FIRST LEGO LEAGUE DISCOVER

TEAM MEETING GUIDE

SUPER POWERED

FIRST

LEGO education

Introduction to *FIRST*® LEGO® League Discover

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 learning. *FIRST* LEGO League was created through an alliance between *FIRST*® and LEGO® Education.

FIRST® ENERGIZE℠ presented by Qualcomm and SUPERPOWERED℠

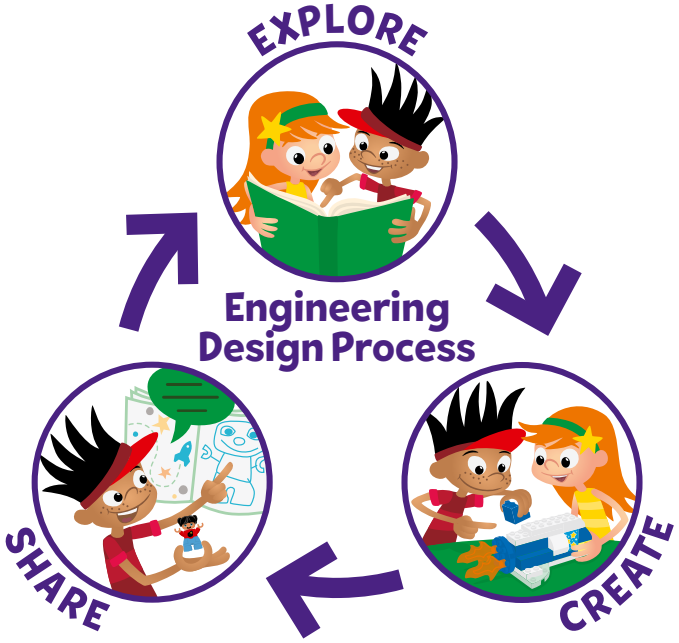
Welcome to the *FIRST*® ENERGIZE℠ season presented by Qualcomm. This year's *FIRST* LEGO League challenge is called SUPERPOWERED℠. Children will learn about how energy is generated, stored, distributed, and used.

Children work together in teams using DUPLO pieces from STEAM Park by LEGO Education and the Discover set. Children should be encouraged to work with their teammates, listen to each other, take turns, and share ideas and pieces.

Program Outcomes

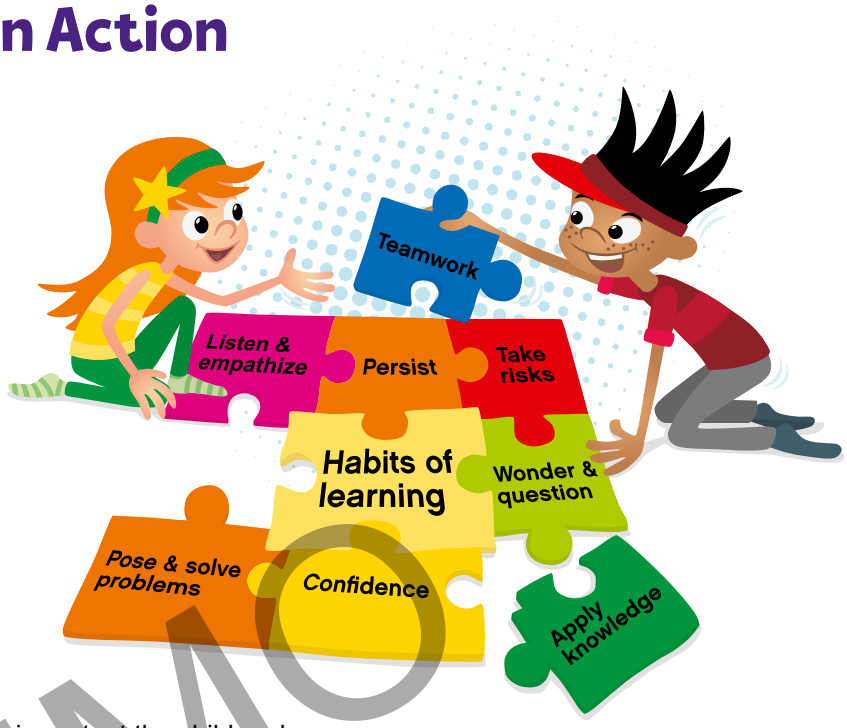
The children will:

- 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.



Playful Learning in Action

Research shows that when young children are engaged in playful STEM experiences, they ignite their natural curiosity, grow their knowledge, and develop habits of learning. When educators nurture these natural-born scientists, they build a bridge between the real world, STEM skills, and literacy.



Habits of Learning

In *FIRST*® LEGO® League Discover, children are given meaningful problems to solve. They work together to wonder and question, build and tinker, listen and share. By the end of their experience, children emerge more confident and better equipped to face future challenges.

