FIRST LEGO LEAGUE EXPLORE

TEAM MEETING GUIDE

FIRST

LEGO education

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FIRST® LEGO® League Global Sponsors

Guide Basics

How to Use this Guide

The 12 sessions outlined give your team a guided experience in *FIRST*® LEGO® League Explore. Plan for each session to last 60 minutes, but you may adjust this to meet your own implementation needs. Your role during each session is to lead the introduction and facilitate the group and team activities.

Working as a Team and in Groups

For most sessions, the team is divided into two groups, May's Group and Marco's Group. The team will work together to create their team model and team poster.

If you are working with more than one team at one time, make sure that you have all the materials listed on page 4 for EACH team. Each team should have no more than six students. See page 7 for management tips.

Available Resources

Your country might have a specific *FIRST* LEGO League website, which you can find by going to firstlegoleague.org and clicking your region on the world map. To find available resources, visit the firstinspires.org. Sign up for email blasts from *FIRST* for news and blogs and follow us on social media.

Resources

LEGO Support	education.lego.com/en-us/support Phone: (800) 422-5346
Main Websites	firstlegoleague.org/ firstinspires.org/robotics/fll
Team Resources	firstinspires.org/resource-library/fll/explore/team-management-resources
General Support Questions	fllexplore@firstinspires.org
Equity, Diversity, & Inclusion	firstinspires.org/about/diversityinclusion
Youth Protection	firstinspires.org/resource-library/youth-protection-policy
LEGO Education Teacher Community	community.lego.education.com

What Does the Team Need?

LEGO® Education WeDo 2.0 Set

Electronic Device

Your team will need a compatible Bluetooth-enabled device like a laptop, tablet, or computer. To view system requirements and download software, visit legoeducation.com/downloads.

Team Poster Supplies

Each team will need a large poster board and various art supplies and materials to create their team poster in Sessions 10-11.

PLAYMAKERS℠ Explore Set

Each team will get one PLAYMAKERS℠ Explore Set. Leave the LEGO® elements in their plastic bags until the sessions in which they are needed.

	Heart Game	Treadmill	Motor and Hub Build	Prototyping Pieces
Bag	1	2	3	4
Book	1	2	2	-
Session Built	May's Group: 2 Marco's Group: 5	May's Group: 3 Marco's Group: 6	Team: 8	• These are used during Sessions 2-7 to build solutions to the design challenges. • The team will use these elements (along with one part of the combined build) to create their team model in Sessions 8-9. • There are six baseplates provided. These can be used for each individual student to create his or her own build ideas or can be combined to create a team build.

Engineering Notebook Explained

Read the *Engineering Notebook* carefully. Each person on the team should have one. It contains all the information the team needs and guides them through the sessions. The tips in this *Team Meeting Guide* will direct you how to support each session.

Getting Started Pages

- Welcome
- Team Journey
- Challenge Story
- Core Values
- Inspiration Toolkit

Additional Pages

- Empty Lot Drawing Space
- Park Drawing Space
- Obstacle Course Drawing Space
- Find Your Projects
- Programming Block Descriptions
- Career Connections

Session Layout

	Introduction (10 minutes)	Group and Team Tasks (35 minutes)		Share and Clean Up (15 minutes)
Session 1	Let's Discover	Whole Team: Explore Challenge	Whole Team: Build Models	Share
Session 2	Coach Says!	May's Group: Heart Game	Marco's Group: Cooling Fan	Share
Session 3	Walk and See	May's Group: Treadmill	Marco's Group: Moving Satellite	Share
Session 4	Act It Out	May's Group: Combine Models	Marco's Group: Spy Robot	Share
Session 5	Human Robot	May's Group: Cooling Fan	Marco's Group: Heart Game	Share
Session 6	Let's Dance	May's Group: Moving Satellite	Marco's Group: Treadmill	Share
Session 7	Kid Robot	Marco's Group: Spy Robot	Marco's Group: Combine Models	Share
Session 8	Have an Impact	Whole Team: Code Model	Whole Team: Build Motor & Hub	Share
Session 9	Let's Innovate	Whole Team: Build Team Model	Whole Team: Code Team Model	Share
Session 10	Be Inclusive	Whole Team: Create Plan	Whole Team: Design Poster	Share
Session 11	Go Team	Whole Team: Create Poster	Whole Team: Finish Poster	Share
Session 12	Let's Have Fun	Whole Team: Prepare to Share	Whole Team: Get Ready for Event	Share

General Management Tips

COACH TIPS

- Determine your timeline. How often will you meet and for how long? How many meetings will you have before your official event?
- Set team guidelines, procedures, and behaviors for your meetings.
- Get into the mind-set that the team should be doing most of the work and learning. You are there to facilitate their journey and remove any major obstacles.
- Celebrate the failures and every success, no matter how small.

TEACHER TIPS

- If you are running this program with a classroom of students, place them into teams of four.
- If you are implementing during the school day, adapt the sessions to fit your needs.
- Number and label the LEGO® sets. Assign each team a set for the whole time.
- Have teams name their Smarthubs. They can use tape to identify them.
- If you aren't sending all your teams to an official event, check out the *Class Pack Festival Guide* for how to host your own event for your teams.

TEAM MANAGEMENT

- When the team is working with the Explore set, you could use these roles:
  - LEGO element finder
  - Builder
  - Checker
- When the team is working with the WeDo 2.0 set, you could use these roles:
  - LEGO element finder
  - Builder
  - Programmer
- Provide extra drawing or grid paper to the team to write and draw their ideas.
- There are template pages of the empty lot, park, and grid lines in the *Engineering Notebook* that could be copied and provided to teams.

