Welcome!

**Team Members:**

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Together with your teammates, you will:

- Discover real-world challenges and opportunities in this season’s theme.
- Create a team model and program it to make part of it move.
- Test and improve your code and build changes.
- Track your work in the *Engineering Notebook*.
- Make a team poster that reflects your team’s journey.
- Share your model and poster with reviewers at an Explore festival.
- Celebrate your accomplishments with family and other teams at the festival.
Explore Story

Izzy has a project to finish. She must share what she loves to do with her friends at school. She loves to skateboard and wants to share this in a fun and exciting way.

Izzy meets Noah. Noah is a sound engineer. Sound effects and music can help make a scene happy, tense, or exciting.

Sam is the stage manager at the theatre. Every light, prop, and scenery change makes a live performance seem magical.
Explore Story

With technology, museums come alive. We can make it feel like dinosaurs still walk the earth!

Emily is a visual effects director. I can make heroes fly, dragons breathe fire, and aliens visit from other galaxies.

At the skatepark...

Izzy thinks about how to show other people the skateboarding she loves to do.

She has heard about how technology can help.

All these things have given her some great ideas.

Anna is the museum curator.
Come back to these pages throughout your team journey to update your personal and team goals and to share your progress.

### START HERE!

<table>
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<th>What do you want to do? When do you need it to be done?</th>
<th>What challenges did you face? What progress have you made?</th>
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Core Values

**DISCOVERY**
We explore new skills and ideas.

**INCLUSION**
We respect each other and embrace our differences.

**INNOVATION**
We use creativity and persistence to solve problems.

**TEAMWORK**
We are stronger when we work together.

**IMPACT**
We apply what we learn to improve our world.

**FUN**
We enjoy and celebrate what we do!

Draw or write an example of your team using each Core Value when directed in the sessions!

You will develop new skills as you work together.
Activity 1 Tasks (15-20 minutes)

- Read the Explore story and explore the MASTERPIECE™ theme.
- Talk about your own hobbies or interests.
- Think about how you use art or creativity in your hobbies or interests.
- Draw a picture of what you love to do.

Your team needs:

Where did you learn about your hobby or interest?

What tools or objects do you need for your hobby?

What I love to do:
Activity 2 Tasks (15-20 minutes)

- Explore how people share what they love to do.
- Talk about places in your community where people share what they love to do.

Challenge

- Discuss the creative ways Izzy could get her friends interested in skateboarding.
- Use the prototyping pieces to build a place where Izzy could share her love of skateboarding.
- Share your ideas.

Hobbies and Interests

Your team needs:

I love skateboarding! Help me show my friends how fun it is!

My ideas:
Activity 1 Tasks (15-20 minutes)

☐ Follow the building instructions in Book 1 to make the basic stage.

☐ Talk about what you would share if you were on the stage.

☐ Identify the icons on the mat. Think about what the icons represent.

☐ Move the stage to different icons on the mat and discuss what could be shared there.

Your team needs:
Behind the Scenes

Your team needs:

Activity 2 Tasks (15-20 minutes)

☐ Follow the building instructions in Book 1 to make the minifigures.

☐ Explore the minifigure items.

☐ Re-read the Explore story (p. 4-5). Explain how the characters might use one or more of the items to help them in their job.

Challenge

☐ Using the minifigures and stage, build another scene for the Explore story that shows the stage being used in a different way.

☐ Share your scene and explain what is happening.

Which experts could help make my skateboarding show more exciting?

My ideas:
Activity 1 Tasks (15-20 minutes)

- Follow the building instructions in Book 2 to build the music concert pieces.
- Add the music concert pieces to the basic stage you built last session.
- Place the concert stage on the mat near the music notes.
- Discuss how sound or music is used to help performers entertain their audience.

Your team needs:

What kind of technology is used in the music industry?

What instruments have you seen being played during a concert?

Scan me to see a video of the music concert model!
Sound All Around

My ideas:

Activity 2 Tasks (15-20 minutes)

- Identify the concert pieces that were added to the basic stage.
- Discuss what other technology you would like to add to the concert stage.