It is important the children have fun. The more playful the sessions are, the more motivated and excited they will be. Don't worry if you don't know all the answers, and remember, there is no such thing as failure! If something goes wrong, you learn from it and try again.

Playful Learning in Action

FIRST® Core Values

The *FIRST*® Core Values are the cornerstones of the program. They are among the fundamental elements that distinguish *FIRST*® LEGO® League from other programs of its kind. By embracing the Core Values, children use discovery and exploration of the theme and learn that helping one another is the foundation of teamwork.

Teamwork
We are stronger when we work together.

Inclusion
We respect each other and embrace our differences.

Impact
We apply what we learn to improve our world.

Fun
We enjoy and celebrate what we do!

Discovery
We explore new skills and ideas.

Innovation
We use creativity and persistence to solve problems.

Early STEM Skills

Children will develop early STEM skills including:

- **Science**: cause and effect, gravity, force, motion, and simple machines
- **Technology**: tools and investigating how things work
- **Engineering**: creating designs, building solutions, and solving problems
- **Math**: abstract and quantitative reasoning, attributes of objects, and shape identification

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.

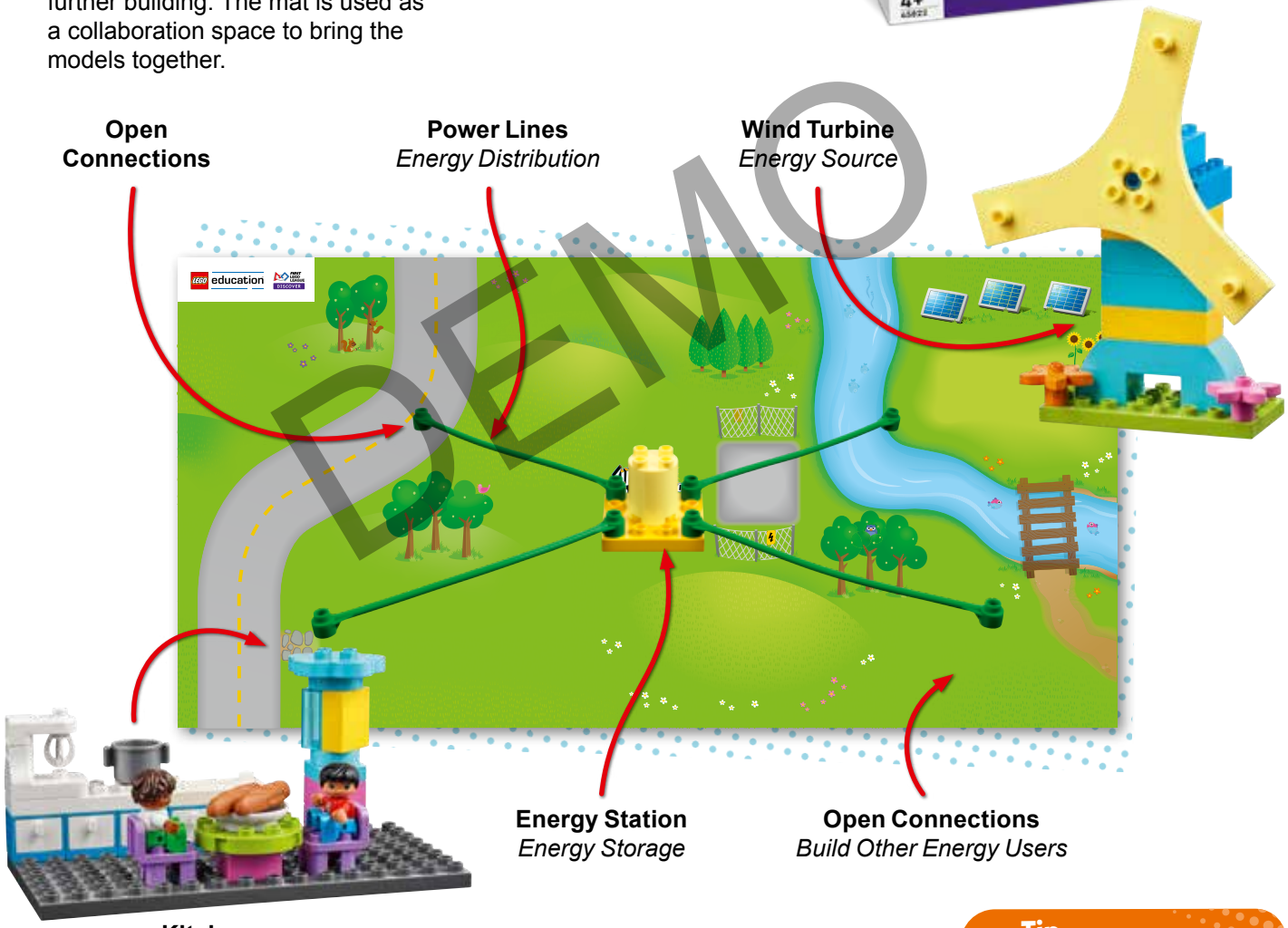
What Do You Need?