MATERIAL MANAGEMENT

LEGO Parts

- Place any extra or found LEGO pieces in a cup. Have kids who are missing pieces come to the cup to look for them.
- Wait to dismiss your team until you look over their LEGO set.
- The lid of the LEGO set can be used as a tray to keep pieces from rolling away.
- Use plastic bags to store any unfinished builds and their pieces between sessions.
- Designate a storage space for the builds and WeDo 2.0 container.

Pre-Session Checklist

- [ ] Make sure you have a Bluetooth-enabled device with the WeDo 2.0 app or software installed.
- [ ] Unpack the WeDo 2.0 set and sort the LEGO® elements into the tray.
- [ ] Make sure the Smarthub has batteries in it.
- [ ] Familiarize yourself with the contents of the Explore set. When you get to Sessions 2-7, you will see that each group needs a specifically numbered bag and book.
- [ ] Read over the *Engineering Notebook* and this guide to gain an understanding of the materials.
- [ ] Explore the *FIRST*® Core Values. These are the essential foundation for your team.
- [ ] Watch the *FIRST* LEGO League Explore Season Launch video and other videos on the *FIRST* LEGO League YouTube channel.
- [ ] Think about any adult experts that could visit the team and talk about the theme.
- [ ] Think about places in your community where the team could visit to help them think about the task of changing spaces so that everyone can be more active there.

New to Building and Coding?

If the team is new to using WeDo 2.0, it would be beneficial to take some time for them to get acquainted with building and coding with the set. Here are suggested activities that the team could complete before starting the session:

1. **Introduction**
2. **Getting Started Project: Glowing Snail**

Session 1

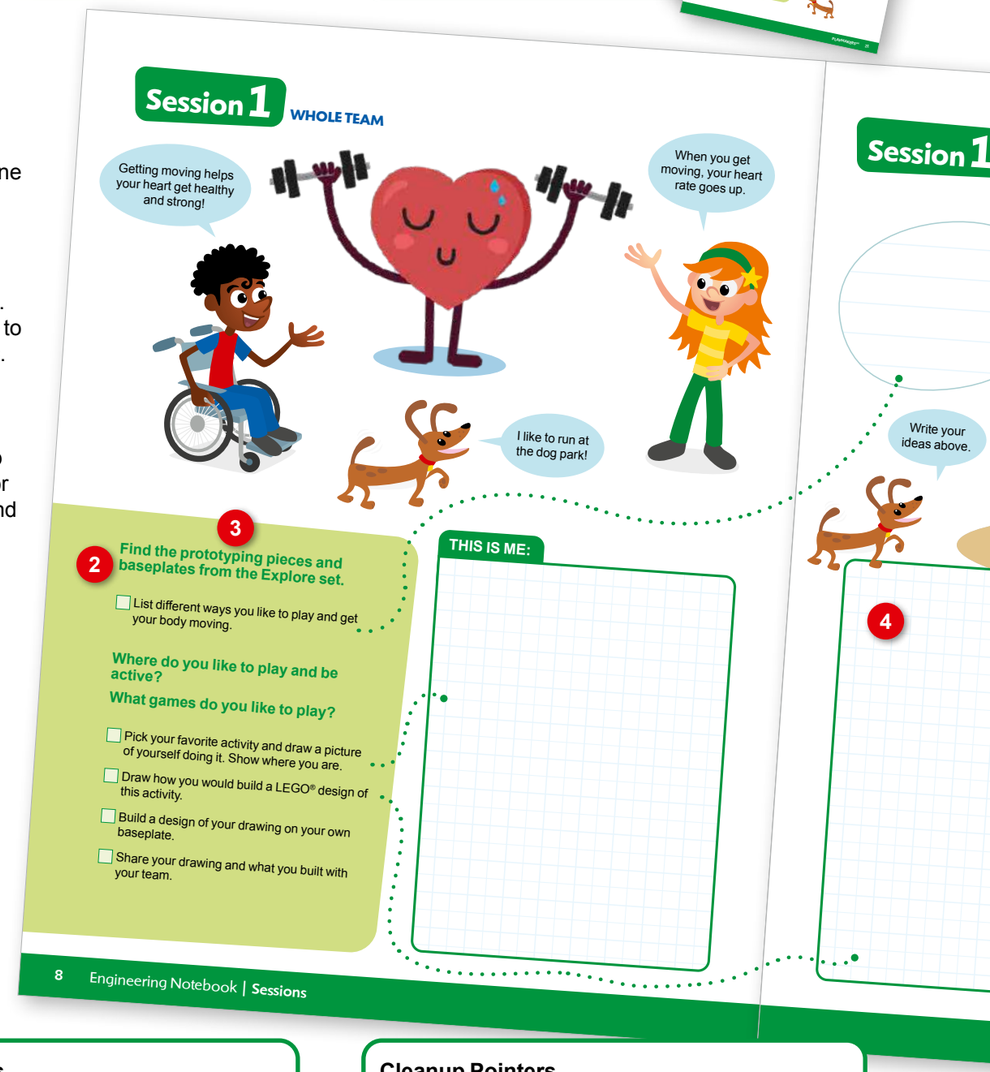
Outcomes

- All students on the team will be able to list their favorite activities in which they move and play and will draw a picture of themselves doing that activity.
- All students on the team will be able to draw a design of and build a LEGO® model of their favorite activity on their individual baseplate.

1. Introduction:
Session 1: Let's Discover

Details for each of the Introduction activities are provided on pages 21-24.

2. There are six baseplates in the Explore set. Give one to each student.
3. Introduce the prototyping pieces (Bag 4) to the team. They will use these to create their models. Do NOT open any other bags.
4. Provide extra scrap paper as needed for the team to draw and write their ideas.



