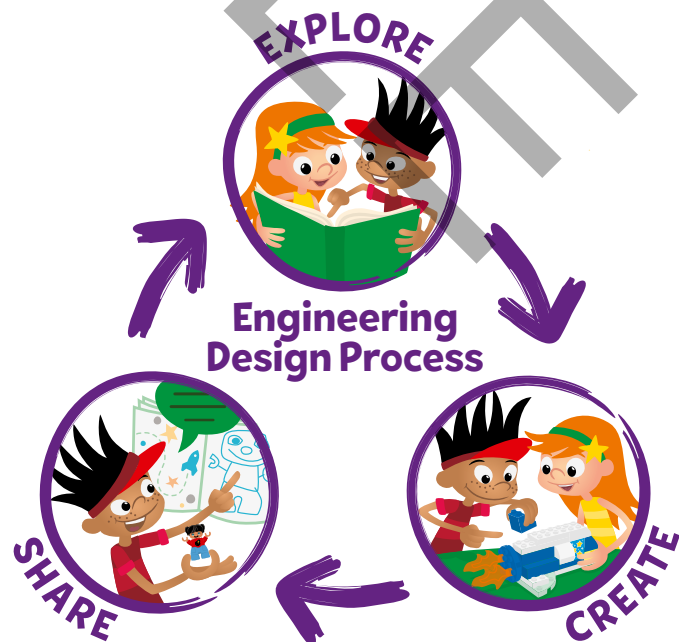
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Program Outcomes

The children will:

- Use and apply the *FIRST* Core Values, habits of learning, and engineering design process to create solutions.
- Explore the season theme and their ideas through collaboration, building, and playful learning.
- Create and test their ideas and solutions.
- Share and communicate what they have learned with each other and others.

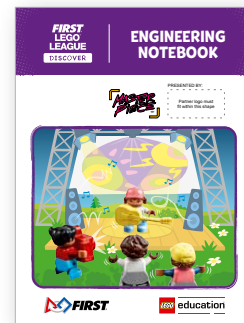


What Do You Need?

Engineering Notebooks (per child)

You will receive a set of *Engineering Notebooks*, which provide a place for children to record ideas and drawings. There

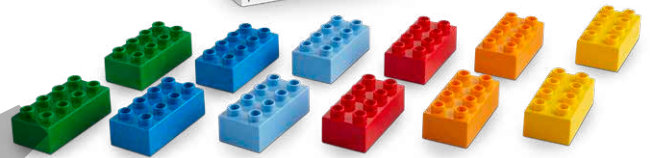
is one page to fill in for every other session. Provide one notebook to each child.



Discover More Set (per child)

The Discover More set is designed for children to take home and keep even after their Discover experience is complete. The set includes two sets of Six Bricks for an adult and child to participate

in the activities and play a game together. Further information can be found on the Family Engagement page.



LEGO® Education STEAM Park Set (serves 8 children)

All teams will use the STEAM Park set to explore STEM concepts and form the basis of their team model. This set will be used throughout sessions, as well as at the celebration.

There is also a *STEAM Park Teacher Guide* that contains lesson plans as well as other ideas and inspiration.

We suggest pre-teaching the following sessions from the teacher guide if the class or students are new to STEAM Park:

1. Functional Elements
2. Welcome to STEAM Park
3. Gears



Tip

STEAM Park comes in a cardboard box. You could store STEAM Park in a plastic storage tub, which might be better with frequent use.



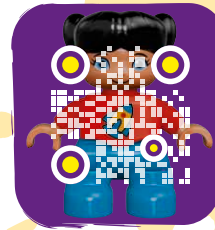
Scan me for more STEAM Park lessons

What Do You Need?

Discover Set (serves 4 children)

The Discover set consists of the Discover model, LEGO® DUPLO® figures, Six Bricks sets, mat, and building cards. The Discover model is intended to help children connect to the theme and provide a starting point for discussions and further building. The mat is used as a collaboration space to bring the models together.

Each Discover set includes five sets of Six Bricks for use in the classroom. There are enough sets to give one to each child, plus one for the teacher. Each child will need one of each of the six colored bricks.