Discover Set Video

Discover Set *(serves 4 children)*

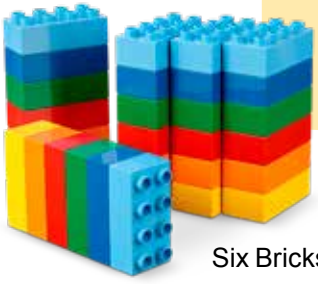
The Discover set consists of the Discover model, LEGO® DUPLO® figures, Six Bricks sets, mat, and building cards. The Discover model is intended to help children connect to the theme and provide a starting point for discussions and further building. The mat is used as a collaboration space to bring the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



DUPLO Figures

Building Cards



Six Bricks Sets

Tip

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

Family Engagement

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

Family Engagement Resources

Each child should take home one Discover More set, which contains two sets of Six Bricks. You could send home the Discover More Game along with the Discover More set. The families will keep the Discover More sets, and they don't need to come back to the classroom.

Tip

If possible, hold a meeting with families to introduce *FIRST* LEGO League Discover and the Discover More game.

This meeting could cover:

- What *FIRST* LEGO League Discover is
- What the Habits of Learning are
- What the Core Values are
- The celebration event
- The Discover More set and game
- How to support children at home

If you're not able to hold a meeting, you might use a variety of other ways (letter, video, website, social media) to communicate this information to families.

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 die, and a token for each player.

Recognizing that these activities have been done helps to build a bridge between home and school and the learning that takes place in both.

WHAT IS THE CELEBRATION EVENT?

At the end of the their experience, all teams should participate in a celebration event (Session 10). 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 (page 24) and certificates.
- 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.

Tip

See pages 23-24 for more details on the event day.

Session Layout

	Warm-Up (Six Bricks) 10 minutes	Task 1 (Explore) 10 minutes	Task 2 (Create) 25 minutes	Task 3 (Share) 15 minutes
Session 1 Let's Discover	Discover Six Bricks I	Energy Theme	Explore STEAM Park	Share Prompt
Session 2 Energy Sources	Discover Six Bricks II	Energy Sources	Wind Turbine and Energy Sources	Engineering Notebook Page
Session 3 Energy Connections	Energy Flow	Energy Connections	Energy Connections	Share Prompt
Session 4 Energy Users	Energy Device	Energy Users	Kitchen and Energy Users	Engineering Notebook Page
Session 5 Fun Fair	What Can You Build?	Mat Areas	Fun Fair with Moving Parts	Share Prompt
Session 6 Your Energy Story	Build the Picture	Energy Jobs	Your Energy Story	Engineering Notebook Page
Session 7 Electric Car	Energy Tower	Ramps	Electric Car and Charging Station	Share Prompt
Session 8 Future Energy	Future Car	Reflection	Energy Future	Engineering Notebook Page
Session 9 Improve Energy Story	Along the Wire	Energy Needs	Improve Your Energy Story	Share Prompt
Session 10 Let's Celebrate	**Final Celebration Event!**			

Session 1: **Let's Discover**

Each session provides a deeper connection to support you and 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 for the children, know that they will make mistakes and iterate on their designs.

What can we build with STEAM Park related to energy?

Each session has a Big Question that can be shared to frame the session.

Six Bricks Warm-Up (15 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 1

Task 1 (10 minutes)

Introduce the theme of energy. Have a discussion on these questions to start the session and explore the children's understanding. Recognize times in the school day when the children use energy.

To encourage language use, you could ask them:
- What is **energy**?
- What sort of energy do we use to make things work (i.e., sunlight, **electricity**, **fuel**)?
- How do you use energy (i.e., food, light bulbs, electronics)?

Task 2 (25 minutes) 2

Have the children build using the different pieces in STEAM Park. Encourage them to play freely and build anything they want, using their imaginations and discovering the pieces' **functions**. Help them identify pieces that could relate to energy.

Task 3 (15 minutes)

Have the children share and explain what they built and how the pieces they identified relate to energy. 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.

Outcomes

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

The children will identify LEGO® elements that relate to energy.

Tips

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

2 Check out the Functional Elements lesson for examples.

Key Vocabulary

electricity, energy, fuel, function

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.

FIRST® ENERGIZE℠ PRESENTED BY Qualcomm

FIRST® LEGO® LEAGUE