

**FIRST
LEGO
LEAGUE**

EXPLORE

TEAM MEETING GUIDE



FIRST® LEGO® League Global Sponsors

The LEGO Foundation



Introduction

Welcome!

In *FIRST*® LEGO® League Explore, teams focus on the fundamentals of engineering as they explore real-world problems, learn to design and code, and create unique solutions made with LEGO® bricks and powered by LEGO® Education SPIKE™ Essential.

FIRST LEGO League Explore is one of three divisions by age group of the *FIRST* LEGO League program. 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® AGE™ and UNEARTHED™

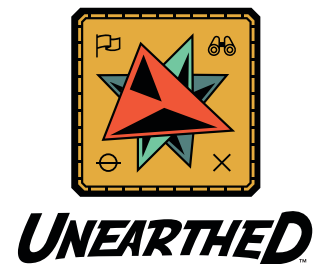
Welcome to the *FIRST*® AGE™ season presented by Qualcomm. Robots. LEGO bricks. Game pieces. Tools. Team T-shirts. Volunteer pins. Engineering notebooks. Pizza boxes. Banners. Remove the people from a *FIRST*® community event, and these are some of the objects you might see left behind. They are the **artifacts** future archaeologists can use to put together the pieces of the *FIRST* story.

Archaeology helps us **uncover cultural histories** through the study of artifacts. The field

provides insight into how living beings have interacted with our planet and each other throughout history. It reconstructs the stories of our communities so we can learn from our past.

During our archaeology-inspired season, *FIRST* teams and supporters will use STEM and collaboration skills to unearth new findings about ourselves and our collective communities to help build a better world.

Dig in with *FIRST*!



Explore, Create, Test, & Share

Explore: This season, children will be asked to investigate the past as if they are a team of archaeologists. They should review the Explore story found in the *Engineering Notebook* for clues about how archaeologists learn about people and cultures from a long time ago. Encourage children to ask questions about the theme and make real-world connections to the models they build.

Create & Test: The children will build and explore an archaeological dig site, tools used to uncover mysterious artifacts,

and more. They will also explore coding as they motorize parts of their team model toward the end of their experience. Encourage children to build freely and change their models as they have new ideas or when they've learned something new.

Share: The children will record their ideas and designs in their *Engineering Notebooks*. They will share their models and what they learned with others. Finally, they will participate in a festival to share their team posters and team

models with reviewers, families, and friends. Most importantly they will . . .



Playful Learning in Action

The Coach's Role

As a coach in *FIRST*® LEGO® League Explore, your job is to guide and support your team while allowing the children to take ownership of their learning. The team will rely on you to help them stay focused, ask guiding questions, and provide tools or resources when needed.

You don't need to be an engineering expert or a seasoned educator – your goal is to create a space where curiosity thrives and every child feels empowered to contribute.

Coaches in *FIRST* LEGO League Explore will:

- **Facilitate Play and Learning:** Guide the team as they explore STEM concepts using the Explore Set and create their team model and poster.
- **Promote Teamwork:** Encourage team members to share ideas, take turns, and collaborate as they work together.
- **Champion Core Values:** Model the *FIRST* Core Values and recognize how teams apply them throughout each session.
- **Prepare the Team:** Help the team prepare to present their team model and poster at the festival event, ensuring they're ready to share what they've learned and created.
- **Be a Role Model:** Celebrate every step of progress, no matter how small, and encourage the team to embrace new ideas and challenges.

Explore Story

The Explore story is a wordless comic used throughout the sessions to inspire creativity and spark discussions about the season's theme. Teams are encouraged to interpret the images to create their own imaginative story and to connect what they build to the story the images tell. There is no right or wrong way to interpret the Explore story, and teams can use it as much or as little as they like.

Have the team look closely at each scene and think about what the characters might be feeling, saying, or doing. What clues can they find in their expressions, actions, and backgrounds? What might have happened before this moment, and what could happen next?



Tip

The Explore story is found on page 4 of the *Engineering Notebook* and the back of the Explore mat.

FIRST® Core Values

The *FIRST*® Core Values are fundamental to *FIRST* and unique to its programs. They emphasize friendly collaboration, respect for the contributions of others, teamwork, learning, and community involvement and are part of our commitment to fostering, cultivating, and preserving a culture of equity, diversity, and inclusion.

Our community expresses the *FIRST* philosophies of *Gracious Professionalism*® and *Coopertition*® through the *FIRST* Core Values.



We are stronger when we work together.



We respect each other and embrace our differences.



We apply what we learn to improve our world.



We enjoy and celebrate what we do!



We explore new skills and ideas.

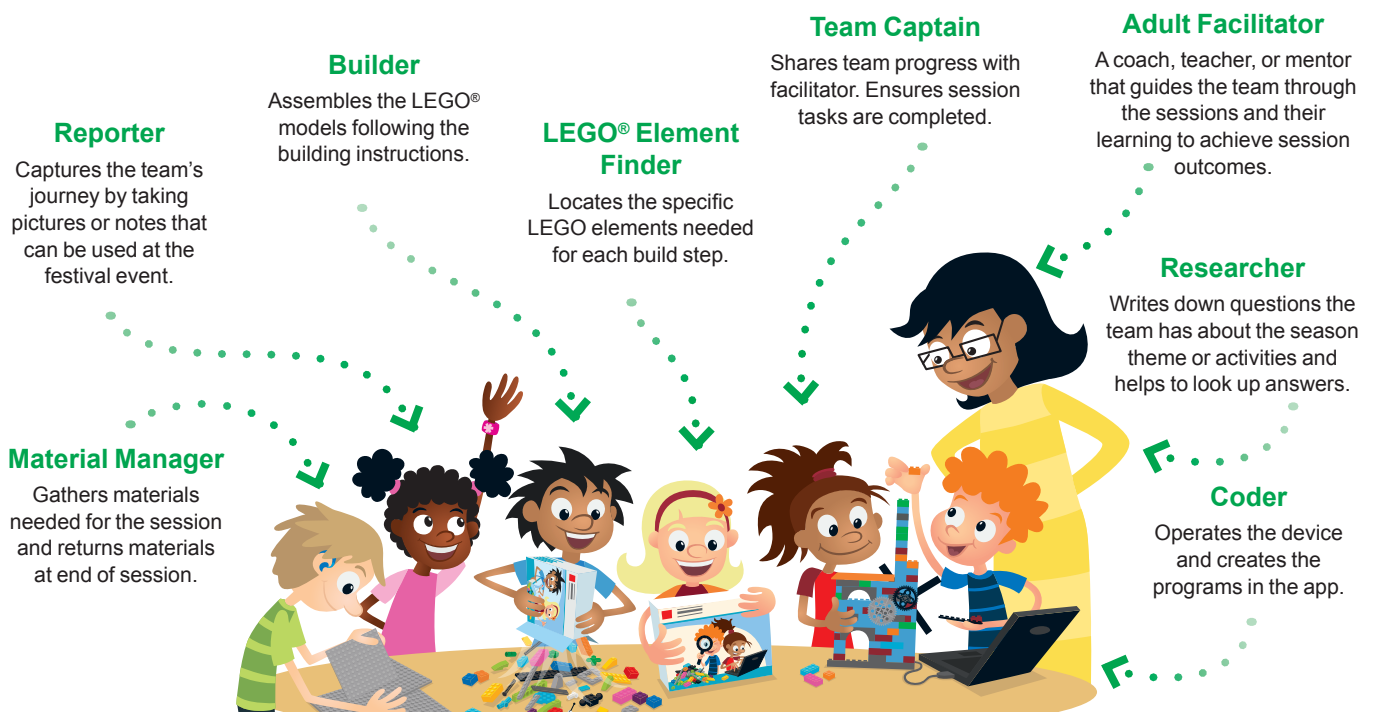


We use creativity and persistence to solve problems.