Challenge

- Build examples of the additional technology using the prototyping pieces and add them to the stage.
- Share the technology represented in your model.

What skills and what technology do you need as a sound engineer? Find out more on page 30!

I think Izzy should skateboard to exciting music or some cool sound effects!
Activity 1 Tasks (15-20 minutes)

☐ Open the SPIKE™ Essential app. Complete your lesson.
☐ Make the model go in a different direction or rotate at a different speed.
☐ Write down your ideas below for how to change the program.
☐ Modify the program based on your ideas.
☐ Run your new program. See what happens.

Your team needs:

Your lesson:

First LEGO® League
Explore Unit:
Lesson 1

Write your ideas!

This kind of technology would be great to use in a theater!

Sam
Theater Technology

Your team needs:

Activity 2 Tasks (15-20 minutes)

- Modify the SPIKE model from the previous task so that it represents a rotating stage.
- Open the SPIKE™ Essential app.
- Change the program to make the stage rotate every 10 seconds. Try it out!

Challenge

- Build two different scenes on your rotating stage. The scenes can be about what you love to do!
- Place your stage on the mat. You could use the theater icons as building locations!
- Share the scenes you built and explain how you coded the model.

A rotating or revolving stage can make it easier to move props or scenery.

What responsibilities does a stage manager have in a theater? Find out more on page 30!
Activity 1 Tasks (15-20 minutes)

☐ Open the SPIKE™ Essential app. Complete your lesson.

☐ Code the model to flash a light when a team member approaches the sensor.

☐ Modify the program based on your ideas and test it out!

Challenge

☐ Code the model to display a different light pattern that is unique to your team.

Your team needs:

Your lesson:

Lights and sounds can help a museum exhibit be more interactive!

Write your ideas!

Show how you include everyone’s awesome ideas!
Activity 2 Tasks (15-20 minutes)

- Modify the SPIKE model from the previous task so that it represents a museum exhibit.
- Open the SPIKE™ Essential app.
- Change the program so that it displays a new light pattern. Try it out!

Challenge

- Change the program so that the model will play a sound when someone approaches your exhibit.
- Share what you built and explain how you coded the model.

Your team needs:

A light show could help Izzy’s skateboard skills really stand out!

How could I use technology like this in a museum exhibit? Check out page 31.

Draw your ideas!
Activity 1 Tasks (15-20 minutes)

- Open the SPIKE™ Essential app. Complete your lesson.
- Code the model to move backward.
- Write down your ideas for how to change the program below.
- Change the existing program based on your ideas. Test it out!

Challenge
- Modify the model so that it has four wheels.

Your team needs:

Written ideas:

I think we can capture some great images of Izzy skateboarding!

Emily

I use technology to help get an exciting visual image. Check out page 30!

Write your ideas!
Visual Effects

Activity 2 Tasks (15-20 minutes)

- Modify the SPIKE model from the previous task so that it represents a vehicle with a camera.
- Open the SPIKE™ Essential app.
- Change the program so that the vehicle drives slowly. Try it out!

Challenge

- Pick two icons on the mat that Izzy should skate between.
- Change the program for your vehicle to move between the two icons.
- Share how you coded your moving camera.

Can your camera keep up with me?

Actors and athletes are two examples of people that could be filmed with moving cameras. See page 31 for more!
Activity 1 Tasks (15-20 minutes)

- Build the motor and hub base following instructions in Book 2.
- Connect the motor and hub to the basic stage model from Session 2.
- Open the SPIKE™ Essential app. Try the program provided in Book 2 to motorize your model.
- Write a new program to rotate the center of the stage where the performer stands.

Challenge

- Pick a hobby or interest you and your team want to share on the stage. Draw your ideas for how you could do this below!

Your team needs:

Scan me to see a video of the motorized music concert model!

Draw your ideas!
Setting the Stage

Activity 2 Tasks (15-20 minutes)

☐ Decide where on the mat you will build your model.