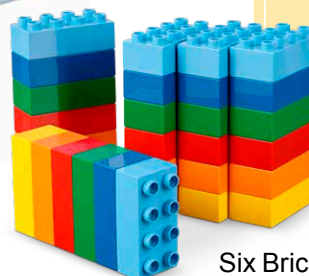
Scan me
and view the
Discover Set
Video



Building Cards



DUPLO Figures







Six Bricks Sets

Tip

You could keep the children's Six Bricks in a separate, smaller container.

Sessions At-A-Glance

	 Warm-Up (Six Bricks) 10 minutes	 Explore Task 10 minutes	 Create Task 25 minutes	 Share Task 15 minutes
Session 1 Let's Discover	Discover Six Bricks I	Setting the Stage	Explore STEAM Park	Share Prompt
Session 2 Music Concert	Discover Six Bricks II	Music Concert	Concert Stage Build	Engineering Notebook Page
Session 3 Museum Exhibit	What Can You Build?	Museum Exhibit	Exhibit Build	Share Prompt
Session 4 Theater Show	Build the Picture	Theater Show	Theater Stage Build	Engineering Notebook Page
Session 5 Your Own Show	Rhythms and Moves	Your Own Show	Your Show with Moving Parts	Share Prompt
Session 6 Behind the Scenes	Back-to-Back	What Do People Do	Jobs and Tools	Engineering Notebook Page
Session 7 The Audience	Build a Bridge	The Audience	Entertaining Everyone	Share Prompt
Session 8 Places of the Future	Future Car	Places in the Future	Build a Future Place	Engineering Notebook Page
Session 9 Dress Rehearsal	It Takes a Team	Reflection	Combine Your Ideas	Share Prompt
Session 10 Let's Celebrate	CELEBRATE!			

Session 1: Let's Discover

Each session provides a deeper connection to support you in your teaching.

As you go through these sessions, don't worry if you don't know all the answers – and remember, there is no such thing as failure! Also, know that the children will make mistakes and iterate on their designs.

Outcomes

The children will play with STEAM Park, building creatively and trying new things.

The children will identify LEGO® pieces that relate to what they care about.

What can we build with STEAM Park that helps show what we love to do?

Each session has a big question that can be shared to frame the session.

Six Bricks Warm-Up (10 minutes)

Discover Six Bricks I (see Appendix for full activity)

The children will use the Six Bricks both in the classroom and at home with the Discover More set to learn new skills and explore new ideas.

Explore Task (10 minutes)

Introduce the idea of a **hobby** or an interest. Have a discussion to discover what the children like to do or what they are interested in and how they share it with others.

Imagine there is a school **performance** where the children get to choose what to share with the **audience**.

- What would you perform?
- What would it look like?
- What type of space would you need?
- Who would you like to share with?


Create Task (25 minutes)


Have the children build using the different pieces in STEAM Park. Encourage them to play freely and build anything they want that relates to their hobby or interest and how or where it could be shared with others.

Share Task (15 minutes)

Have the children share and explain what they built and how the pieces they identified relate to their interests. They could share in pairs or in their teams if they aren't comfortable sharing with entire class. All the children's builds will be correct and there is no one right answer to these sessions.

Tips

 Send home the Discover More game (see page 10) with the Discover More set with each child.

 Check out the Functional Elements lesson for examples.



Scan for STEAM Park Functional Elements lesson

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Key Vocabulary

hobby, performance, audience

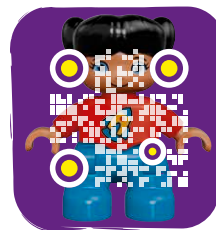
Playful Learning in Action

The children will use **discovery** to explore new ideas with STEAM Park. They will **wonder** and **question** what the pieces do.



Six Bricks Activities

In addition to the Six Bricks activities listed in this *Team Meeting Guide*, you can find more activities on legofoundation.com.



Scan me to find more activities

Discover Six Bricks I

Base Activity

1. Each child separates his or her bricks and spreads them out.
2. With closed eyes, they shuffle their bricks around.
3. Keeping their eyes closed, each child picks any brick and holds it up high.
4. Now they open their eyes and see what color they hold.

Part 2

5. Let them pick any brick, look at it carefully, and turn it around and over in their hands.

Guiding Questions:

- *What color brick do you have?*
- *Can you name all the different colors?*
- *Can you sort the bricks into warm and cold colors?*
- *Can you create a rainbow with your bricks?*
- *What color is your brick? How does it feel (rough, smooth, hard, soft, shiny, dull, etc.)?*
- *What spaces and shapes can you see on your brick? How many studs does each brick have?*

Children learn to:

- Play and become familiar with the bricks.
- Listen and respond to questions.
- Use descriptive language.