Team Roles

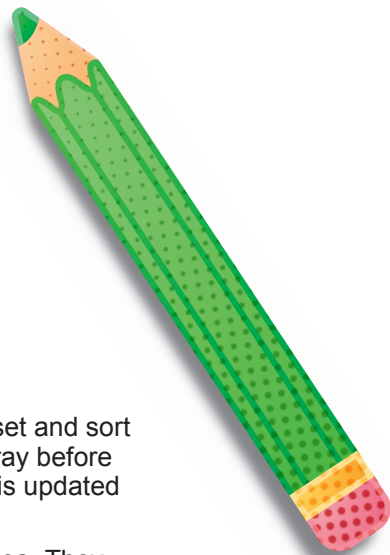
Using roles helps the team function more efficiently and ensures that everyone on the team is engaged. Team members can use these suggested roles throughout their sessions or create their own. Make sure that every team member has the chance to try each role during the season, allowing them to explore different tasks and responsibilities.

Some roles, such as builder or coder, could be filled by multiple team members during a session. Each team member could also experience a role multiple times throughout their *FIRST*® LEGO® League Explore experience.



Pre-Season Checkpoint

The following are some helpful steps for getting started with coaching *FIRST*® LEGO® League Explore. Use this checkpoint to help you get ready for your first session with the team.



- ☐ Read the **Engineering Notebook** and all pages of this **Team Meeting Guide**. These guides are full of helpful tips and resources to guide you through the sessions.
- ☐ Ensure you have received all materials needed to implement the program. See page 8 for what you need.
- ☐ Make sure you have a Bluetooth-enabled device with the **SPIKE™ App** installed.
- ☐ Identify the space where you will meet and how you will store materials between the sessions.
- ☐ Decide how often your team will meet. Communicate this schedule with team members and families.
- ☐ Think about your **festival event**. Do you need to register for a local event, or are you having your own classroom festival? Share the date of the festival with families and caregivers. See pages 30 for more details.
- ☐ Unpack the **SPIKE Essential** set and sort the LEGO® elements into the tray before Session 1. Make sure the hub is updated and fully charged.
- ☐ Explore the **FIRST® Core Values**. They are the essential foundation of *FIRST* programs.
- ☐ Familiarize yourself with the contents of the **Explore Set** and watch the *FIRST* LEGO League Explore **season videos** on the *FIRST* LEGO League YouTube channel.
- ☐ Browse the available content on the **Explore Season Resources** page and **Multimedia Resources** list.
- ☐ Coaches and team members could complete the **Tutorial Activities** in the SPIKE App so that they gain experience in building and coding before the sessions. This is especially helpful if you are new to the program.

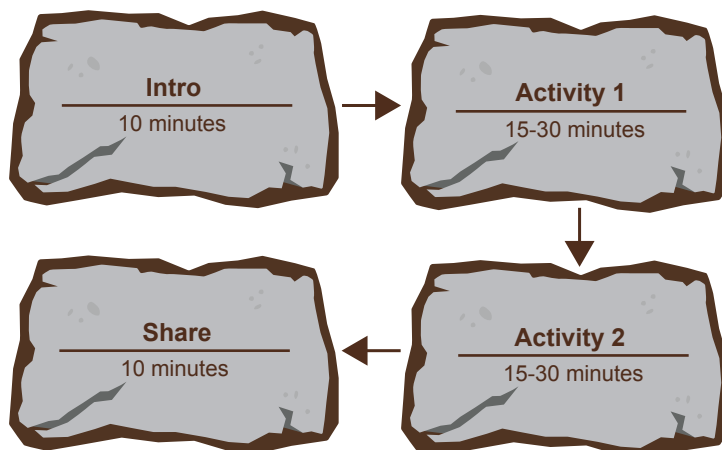


Tip

Mid-season checkpoints can be found on pages 18 and 22.

Session Timing

The session task times here are suggestions. You may find that you need more or less time to explore and complete the tasks within a session. Be flexible and remember that you can split the tasks up over multiple days if needed.



Season at a Glance

Session tasks can be split over two or more team meetings.

Recommended: 60 minutes

Session 1: Archaeology Adventure

Explore UNEARTHED™ theme
Archaeology free-build activity

Session 2: Relic Rescue

Build models from Explore Set
Explore artifacts

Recommended: 60-75 minutes

Session 3: Site Surveyors

Coding Lesson 1 (Classic Carousel)
Explore how archaeologists use maps

Session 4: Dirt Detectives

Coding Lesson 2 (Animal Alarm)
Explore how archaeologists use technology

Session 5: Excellent Excavators

Coding Lesson 3 (Arctic Ride)
Explore vehicles used at excavation sites

Session 6: Signal Seekers

Explore tools and technology
Code the radar model

Session 7: History Helpers

Explore archaeology jobs
Code the excavation model

Recommended: 90 minutes

Session 8: Team Model

Design team model
Build team model

Session 9: Team Poster

Design team poster
Create team poster

Session 10: Prepare for Your Event

Finish team model and poster
Practice sharing

What Does the Team Need?

LEGO® Education Set

The LEGO® Education SPIKE™ Essential set, with its motor, sensor, and hub, is the set referenced throughout the sessions in this guide.

Note: Other LEGO Education sets are also allowed and can be used to complete the activities, although specific instructions may vary.



UNEARTHED™ Explore Set

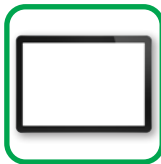
Each team will need one Explore Set, which includes the Explore model, mat, building instructions, and prototyping pieces. Leave the LEGO pieces in their numbered bags until the team reaches the sessions that need them.



Engineering Notebooks

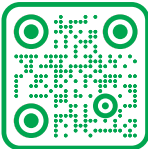
Each team member needs their own *Engineering Notebook* to record their ideas and progress. The *Engineering Notebook* contains session tasks, jobs and technology, and relevant information to guide them through the sessions.