Guiding Questions
- How does your favorite activity help raise your heart rate?
- Where do you play your favorite activity?

Cleanup Pointers
- The LEGO models built should be taken apart. The prototyping pieces could be placed back in the Explore box or in a container labeled "Prototyping Pieces."

Sessions 2 and 5

Outcomes

- The group will be able to build the heart game. They will be able to build a solution for a game for May and Marco that will raise their heart rate.
- The group will be able to build the cooling fan and program it. They will be able to create a new code with the provided coding blocks and adapt the cooling fan design.

Introduction:

Session 2: Coach Says!
Session 5: Human Robot

1. The group will need Book 1 and Bag 1 located in the Explore set.
2. Each group is given a place to use as the location for their solution to Marco's question.
3. You could provide additional scrap paper or copies of the drawing pages for the team to use if needed.
4. One full page of drawing space is provided for both the empty lot and the park for use across multiple sessions.
5. Only Bag 4 should be used to build the solution to the question presented by Marco.

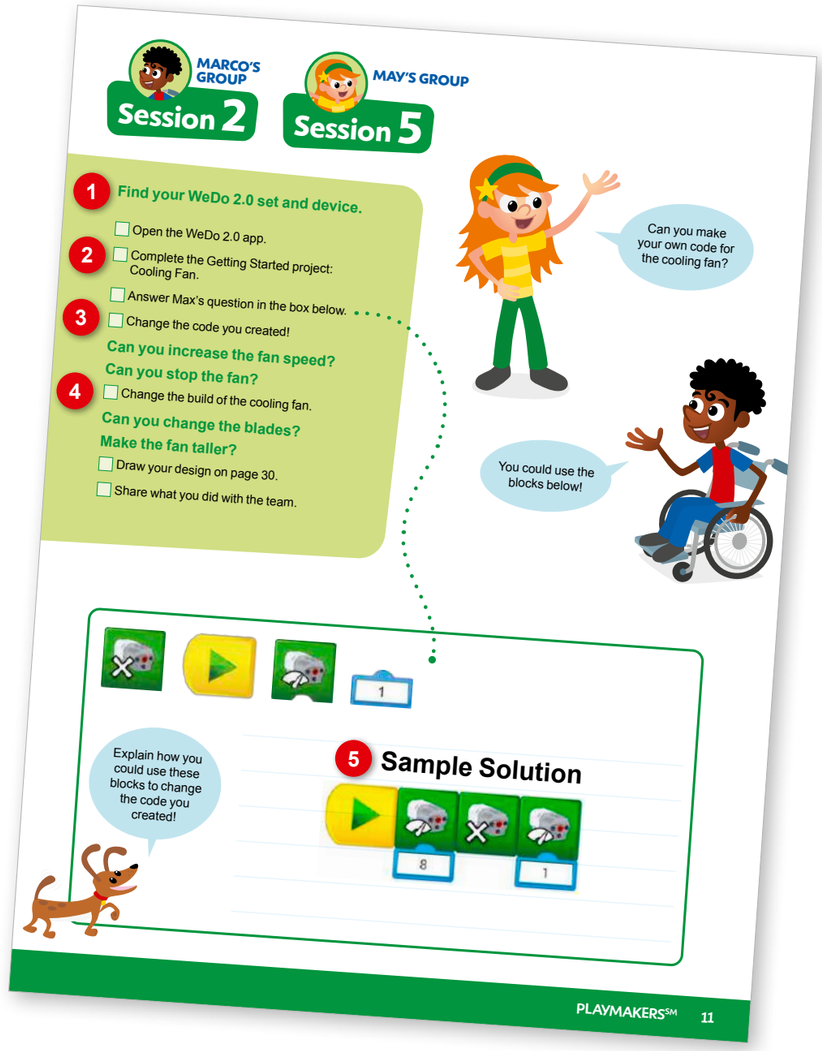
Guiding Questions

- How could you create a fun game to get people more active in your community?
- What solution did you build to answer Marco's question?
- What do you want your code to make the model do?
- How did you change the design of the cooling fan?

Cleanup Pointers

- The cooling fan should be taken apart and the LEGO® elements returned to the WeDo 2.0 set.
- The heart game should remain assembled for Session 4 (May's Group) and Session 7 (Marco's Group) to be combined with the treadmill.
- The solution built with the prototyping pieces should be taken apart and elements stored.

1. Make sure you have the WeDo 2.0 app loaded on the device before this session.
2. Instructions for accessing Getting Started projects are on page 26 in the *Engineering Notebook*.
3. If a group is short on time, you could have them complete the Getting Started project only.
4. Get the team in the habit of sorting the WeDo 2.0 elements back into the set at the end of each session.
5. The coding blocks are deliberately placed in the incorrect coding sequence. A sample solution is provided here.



Share

- Get your team together to share what they did in the session.
- Have the group show the coding skills they learned. Have them explain how they changed the code and the design.
- Have the group demonstrate how the heart game works. Have them explain their designs and solutions for the challenge presented by Marco.

Sessions 3 and 6

Outcomes

- The group will be able to build the treadmill. They will be able to build a solution for different play stations for May and Marco.
- The group will be able to build and program the moving satellite. They will be able to create a new code with the provided coding blocks and adapt the moving satellite design.

Introduction:

Session 3: Walk and See
Session 6: Let's Dance

1. The group will need Book 2 and Bag 2 located in the Explore set.
2. You could provide examples of different activity stations like those in the gym, at a park, or on a playground.
3. The Inspiration Toolkit page in the *Engineering Notebook* on page 7 is a great resource for real-life examples and ideas.
4. Use the prototyping pieces to build the solution to the question presented by Marco.