Discover Six Bricks II

Base Activity

1. Children lay out their bricks in any order (see the picture).
2. Then they put a finger on the red brick and move it left.
3. They turn the dark blue brick upside down (or on its side).
4. Children click the green brick on the red and cover all studs.

Vary the instructions you give such as colors, moving bricks left/right, and positions.

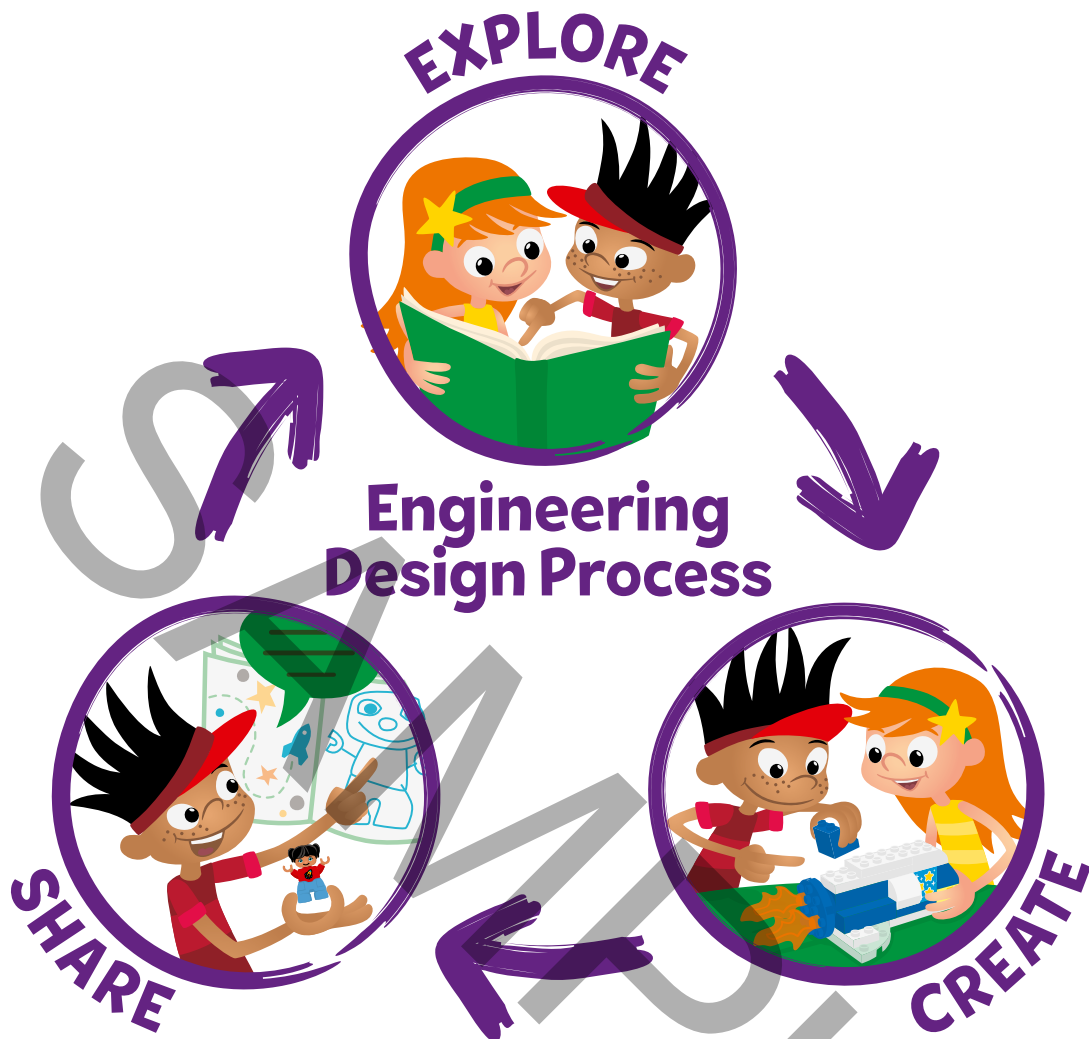
Guiding Questions:

- *How did you keep attention?* (encourage some of the children to explain in turn)
- *How can we make this activity harder?* (Give more instructions, say them faster...?)