Electronic Device



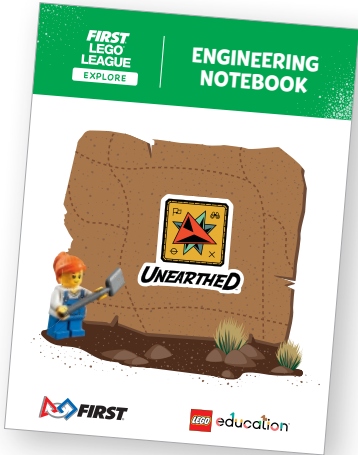
Your team will need at least one compatible Bluetooth-enabled device like a laptop, tablet, or computer to run the LEGO® Education SPIKE™ App.

Scan the QR code to view system requirements and download the SPIKE App.



Team Poster Supplies

Each team will need a poster board and various art supplies in Sessions 9-10 to complete their team poster. These supplies can also be used in earlier sessions to record team progress.



	Radar	Excavation Site	Excavation Site Hub and Motor Pieces	Prototyping Pieces
Book	1	2	2	-
Bag	1	2-5	6	7-12

Team Management Tips

SESSION PLANNING

- The **suggested session lengths** are flexible. Your team may need more or less time to complete tasks. Feel free to revisit previous sessions as many times as needed to meet the session outcomes.
- Use the **mid-season checkpoints** on pages 18 and 22 to track your team's progress and ensure they're on the right path. These checkpoints will help to get your team ready for the festival event.
- Ask open-ended questions to help keep the team focused and encourage deeper thinking. You can find **guiding questions** within each session to spark discussion.
- Explore **jobs and technology** on pages 5, 28, and 29 of the *Engineering Notebook* to help team members link their activities to real-world jobs.
- Remember, it's the team members who should be doing the work. Your role as a coach is to guide, encourage, and remove obstacles, enabling them to lead their own exploration journey.

BUILDING AND CODING

- Encourage team members to refer to the **building and coding instructions** while working on the Explore models and check their work as they go.
- There's no right or wrong way to approach **creative building**. Let the team use their imagination and focus on connecting to the season theme and exploring new ideas along the way.
- Remind teams to embrace the **engineering design process**. Encourage them to modify and improve their designs throughout the season. The process is outlined on the back of their *Engineering Notebooks*.

Scan here for the
Multimedia Resources.



MATERIAL MANAGEMENT

- Make sure to **charge electronic devices** and **store all materials** in a designated space between sessions. This will keep everything organized and ready for the next meeting.
- Keep **extra LEGO® pieces** in a shared container so team members can easily access them if they are missing elements during building.
- Use bags, bins, or the set's lid to **store unfinished builds** or keep loose pieces organized and prevent them from getting lost during the session.

FACILITATING TEAMWORK

- Help the team practice taking turns and **resolve conflicts** by encouraging open communication and kindness. Step in to guide the conversation when needed, but let the team work toward their own solutions.
- Plan **team-building activities** to help build collaboration, respect, and use of the *FIRST®* Core Values.
- Consider printing or having the team create their own **Core Values posters** to display during sessions. This visual reminder will help them reflect on these principles as they work together.

SUPPORT RESOURCES

- Take advantage of the **Multimedia Resources** list, **Session Slides**, and the **Season Resources** page. These tools provide additional support and can enhance your team's learning experience.
- Remember, your **local Program Delivery Partner** is here to help! Reach out to them for local resources, including coach meetings or support groups. Connecting with other coaches can offer valuable insights and ideas for running your sessions.

Session 1

Outcomes

- The team will use **discovery** to explore the UNEARTHED™ theme and share what they know about archaeology.
- The team will build things related to archaeology.

Introduction

Let's Discover!

- Introduce the *FIRST*® Core Values. Read the definition for *discovery* to the team from page 5.
- Have the team provide examples of how they have used **discovery**.

Get the teams excited to start their UNEARTHED™ journey!

Guiding Questions

- What do you know about archaeology?
- What does an archaeologist do?
- What do you think is happening in the Explore story?

- 1 Use the Multimedia Resources to find example photos, websites, and other activities related to the sessions.
- 2 Help the children select a team name. This is how the team will be recognized at the festival. They can record their name in their *Engineering Notebook*.
- 3 The Explore story on page 4 is a wordless comic referenced throughout the sessions to inspire creativity and spark discussions about the season's theme.
- 4 Writing and drawing space is provided throughout the *Engineering Notebook* for each team member to capture their ideas.

Session 1

Activity 1 Tasks

- 2 ☐ Gather with your team and pick a team name for the UNEARTHED™ season.
- 3 ☐ Look at the Explore story on page 4. Look closely at each picture and think about what the characters might be thinking or doing.
 - ☐ Share what you know about archaeology with your team.
 - ☐ Write or draw what your team shared.
 - ☐ List your team goals on page 6.

A list of materials needed for each activity can be found here.

Your team needs:



What words do you know that relate to archaeology?

What happened in the Explore story?



Archaeologists are scientists that study how people lived in the past!

4

Archaeology Adventure



Have the team set some goals for the season. They can share what they hope to learn about archaeology or about building and coding.

Share

Have the team:

- Talk about what they think happened in the Explore story.
- Share what they know about archaeology.
- Share what they built to tell their story.

Each session has guiding questions to help you facilitate discussion with the team.

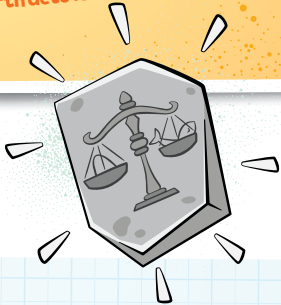
Your team needs:



5

The prototyping pieces from the Explore set are in Bags 7-12. They will be used in building activities.

Sometimes archaeologists don't have all the information they need to rebuild an artifact. Technology can be used to imagine what artifacts looked like in the past.



Archaeology Adventure

Activity 2 Tasks

- ☐ Divide your team into two groups and share the prototyping pieces.
- ☐ Build a small artifact. What did your teammates build?
- ☐ Put the artifact on the mat.
- ☐ Draw a picture of the artifact you built.

6

Challenge

- ☐ Take the artifact apart and trade your pieces and drawing with another group.
- ☐ You are an archaeologist who made an amazing discovery. The artifact you found is in many pieces and needs to be put back together. A drawing of the artifact was found. Will it help you put it back together?
- ☐ Rebuild the artifact based on the drawing. Did your group rebuild the artifact correctly?

7

Guiding Questions

- What do you see on the mat?
- How do archaeologists know where to dig?
- What do archaeologists look for?

Session Tips

- 5 The prototyping pieces in Bags 7-12 are used throughout the sessions to build solutions to the design challenges. If you have other LEGO® bricks available, you can use those to give the team more options.
- 6 Help the team trade their artifact models with the other group. You could limit the number of bricks used to simplify the activity.
- 7 Encourage the children to share what they built and to explain how it is related to the theme of archaeology.