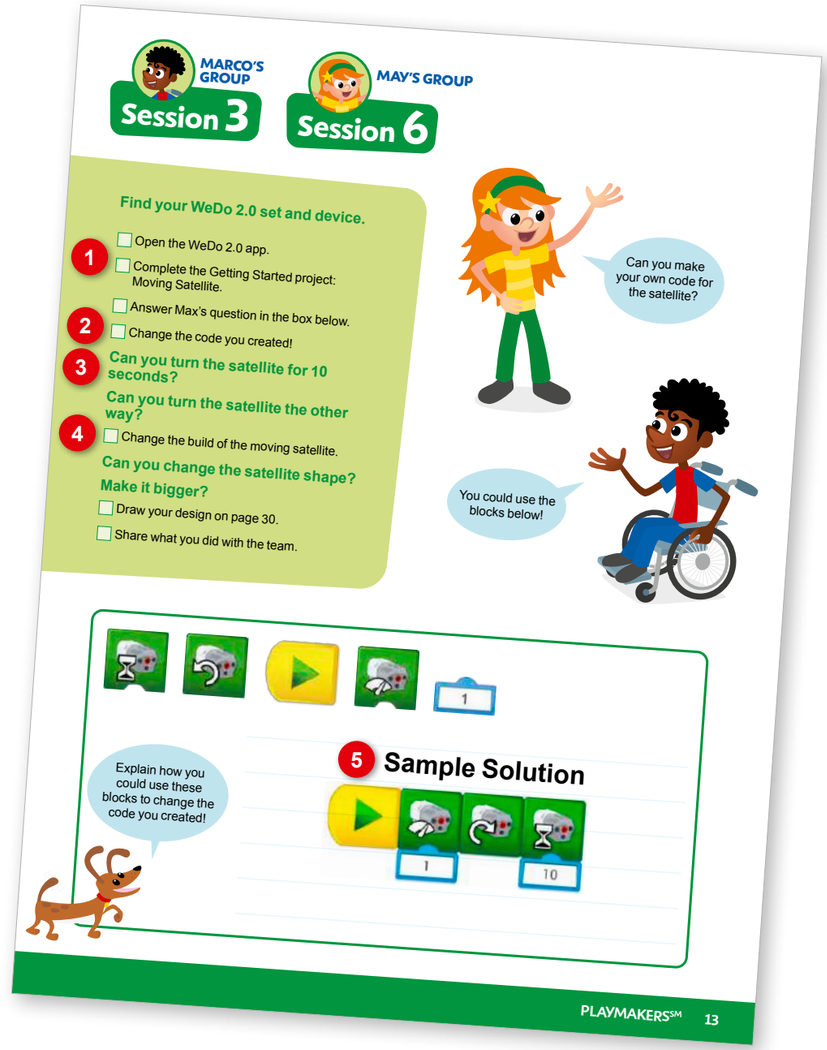
Guiding Questions

- How does the treadmill build compare to the real-life treadmill?
- How does your solution answer Marco's question?
- What do you want your code to make the build do?
- How did you change the design of the moving satellite?

Cleanup Pointers

- The moving satellite should be taken apart and the LEGO® elements returned to the WeDo 2.0 set.
- The treadmill should remain assembled for Session 4 (May's Group) and Session 7 (Marco's Group) to be combined with the heart game.
- The solution built with the prototyping pieces should be taken apart and elements stored.

1. The group will use various motor blocks to code the motor direction and duration.
2. If a group is short on time, you could have them complete the Getting Started project only.
3. You could have the group write the sequential steps for the code before coding in the app.
4. Get the team in the habit of sorting the WeDo 2.0 elements back into the set at the end of each session.
5. The coding blocks are deliberately placed in the incorrect coding sequence. A sample solution is provided here.



Share

- Get your team together to share what they did in the session.
- Have the group show the coding skills they learned. Have them explain how they changed the code and the design.
- Have the group demonstrate how the treadmill works. Have them explain their designs and solutions for the challenge presented by Marco.