☐ Use the prototyping pieces to add to your stage and make it exciting for an audience!

Challenge

☐ Change the model and the program to show off a different hobby or interest.

☐ Share your build and explain the different kinds of technology you used.

Your team needs:

Will you build a museum exhibit, a concert, or a play?

How can you redesign the model or change the program?
**Session Tasks** *(80-100 minutes)*

- Design a team model that shows how technology helps you share what you love to do.
- Brainstorm your solutions.
- Explore the list of required parts on the next page.
- Draw your team model design and label the required parts.
- Create your team model together. Use the mat and build the different parts of your show!

**Draw your team model on the mat.**

**Build a team model of a place where an audience is immersed by a concert, performance, or exhibit.**
Team Model

Requirements

- Be sure to include a hobby or interest, a light or sound feature, and an audience.
- Include all parts of the Explore model.
- Motorize the Explore model.
- Be made of only LEGO® elements.
- Use LEGO coding.
- Use the MASTERPIECESM mat.

Build a team model that represents a unique way to share your team’s hobbies and interests with others.

Label the required parts of your team model.
Session Tasks (80-100 minutes)

- Find your poster board and art supplies.
- Brainstorm what to put on your poster.
- Use the next page as a draft for your ideas.
- Work together to create your team poster. Teamwork!
- You can use words, drawings, and photos on your poster.

Congratulations on all you have learned. Now, make a team poster to share about it!

Describe your team journey throughout the sessions.

Your team needs:
Team Poster

Here’s your chance to capture ideas for your team poster.

Sample Topics: Explore, Create, Test, Share, Core Values, Team Journey
Tasks (40 minutes)

- Gather your completed team model and team poster.
- Talk about what your team would like to share at your event!
- Complete the next page to prepare for your event.
- Look over the reviewing sheet with your coach.
- Practice your presentation.
- Communicate what you have learned with others.

Sample Festival Roles

I’m going to share what we explored.

I will describe the team model.

I will explain the program and how it motorizes the team model.

We will show how the poster captures our team journey!

I can reflect on how our team used Core Values.
Consider what you will share at the event.

- Can you describe your team model?
  • Explain how your team used innovation and creativity to share what you love to do.

- What did you learn about the season challenge?
  • 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?

Let’s celebrate how well we all worked together! It is much more fun when everyone on the team is included.
Use this page to draw your designs and ideas!
Career Connections

Sound Engineer

A sound engineer mixes different sounds, controls volume, and creates an optimal listening experience.

Links to Session 3

Stage Manager

A stage manager is responsible for making sure the lights, sound, and props are working properly and in the right place.

Links to Session 4

Visual Effects Director

A visual effects director produces images and settings that help the audience engage with the performance.

Links to Session 6

Exploration

(Recommend completing after Session 4)

Look at the careers on these pages. Choose a job role, research it, and answer the questions.

• Explain the job. What are some of this job’s daily tasks?
• What is this job’s yearly salary?
• What education or training is required?
• What companies could people in this job work for?

Fields of Study

• Graphic Design
• Audio Engineering
• Sculpture
• Cinematographer
• Musical Theater
• Computer Animation
• Photography
A museum curator selects which objects will be featured in an exhibit that will help teach people about history or the future.

Links to Session 5

An actor is an artist that performs in front of a camera or an audience. Actors often use costumes, makeup, puppets, or other props to help bring their character to life.

Links to Session 6

A sports photographer is skilled at taking pictures of athletes in action. Photographers often use large lenses so they can zoom in while keeping a safe distance.

Links to Session 6

Reflection

Look at the careers on these pages. Think about these jobs and what interests you.

- What skills are needed in these jobs?
- What interests you about these jobs?
- Can you think of other jobs that relate to the arts?
- Can you explore one of these careers for more information?
Team Journey

Explore the challenge

Explore, create, test, and share as you go through the sessions

Learn about Core Values

Create team model

Design team poster

EXPLORE

Engineering Design Process

SHARE

CREATE

TEST

Celebrate at an event

Explore, create, test, and share as you go through the sessions.

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