Clean Up

- Anything built with the prototyping pieces should be taken apart.
- Keep the prototyping pieces in a dedicated container as they will be used frequently throughout the experience.

Session 2

Outcomes

- The team will build the radar and excavation site models from the Explore Set.
- The team will talk about artifacts and the tools used to find them.

Introduction

Make an impact!

- Read the definition of *impact* to the team from page 5.
- Talk about what **impact** is. Have the team provide examples of how they use this Core Value.



Talk to the team about dig sites, where archaeologists work to recover artifacts from underground using a variety of tools.

Guiding Questions

- How do archaeologists know where to dig?
- What are some tools that are used by archaeologists?
- How can radar help an archaeologist find an artifact?

Session Tips

- 1 There is a summary of the archaeological process on page 30 of the *Engineering Notebook*.
- 2 Use Bag 1 and Book 1 to build the radar model. Have the children work as a team to build the models. They should talk about what they are building.
- 3 Lead a discussion about tools used at an excavation site.

Session 2

Activity 1 Tasks

- 1 ☐ Look at the archaeological process on page 30.
☐ Talk to your team about how archaeologists choose where to dig.
☐ Use Bag 1 and Book 1 to build the radar model.
☐ Place the radar model on the mat.
☐ Take turns moving the model to different locations on the mat. What kind of artifacts could be detected by radar?
- 3 ☐ Talk to your team about other tools used by archaeologists. What tools are needed for digging? What tools are used to document or study artifacts?
☐ Write your ideas below.

Your team needs:

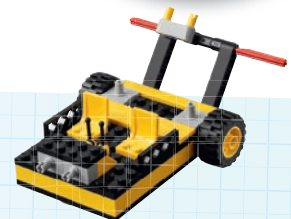


2

A dig site is a place where archaeologists remove, or excavate, artifacts from the ground.

Tools like radar help find artifacts that are lost or buried deep underground. An excavator might be used to dig up a large area.

Some tools used by archaeologists are ...

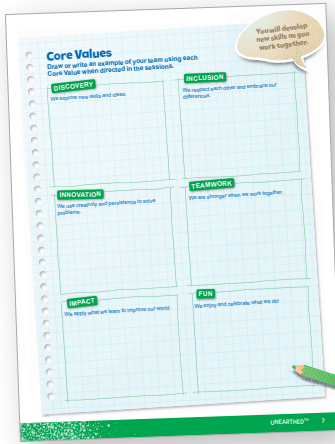


Extra tip



- The team can look at jobs and technology related to archaeology on pages 5, 28, and 29 of the *Engineering Notebook*.
- Make sure to charge your LEGO® Education set for the next session!

Relic Rescue



Complete the Core Values page throughout the sessions during the introduction activities.

Share

Have the team:

- Talk about the radar and excavation models.
- Share what they learned about how archaeologists excavate a site in their *Engineering Notebooks*.

Your team needs:



Leave the excavation model assembled at the end of the session.

Page 31 shows pictures of the model being taken apart.

Archaeologists search for items from long ago, like artifacts or relics. They might find pottery, coins, tools, or even old toys.

Relic Rescue

4 Activity 2 Tasks

- ☐ Use Bags 2-5 and Book 2 to build the excavation model.
- ☐ Place the model on the mat.
- ☐ Explore the layers of the excavation model. Use the archaeology tools to remove pieces. What artifacts can be found inside?
- ☐ Talk with your team about the artifacts inside the excavation model. How do you think these were used?
- ☐ Practice removing layers and excavating the model. Can you put it back together?
- ☐ Look at the different rooms within the model and discuss with your team how they were used.

Challenge

- ☐ Excavate the model carefully to retrieve one of the artifacts.
- ☐ Put the model back together and challenge another team member to excavate another artifact. Make sure everyone has a turn.
- ☐ Share what you learned about artifacts and excavating.

Guiding Questions

- How many artifacts are inside the excavation model?
- How do archaeologists keep track of what they find?
- How did you put the model back together after another team member took it apart?

Session Tips

- 4** Use Bags 2-5 and Book 2 to build the excavation model.
- 5** Have the children explore the layers of the excavation model. They may need to use some of the tools included in the set to unlock different layers. (See page 31 of the *Engineering Notebook*.)

Clean Up

- Fold the mat and store it to keep it from being damaged.
- The radar and excavation site models can stay assembled. They will be used again in Sessions 6 and 7.

Session 3

Outcomes

- The team will build the LEGO® model from the lesson and explore motor-coding blocks.
- The team will learn about how archaeologists use technology at a dig site.

Introduction

Teamwork makes the dream work!

- Read the definition for *teamwork* to the team from page 5.
- Talk about what **teamwork** is. Have the team provide examples of how they use this Core Value.



Tell the team they will use their device and the SPIKE™ App in this session to code a motor.

Guiding Questions

- Which blocks can you use to code the LEGO model?
- How do you change the program so the model moves in a different way?

Session Tips

- 1 The team will only use their SPIKE Essential set for Activity 1.
- 2 If your team is new to coding, you could have them complete the Tutorial Activities in the app.
- 3 Lessons can be found in the *FIRST® LEGO® League Explore Unit*. Show the team how to access the Classic Carousel lesson in the app.

Session 3

Activity 1 Tasks

- 2 ☐ Open the SPIKE App on your team's device.
- 3 ☐ Complete Coding Lesson 1 in the *FIRST® LEGO® League Explore Unit – Classic Carousel*.
- ☐ Change the program so the carousel rotates in the opposite direction.
- ☐ Talk with your team about how this model could help an archaeologist. What changes would you make?
- ☐ Write your ideas below.

Your team needs:



Archaeologists look for clues to find the best places to dig. They use old maps and technology to learn where people lived a long time ago.

An archaeologist could use this to...

Site Surveyors

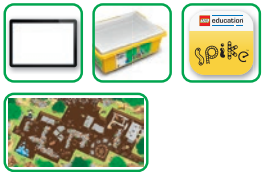


Share

Have the team:

- Share the motor-coding skills they learned.
- Talk about the kind of technology used at a dig site.

Your team needs:



Surveys help map the locations of sites and artifacts to understand how the people that once lived there used the land.

Drones can be flown above an excavation site to help create maps or to find new places to dig.

Site Surveyors

Activity 2 Tasks

- 4 ☐ Change the carousel model so an archaeologist can use it at an excavation site. You could build one of the ideas you had in Activity 1.
- ☐ Select an artifact on the mat that interests your team.
- ☐ Place the model on the mat near the artifact.

Challenge

- 5 ☐ Open the SPIKE App on your team's device.
- ☐ Change the program so that the model rotates and stops above the artifact you selected.
- ☐ Share what you built and explain how you coded the model.

Guiding Questions

- What would you add to the model to make it look like a tool used for archaeology?
- Can you code the model so it stops over a different artifact?