Sessions 4 and 7

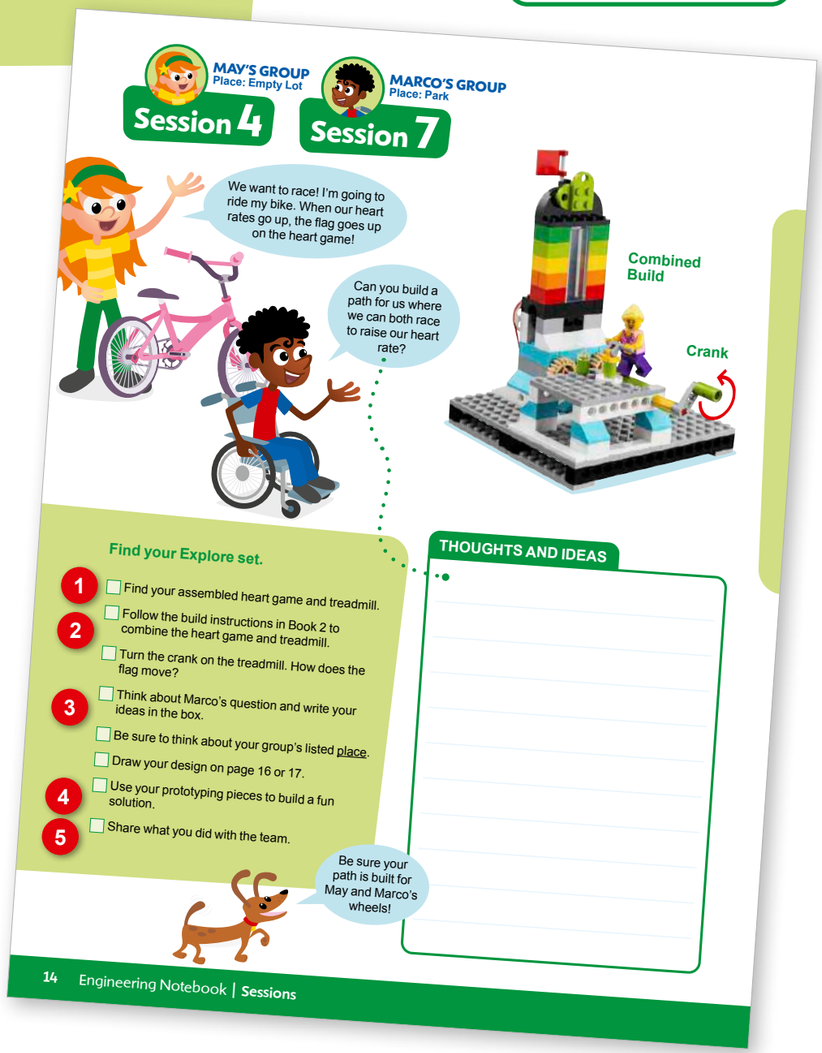
Outcomes

- The group will be able to combine the heart game and treadmill. They will be able to build a solution for a path for May and Marco.
- The group will be able to build the spy robot and program it. They will be able to create a new code with the provided coding blocks and adapt the spy robot design.

Introduction:

Session 4: Act It Out
Session 7: Kid Robot

1. The group will need their assembled heart game and treadmill. If these builds have been taken apart, have the group build them again.
2. The group will need Book 2 located in the Explore set. No extra pieces are needed for assembly.
3. The goal is for the group think about making sure their path is accessible for both the bicycle and wheelchair.
4. Use the prototyping pieces to build the solution to the question presented by Marco.
5. A bicycle and wheelchair are located in Bag 4 and could be physically shown moving through the built solution.



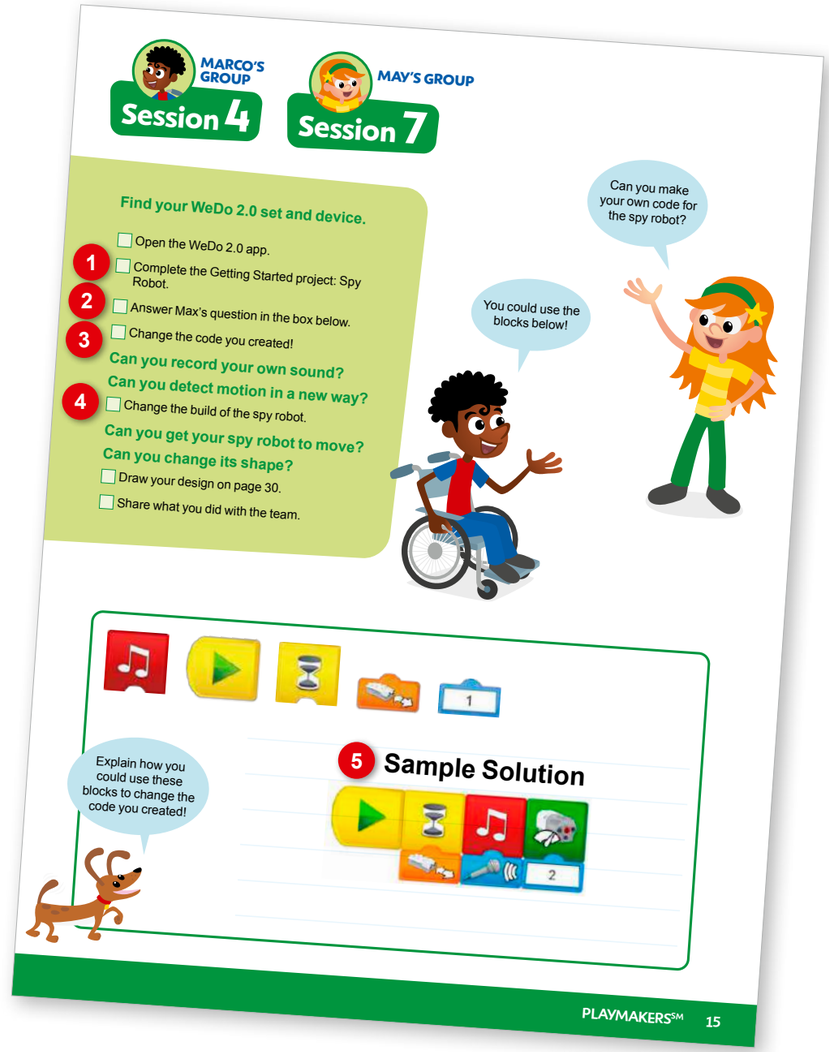
Guiding Questions

- What places could you create paths to play in your own local community?
- How do you make sure your path is accessible and inclusive for everyone?
- What do you want your code to make the build do?
- How did you change the design of the spy robot?

Cleanup Pointers

- The spy robot should be taken apart and the LEGO® elements returned to the WeDo 2.0 set.
- At the end of Session 4, the treadmill and heart game should be taken apart. Put the pieces for each build in their own bag. The combined build can stay assembled after Session 7.
- The solution built with the prototyping pieces should be taken apart.

1. This group will learn about coding to detect motion with the motion sensor and using sound.
2. If a group is short on time, you could have them complete the Getting Started project only.
3. You could have the group write the sequential steps for the code before coding in the app.
4. Get the team in the habit of sorting the WeDo 2.0 elements back into the set at the end of each session.
5. The coding blocks are deliberately placed in the incorrect coding sequence. A sample solution is provided here.