Children learn to:

- Use spatial skills to orient themselves.
- Keep attention and resist distraction.
- Initiate activities.





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ENGINEERING NOTEBOOK

**MASTER
PIECE**



Session 2: Music Concert

Show me the concert stage you built!



Draw and write your ideas.

SAMPLE

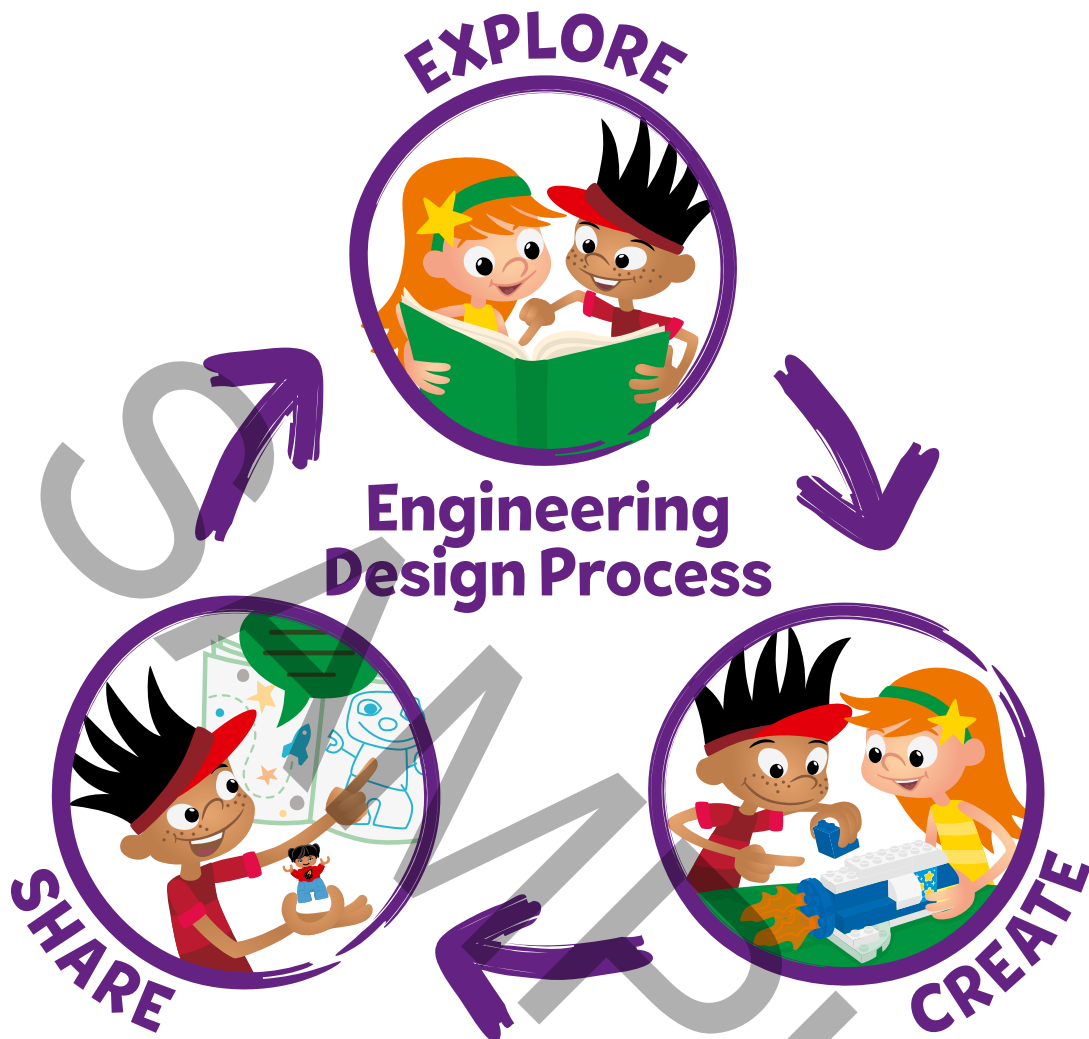
Session 4: Theater Show

Show me something special about your stage.



Draw your ideas.

SAMPLE



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