Session Tips

- 4 The team should use LEGO® elements from their SPIKE Essential set to modify their model.
- 5 The team should determine how to change direction and speed in their program.
- 6 Examples of jobs and technology used by archaeologists are listed in the *Engineering Notebook* on page 5, 28, and 29.

Clean Up

- Everything built in this session should be taken apart and returned to storage.

Write your program here:

Session 4

Outcomes

- The team will build the LEGO® model from the lesson and explore sensor blocks.
- The team will learn about how sensors can be used to detect things archaeologists cannot see at an excavation site.

Introduction

Have fun!

- Talk about how the team has **fun**. Have the team share examples of this Core Value.
- Read the definition for *fun* to the team from page 5.



Tell the team they will use their device and the SPIKE™ App to explore sensor blocks in this session.

Guiding Questions

- How can you change the program so the LEGO model displays a different light?
- How can you code the model to make a sound?
- How might an archaeologist use a sensor?

Session Tips

- 1 The team should focus on using the light blocks in this activity. The team could also incorporate sound into their Animal Alarm model if they have time.
- 2 Give the team time to experiment with the program and different coding options.
- 3 Questions in the *Engineering Notebook* are meant to start a discussion and generate ideas.

Session 4

Activity 1 Tasks

- 1 ☐ Open the SPIKE App on your team's device.
☐ Complete Coding Lesson 2 in the *FIRST® LEGO® League Explore Unit – Animal Alarm*.
- 2 ☐ Change the program so that a different color will display on the alarm.
☐ Talk with your team about how this model could help an archaeologist.
☐ Write your ideas below.

Your team needs:



Sensors can help archaeologists detect things that can't be seen with our eyes.

How can sensors help us learn more about artifacts?

Sensors can help an archaeologist...



The Explore story can be revisited to stimulate conversation or generate ideas.

Dirt Detectives

Share

Have the team:

- Share the sensor-coding skills they learned.
- Share how archaeologists use sensors to learn more about artifacts.

Your team needs:



Archaeologists use sensors to study artifacts without damaging them. Some sensors can detect what materials are present or if something is hidden inside.

Dirt Detectives

Activity 2 Tasks

- 4 ☐ Change the **Animal Alarm** model so that it can be used to inspect artifacts. You could build one of the ideas you had in the previous task.

- 5 ☐ Select an artifact on the mat or any object your team will investigate.

Challenge

- 6 ☐ Change the program so the model will play a sound when your artifact is detected by the sensor. You could also change the light pattern.
- 6 ☐ Share what you built and explain how you coded the model.

Guiding Questions

- How can you change the model so it can be used on an artifact?
- What artifacts or objects should be tested with the sensor?
- How did you include your team members' ideas?

Session Tips

- 4 Use the SPIKE Essential set to modify the model.
- 5 Try to keep the Explore Set separate from the other materials. The sensor will be added to the radar model in Session 6.
- 6 Test your program by using the sensor on other objects from the Explore Set or elsewhere.

Clean Up

- Everything built in this session should be taken apart and returned to storage.

Write your program here:

Session 5

Outcomes

- The team will build the LEGO® model from the lesson and program a robot to drive.
- The team will learn how archaeologists handle and move artifacts at an excavation site.

Introduction

Be innovative!

- Read the definition for *innovation* to the team from page 5.
- Talk about what **innovation** is. Have the team provide an example of this Core Value.



Tell the team they will use their device and the SPIKE™ App to code a driving robot in this session.

Guiding Questions

- How can you make the robot drive in reverse?
- Why would an archaeologist need a vehicle at an excavation site?
- What other vehicles would be helpful at an excavation site?

Session Tips

- 1 The team will create a driving robot. Tell the team to watch their robot so that it does not fall off the table.
- 2 The team can take turns making changes to the program.
- 3 The team will use only their SPIKE Essential set for this activity.

Session 5

Activity 1 Tasks

- 1 ☐ Open the SPIKE App on your team's device.
- 2 ☐ Complete Coding Lesson 3 in the *FIRST® LEGO® League Explore Unit – Arctic Ride*.
- 2 ☐ Change the program so that the model will drive in reverse.
- ☐ Talk with your team about how this model could help an archaeologist.
- ☐ Write your ideas below.

Your team needs:



Trucks, cars, excavators, and cranes are all vehicles you might find at an excavation site.

An archaeologist could use this to...

Mid-season Checkpoint

- ☐ The team has built the radar and excavation models.
- ☐ The team has developed building and coding skills after completing the SPIKE Essential lessons.
- ☐ The team can describe the archaeological process.

Excellent Excavators



The engineering design process is on the back of the *Engineering Notebook*. Show the children how they are using this process.

Share

Have the team:

- Share how they applied coding skills in this session.
- Share how archaeologists use vehicles at excavation sites.

Your team needs:



Archaeologists use vehicles to carry away dirt or to move old artifacts.



Excellent Excavators

Activity 2 Tasks

- ☐ Change the **Arctic Ride** model so that it represents a vehicle used by an archaeologist. You could build one of the ideas you had in the previous task.

4

Challenge

- ☐ Select two artifacts on the mat.
- ☐ Change the program so your model will drive between the two artifacts. Try to stop your model on the artifact.
- ☐ Share what you built and explain how you coded the model.

5

6

Guiding Questions

- Can you modify the robot so that it drives with four wheels?
- Could you build a truck to carry away lots of material from the excavation site?
- How can you code your robot to stop on one of the artifacts?

Session Tips

- 4 Use the Multimedia Resources to find example photos, websites, and other activities related to the sessions.
- 5 The team should practice positioning the robot so that it reaches a specific location on the mat.
- 6 You could place an obstacle on the mat to challenge the team to code their robot to turn.

Clean Up

- Everything built in this session should be taken apart and returned to storage.

Write your program here:

Session 6

Outcomes

- The team will build tools used by archaeologists at excavation sites.
- The team will add the sensor and hub to the radar model.

Introduction

Be inclusive!

- Read the definition for *inclusion* to the team from page 5.
- Talk about what **inclusion** is. Have the team provide examples of this Core Value.



The team will use their device and the SPIKE™ App in this session to modify their radar model.

Guiding Questions

- What archaeology tools have you already learned about?
- How do archaeologists use the tools you talked about with your team?
- Which tools will you draw in your *Engineering Notebook*?

Session Tips

- 1 Encourage the team to build tools using the prototyping pieces.
- 2 Use the Multimedia Resources to find example photos, websites, and other activities related to the sessions.
- 3 Have the children use archaeology words they have learned in previous sessions.

Session 6

Activity 1 Tasks

- ☐ Talk to your team about tools used by archaeologists. What tools are needed for digging? What tools are used to document or study artifacts?
- ☐ Write your ideas below.
- ☐ Select a tool to build with your team.
- ☐ Use the prototyping pieces to create a tool used by archaeologists.
- ☐ Put the tool on the mat.