Share

- Get your team together to share what they did in the session.
- Have the group show the coding skills they learned. Have them explain how they changed the code and the design.
- Have the group demonstrate how the combined build works. Have them explain their designs and solutions for the challenge presented by Marco.

Sessions 8 and 9

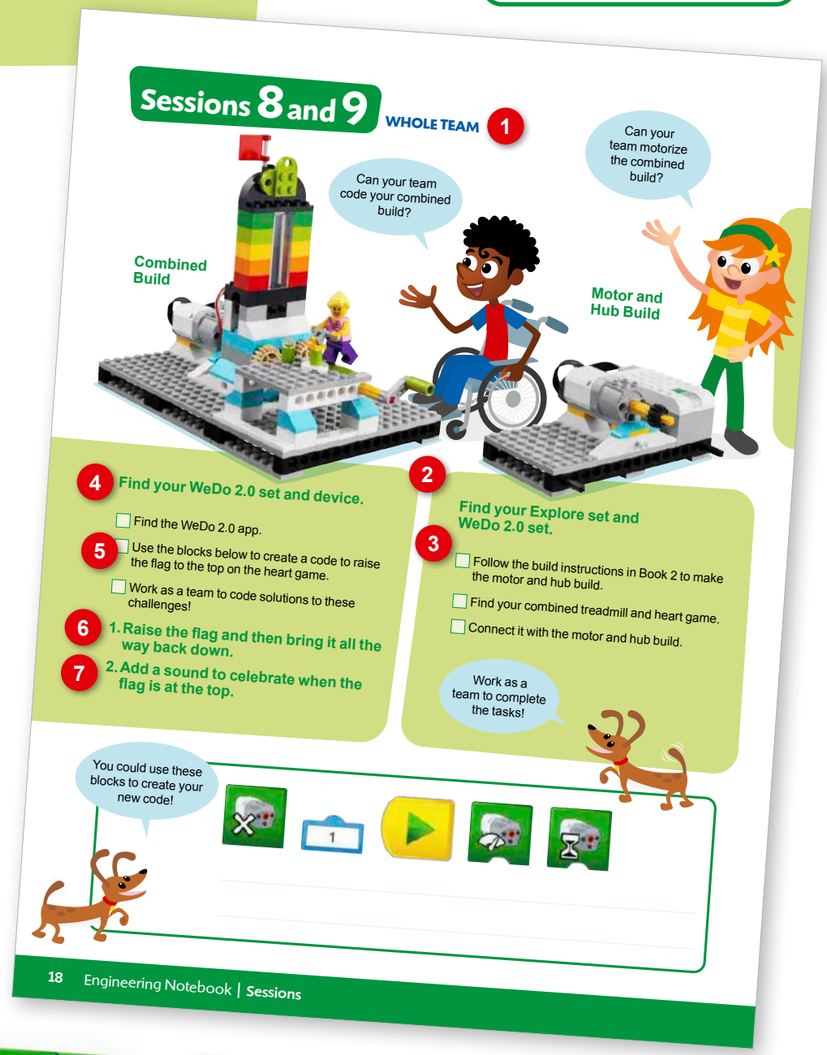
Outcomes

- The team will be able to finalize the combined build and program the flag on it to rise.
- The team will be able to draw their obstacle course design and label its required parts.
- The team will be able to create their team model of an obstacle course.

Introduction:

Session 8: Have an Impact
Session 9: Let's Innovate

1. The whole team will work together on these sessions. Place the team into two groups to complete the tasks.
2. The tasks listed on this page should take 30 minutes to complete in Session 8. The rest of the time in Sessions 8 and 9 should be devoted to the team model.
3. The team will need Book 2 and Bag 3 located in the Explore set.
4. The team will apply coding concepts they learned in Sessions 2-7 to create their programs.