Challenge

- ☐ Build a total of three tools that your team thinks an archaeologist would use at an excavation site.
- ☐ Talk to your team about how each of the tools are used.
- ☐ Share what you built with your team.

Your team needs:



Look at the jobs on pages 5, 28, and 29 to see what tools and technology are used in archaeology.

Some tools used by archaeologists are...

3

Signal Seekers



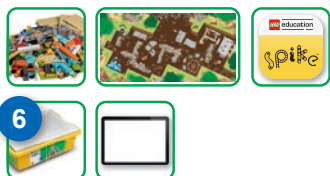
Have the team revisit their goals page in their *Engineering Notebooks* to share what they've learned so far.

Share

Have the team:

- Talk about the tools and technology used at excavation sites.
- Share what they have learned about archaeology so far.

Your team needs:



Signal Seekers

Activity 2 Tasks

- 4 ☐ Locate the radar model from Session 2 or use Bag 1 to build it.
- 5 ☐ Use the building instructions in Book 1 to attach the hub and the sensor to the radar model.
- ☐ Open the SPIKE App. Try the program you used in Session 4 on the radar model.
- ☐ Take turns moving the model to different locations on the mat. What kind of artifacts could be detected by radar?

Challenge

- ☐ Program the model to display a different light pattern.
- ☐ Talk to your team about other tools used by archaeologists. What tools are needed for digging? What tools are used to study artifacts?
- ☐ Write your ideas below.

Guiding Questions

- What do you know about radar and how it is used by archaeologists?
- What other technology could you find at an excavation site?
- What other jobs might you find at an excavation site?

Session Tips

- 4 The team can rebuild the radar model if it was taken apart or modified in a previous session.
- 5 Use the building instructions in Book 1 to attach the sensor and hub to the radar model.
- 6 Use the SPIKE Essential set in Activity 2 and return the pieces to storage at the end of the session.

Clean Up

- Everything built in this session should be taken apart and returned to storage.
- Store the SPIKE™ Essential set and the Explore Set separately.

Some tools for digging and studying artifacts are...



Session 7

Outcomes

- The team will learn about jobs related to archaeology.
- The team will add the motor and hub to the excavation model.

Introduction

Model discovery!

- Have the team provide examples of how they have used **discovery** throughout the sessions.
- Have the team build something using the prototyping pieces representing this Core Value.



The team will use a device and the SPIKE™ App in this session to motorize their excavation site model.

Guiding Questions

- What jobs would you find at an excavation site?
- What places are artifacts sent so people can study them?
- What jobs support the work of archaeologists?

Session Tips

- 1 The team should pick one job to focus on before looking at others.
- 2 Use the Multimedia Resources to find example photos, websites, and other activities related to the sessions.
- 3 Use the prototyping pieces and other parts of the Explore Set to have the team build examples of different jobs.

Mid-season Checkpoint

- ☐ The team has practiced attaching the hub and attachments to the radar and excavation models and explored ways to code them.
- ☐ The team has explored tools, technology, and jobs related to archaeology.
- ☐ Register for an event and share details with families and caregivers.

Session 7

Activity 1 Tasks

- 1 ☐ Explore the archaeology jobs on pages 5, 28, and 29.
- 2 ☐ Pick a job that interests you. What kind of training does it require? What kind of tools are used?
☐ Write or draw your ideas below.
- 3 ☐ Use the pieces in the Explore Set to build an example of the job you selected.
☐ Share your ideas with your team.

Your team needs:



Archaeologists carefully study ancient artifacts and solve real-life puzzles to uncover the stories of people from long ago!

My ideas:



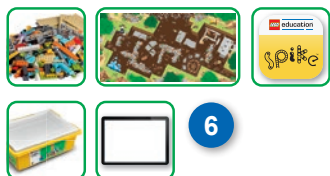
History Helpers

Share

Have the team:

- Share what they learned about archaeology jobs.
- Talk about the jobs and technology used at excavation sites.

Your team needs:



History Helpers

Activity 2 Tasks

- 4 ☐ Locate excavation site model from Session 2 or use Bags 2-5 and Book 2 to build it.
- 5 ☐ Use the building instructions in Book 2 to attach the hub and motor to the excavation site model.
- ☐ Open the SPIKE App. Try the program provided in Book 2 to activate the millstone inside the excavation site model.

Challenge

- ☐ Pick a job for each person on the team and imagine you are all working at the excavation site.
- ☐ Program the model to move in a different way.
- ☐ Use the prototyping pieces to add to the model so that it represents your team.
- ☐ Talk to your team about your role at the excavation site.
- ☐ Share what you built with your team.

Archaeologists work as a team and must rely on good communication and teamwork to be successful.



Guiding Questions

- What kind of skills are needed for these jobs?
- Pick two jobs. How are these jobs different?
- What else would you want to learn about archaeology?

Session Tips

- 4 The team can rebuild the excavation site model if it was taken apart or modified in a previous session.
- 5 Use Book 2 to attach the motor and hub to the excavation site model.
- 6 Use the SPIKE Essential set in Activity 2 and return the pieces to storage at the end of the session.

Clean Up

- Everything built in this session should be taken apart and returned to storage.
- Store the SPIKE™ Essential set and the Explore Set separately.

Session 8

Outcomes

- The team will draw their team model and label the different parts.
- The team will create a team model to share what they learned about archaeology throughout the sessions.

Introduction

Model teamwork and fun!

- Have the team provide examples of how they have used **teamwork** and **fun** throughout the sessions.
- Have the team build something using the prototyping pieces representing these Core Values.



Tell the team they will build their team model and think about what they plan to share with the reviewers at the festival.

Guiding Questions

- How will you plan your design for your team model?
- What do you think is the most important part of your team model and why?
- What part of your team model are you most proud of?

Session Tips

- 1 The team will need all parts of the Explore Set (radar and excavation site models) and the mat.
- 2 Each member could build part of the team model and work as a group to put them together on the mat.
- 3 The team model can only be made of LEGO® bricks, minifigures, baseplates, and other LEGO elements.

Session 8

Activity 1 Tasks

- 3 ☐ Talk to your team about what you have learned about archaeology.
- ☐ Check the required parts of the team model on the next page.
- ☐ Design a team model that shows a team of archaeologists excavating artifacts on the Explore mat.
- ☐ Draw your ideas for your team model below. Label the different parts.

2 Activity 2 Tasks

- ☐ Create your team model together on the Explore mat.
- ☐ Talk about the different parts of your model.

Your team needs:



It's time to build your team model! Your team model will be presented to reviewers at the festival.

Draw and label your team model:



Extra Tip

Create the team model over two meetings and allow the children to be creative.

Team Model



Share

Have the team:

- Review the list of required parts and identify them on the team model.
- Demonstrate and explain their team model.

Team Model

Requirements

- Include an archaeologist, an excavation site, tools, and a special artifact.



- Use only LEGO® elements.

- Use SPIKE™ Essential to motorize any part of your model.

- Include all parts of the Explore Set and mat.

Guiding Questions

- What are the strengths of your design?
- What part of the model will you code and motorize?
- What will you want to share with reviewers at the festival?

Session Tips

- 4 The team model should be able to fit on a table and be easy to move.
- 5 The team should apply the coding concepts learned throughout the sessions to activate their model.
- 6 The team can choose to motorize any part of their team model.

Clean Up

- The team model should stay assembled for the festival.
- Organize unused pieces of the SPIKE™ Essential set and Explore Set and return them to storage.



Session 9

Outcomes

- The team will create a plan for what they will include on their team poster.
- The team will design and create their team poster.
- The team will practice presenting their poster.

Introduction

Model innovation and inclusion!

- Have the team provide examples of how they have used **innovation** and **inclusion** throughout the sessions.
- Have the team build something using the prototyping pieces representing these Core Values.



The team will create a team poster and think about what they plan to share with the reviewers at the festival.

Guiding Questions

- What topics do you want to include on the team poster?
- What pictures could you draw or add to your poster?
- How can you show what you learned?

Session Tips

- 1 You will need to provide a large poster board and various art supplies. A trifold poster board works well.
- 2 The team should create the poster themselves. You can support them and provide insight.
- 3 The team can look back at the Team Journey and Core Values pages in their *Engineering Notebooks* for ideas.



Extra Tip

Create the team poster over two meetings and allow the children to be creative.

Session 9

Activity 1 Tasks

- 3 ☐ Talk to your team about what you will include on your team poster.
- 3 ☐ Use the next page to draft your ideas.

Activity 2 Tasks

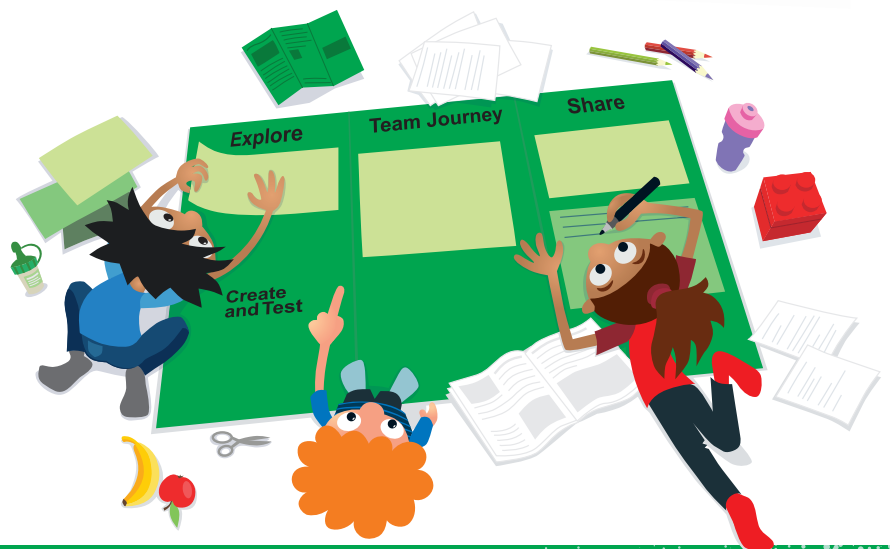
- 2 ☐ Decide how your team will create the poster and determine what supplies you will need.
- ☐ Gather your poster board and supplies.
- ☐ Create your team poster. The whole team should help create it.

Your team needs:

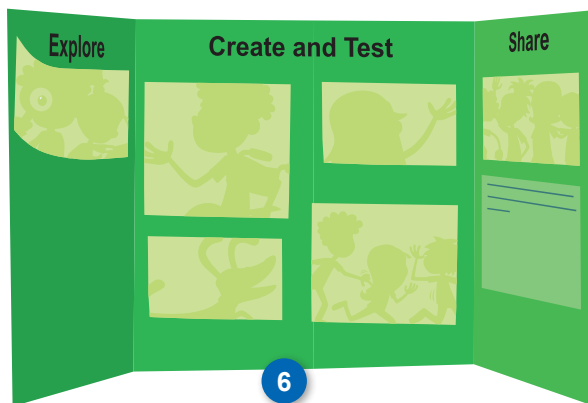


1

Your team poster should describe your team's journey throughout the sessions.



Team Poster



Share

Have the team:

- Share their team poster design and contents.
- Demonstrate how they will share their poster and model with the reviewers.

Guiding Questions

- How will each person talk about the poster?
- What do you want the reviewers to know about your poster?

Session Tips

- 4 Sample topics for the poster are provided for the students. However, they can choose to include anything they feel is necessary.
- 5 Provide extra paper for the team to draw and write their ideas for their team poster.
- 6 Look ahead to Session 10 to see what the reviewers will be asking the team.

Clean Up

- Find a safe place to store the poster.
- You may need extra time at the end of each session to clean up the art supplies.

Team Poster

Team Poster Idea Page

Include how you worked together as a team, what you learned about archaeology, what you built as your team model, and anything else you want to share!

4

5

In the next session, you will prepare for the Explore Festival. You should have your team model and team poster completed.

Session 10

Outcomes

- The team will reflect on their UNEARTHED™ experience.
- The team will create a plan and practice what they will share at the festival.

Introduction

Model impact!

- Have the team provide examples of how they have had an **impact** throughout the sessions.
- Have the team build something using the prototyping pieces representing this Core Value.



The team should have a completed team model and team poster and should use this session to prepare what to share with reviewers.

Guiding Questions

- How has the team demonstrated Core Values?
- How will you present your poster and model at the festival?
- What else does the team need before the event?

Session Tips

- 1 Go over the reviewing sheet and explain the reviewing process with your team.
- 2 Ask the team the reviewing questions and practice the responses they would give.
- 3 A festival is a critical part of the FIRST® LEGO® League Explore experience. If you are unable to attend, plan a celebration of your own. Class Pack teachers can use the *Class Pack Guide* to plan their event.

Session 10

Session Tasks

- 1 ☐ Gather your completed team model and team poster.
☐ Talk about how your team will share what you learned with the reviewers.
☐ Complete the next page.

It's almost time for the FIRST® LEGO® League Explore festival!

2 At the festival, reviewers will ask you about what you learned and give you feedback. They will ask questions about your team model and your team poster.

Sample Festival Roles



Prepare for Your Event



Share

Have the team:

- Practice their team poster presentation.
- Practice their team model presentation.

Prepare for Your Event 5

What I Will Share with Reviewers

4

- Can you describe your team model?
- Explain how your team used innovation and creativity to explore archaeology.

- What did you learn about the season theme?
- How did you use Core Values?

- What part of your team model is motorized?
- How did you code your motorized part?

- What did you include in your team poster?
- How does the poster show your team journey?

6

Let's celebrate how well your team worked together! It is much more fun when everyone on the team is included.