Sample Solutions

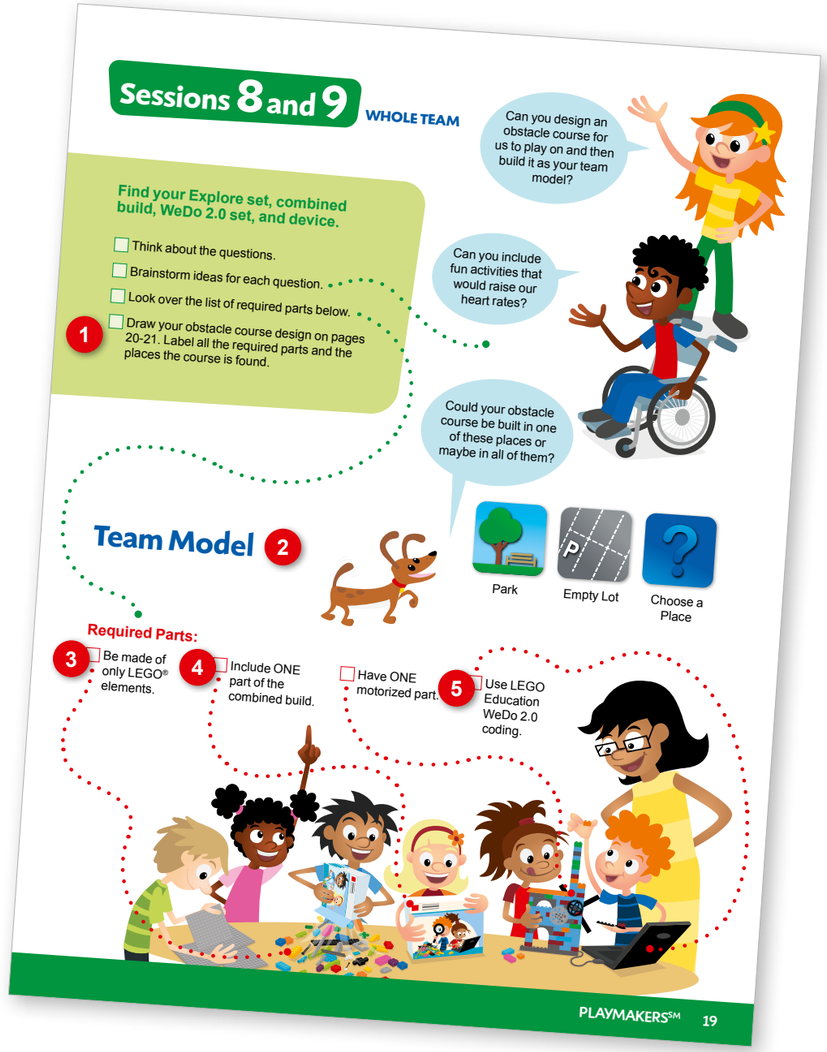
Guiding Questions

- What the strengths and the weaknesses of your design?
- Describe the process you used to create your team model.
- What do you think is the most important part of your team model?

Cleanup Pointers

- The team model will remain assembled from this point forward until the event.

1. There are six baseplates in the Explore set. You could have each team member build a part of the obstacle course.
2. The team model should be able to fit on a table and be easily transportable.
3. The team model can use extra LEGO® bricks, minifigures, baseplates, and other LEGO elements. You may NOT use glue, paint, or art supplies.
4. The team can motorize or use the crank on the heart game. The use of the treadmill is optional.
5. The team could reuse the code from Session 8, or they could motorize and code a brand-new part in their model.



Share

- Get your team together to share what they did at the end of each session.
- Session 8: Have the team explain the code created for each challenge and demonstrate on the combined build. They could share what progress has been made on the team model.
- Session 9: Have the team review the list of required parts and identify them on the team model.

Sessions 10 and 11

Outcomes

- The team will be able to create a plan for what they will include on their team poster.
- The team will be able to design and create what they will include on their team poster.

Introduction:

Session 10: Be Inclusive
Session 11: Go Team

1. You will need to provide a large poster board and various art supplies. A trifold poster board works well.
2. The goal is for the team to create the board themselves. You can support them and provide insight.
3. Sample topics for the poster are provided for the students. They can choose to include whatever they want!
4. You could provide extra scrap paper for the team to draw and write their ideas for their team poster.

Guiding Questions

- What different challenges did you explore?
- What did you create and build?

Cleanup Pointers

- Make sure you have a safe place to store the poster, especially if it needs to lay open to dry.

Session 12

Outcomes

- The team will be able to reflect on their PLAYMAKERS℠ experience.
- The team will be able to create a plan for what to share at their final event.

Introduction:

Session 12: Let's Have Fun

1. Look over the reviewing sheet. It is located on the Resources webpage. Ask your team practice questions to prepare for their event.
2. Every question on this page doesn't need to be answered. They are just to help your team feel ready for the event.
3. If you are not attending an official festival, you can still run your own festival or have an informal sharing event.
4. You could provide extra scrap paper for the team to write out what they plan to share at their event.

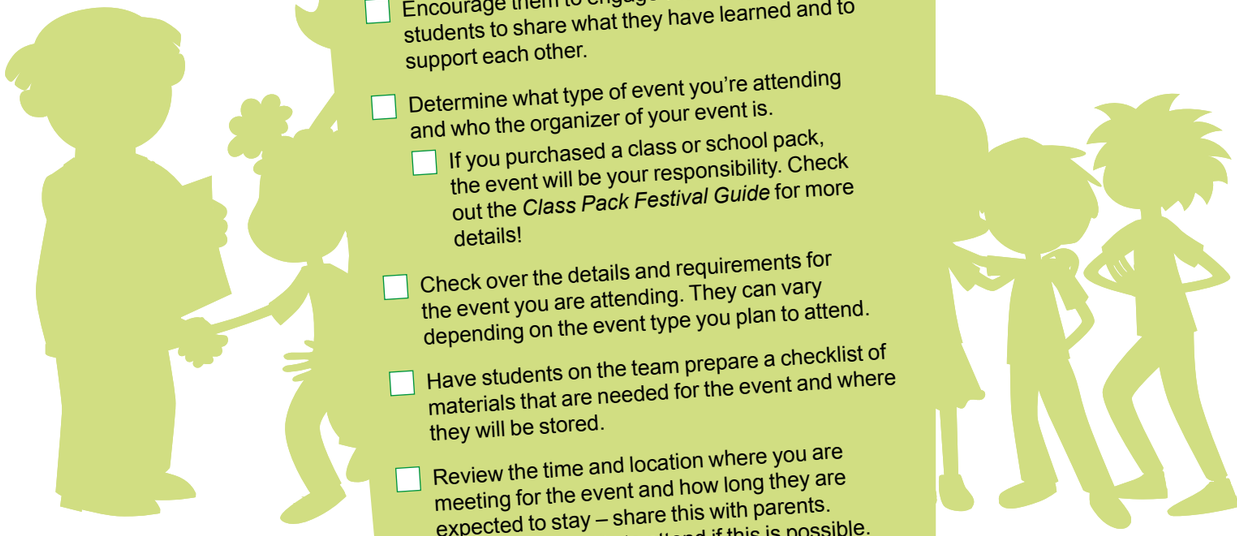
Guiding Questions

- Can you explain the code you created for your motorized part?
- How does your team model relate to the challenge?

Cleanup Pointers

- Make sure the team model and team poster are stored and ready to be transported to the event.

Prepare for Your Festival!