UNEARTHED™ 27

Guiding Questions

- How does the team model relate to the season theme?
- Can you explain the program you coded for the motorized model?
- How will your team show your team spirit at the event?

Session Tips

- 4 The team doesn't need to answer every question on this page. These are meant to help the team feel ready for the event.
- 5 You could have the team practice their presentation by presenting to others before their event.
- 6 Your team could register for an Explore festival or you can run your own. Whichever you decide, be sure to celebrate what the children have learned and accomplished during their Explore experience.

Clean Up

- Make sure the team model and team poster are stored and ready to be transported to the festival.
- Check that you have the device, charging cord, and fully charged battery for the event.

Festival Preparation

FIRST® LEGO® League Explore events are called festivals.

The goal of an Explore festival is for the team to celebrate their hard work and share what they have learned with others. Here's a helpful checklist to help your team prepare.

- ☐ Determine what type of event you're attending and who is organizing it. If you purchased a Class Pack, organizing the festival event will be your responsibility. Check out the **Class Pack Guide** for more details.
- ☐ Review the time and location where you are meeting for the festival and how long teams are expected to stay – share this information with families. Encourage families and caregivers to attend if possible.
- ☐ Remind the team that the festival is a learning experience, and the goal is to have fun! The festival will end in an **award ceremony** where each team is celebrated for their amazing achievements.
- ☐ Go over the **reviewing process** with the team. Let them know the reviewers will ask questions about what the team has been working on and will be excited to hear about what they learned.
- ☐ Remind team members to fill out page 27 of the *Engineering Notebook* to plan what they will share at the festival event.
- ☐ Encourage the team to interact with other teams at the festival to share what they have learned and to support each other.
- ☐ Have the team prepare a **checklist of materials** needed for the festival. Teams will need to bring their team model, poster, and LEGO® Education set.

Reviewing Process

At the festival, teams present their team model and poster, sharing their design process and what they've learned about the season's theme. Volunteer reviewers engage with the teams by asking questions and offering positive feedback.

The **Reviewing Sheet** is used to provide supportive feedback to teams, ensuring that every team feels proud of their achievements while reinforcing the **FIRST® Core Values**. Reviewers also use this sheet to determine which awards each team will win.



Scan here for festival resources and to download the reviewing documents.

What's Next?

Are your events complete? Are you finished with your UNEARTHED™ season?

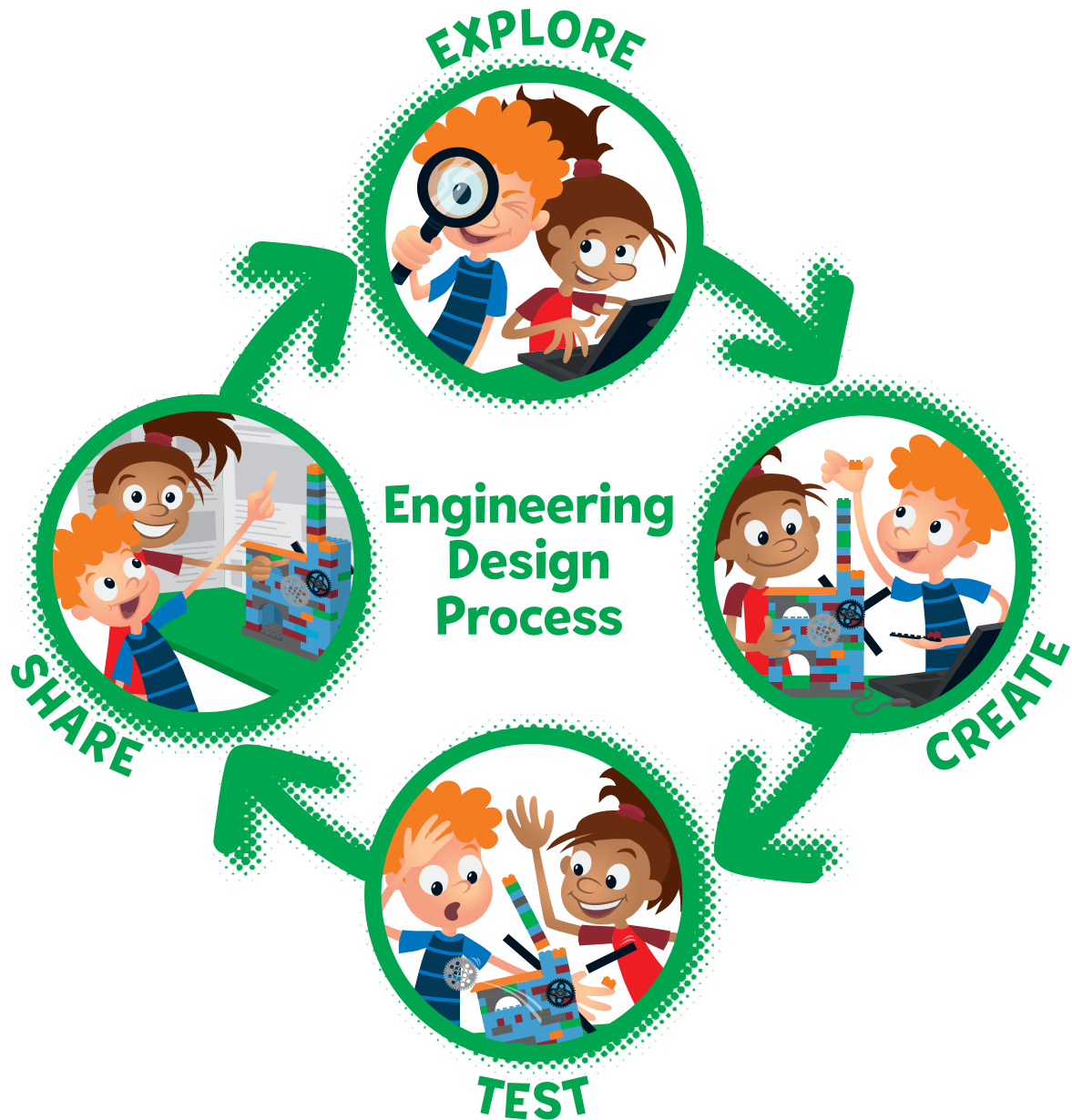
Here are some tips for wrapping up after the team's last event:

- Clean up and take apart the team model. Make sure all SPIKE™ Essential elements go back with the set.
- Inventory the SPIKE Essential set to make sure all the pieces are there.
- Decide what to do with Explore set elements.
- Provide time for the team to reflect on their experience.
- Hold another team celebration and give out certificates!

FIRST® LEGO® League Challenge

If this is your team's last year participating in *FIRST® LEGO® League Explore*, share information about *FIRST LEGO League Challenge*, the next step in the *FIRST* progression of programs. Visit the *FIRST LEGO League* website or reach out to your local Program Delivery Partner to learn about starting a team or registering students.





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