- [ ] The main goal of an event is for the team to have FUN and to feel that their work is valued.
- [ ] Remind students that the event is also a learning experience and the goal is to have fun!
- [ ] Encourage them to engage with other teams and students to share what they have learned and to support each other.
- [ ] Determine what type of event you're attending and who the organizer of your event is.
  - [ ] If you purchased a class or school pack, the event will be your responsibility. Check out the *Class Pack Festival Guide* for more details!
- [ ] Check over the details and requirements for the event you are attending. They can vary depending on the event type you plan to attend.
- [ ] Have students on the team prepare a checklist of materials that are needed for the event and where they will be stored.
- [ ] Review the time and location where you are meeting for the event and how long they are expected to stay – share this with parents. Encourage parents to attend if this is possible.

Events Complete and All Done?

Here are some tips for wrapping up after the last event your team will participate in:

- Clean up and take apart team build. Make sure the WeDo 2.0 elements go back to their set.
- Inventory the WeDo 2.0 set to make sure all the pieces are there.
- Decide what to do with Explore Set elements.
- Allow time for the team to reflect on their experience.
- Hold a team celebration!

Introduction Activities

These Introduction activities incorporate the *FIRST*® Core Values.

Let's Discover

- Read the definition for **discovery** to the team.
- Talk about what **discovery** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team could learn new skills and ideas.
- Have each student draw a picture that shows an example of **discovery** on the Core Values page in their *Engineering Notebook*.

Let's Innovate

- Read the definition for **innovation** to the team.
- Talk about what **innovation** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team has been innovative.
- Have each student draw a picture that shows an example of **innovation** on the Core Values page in their *Engineering Notebook*.

Have an Impact

- Read the definition for **impact** to the team.
- Talk about what **impact** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team can have an impact on others and their community.
- Have each student draw a picture that shows an example of **impact** on the Core Values page in their *Engineering Notebook*.

Introduction Activities

These Introduction activities incorporate the *FIRST* Core Values.

Be Inclusive

- Read the definition for **inclusion** to the team.
- Talk about what **inclusion** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team can make sure everyone feels respected and included.
- Have each student draw a picture that shows an example of **inclusion** on the Core Values page in their *Engineering Notebook*.

Go Team

- Read the definition for **teamwork** to the team.
- Talk about what **teamwork** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team has learned to work together.
- Have each student draw a picture that shows an example of **teamwork** on the Core Values page in their *Engineering Notebook*.

Let's Have Fun

- Read the definition for **fun** to the team.
- Talk about what **fun** is. Have the team provide examples of this Core Value.
- Lead a discussion on ways your team has had fun.
- Have each student draw a picture that shows an example of **fun** on the Core Values page in their *Engineering Notebook*.

Introduction Activities

Coach Says!

- Make a copy of the Coach Says! pages 25-26.
- Cut out each Coding Block on the sheet.
- Hold up each Coding Block square and have the team act out the motion listed for each block as practice.
- Say "Coach Says" then hold up a Coding Block square. The team should act out the action that each block represents without you telling them what to do.
- Continue holding up cards and have the team act it out. See how fast they can go!

Human Robot

- Pick a starting and ending point in your meeting space. Split the team into pairs.
- Each pair should write the steps for you, the human robot, to get from the starting to ending point.
- Read each pair's instructions and act out the EXACT steps until you no longer can or until you reach the ending point.
- Ask each pair if the outcome was what they expected. If it wasn't, why not?
- Discuss how the robot will do exactly what the program tells it to do, not necessarily what the team wants or expects it to do.

Let's Dance

- Show the *FIRST*® LEGO® League's "Teamwork Makes the Dream Work" video.
- Have the students work together to create dance moves to the video.
- Each student on the team could create their own move and then the team could combine all the moves into a team dance.
- Play the video again and have the team dance along with their new moves!

Walk and See

- Go on a walk around your school, building, or other area nearby.
- Ask the team to point out all the different places where they can play and be active.
- Discuss what types of equipment they use and activities they do at these different locations.
- Let each student share about their favorite activities to do in the place listed for the session.
- Brainstorm ideas of what playful activities they could do in the space where they meet for their *FIRST*® LEGO® League Explore sessions.

Introduction Activities

Act It Out

- This is a variation of Coach Says! Call out an activity or sport and have the team act it out.
- You can have the team act out the motions in different ways: without moving their feet, with only their upper body moving, or with the whole body moving.
- Have the students find their heartbeat after each action to see if they have increased their heart rate.
- You could have each student take a turn and call out an activity and then have the team copy his or her movements.

Kid Robot

- Create a maze or simple obstacle course in your meeting space or nearby location.
- Split the team into pairs with one being the human robot and one being the coder.
- Each student should write the steps to get the human robot through the maze or course.
- Have the pairs take turns being the robot and the coder and running the code they wrote.
- The human robot should act out the EXACT steps.

Extension Activity Ideas

Students could try these activities in the program library.

Sessions 2 and 5

- Motor Power
- Increase Speed
- Stop Motor

Sessions 3 and 6

- Motor Direction and Motor Time
- Screen Joystick

Sessions 4 and 7

- Sound
- Detect Motion
- Loop

- Provide books that relate to the challenge for the team to read.
- Plan a field trip (in person or virtual) to a place that relates to the challenge theme.
- Bring in an adult, such as a parent or teacher, who can talk about the importance of being active while having fun!
- Check out the *FIRST*® LEGO® League YouTube channel for videos and inspiration.

Coach Says!

Walk forward for 5 seconds

Stop moving

Walk forward slowly

Walk forward quickly

Coach Says!

Spin to the left (counterclockwise)

Spin to the right (clockwise)

Tilt your body side to side

Clap your hands