

**FIRST[®]
LEGO[®]
LEAGUE**

ENGINEERING NOTEBOOK DEMO VERSION



**CITY
SHAPER**



education

Using this Engineering Notebook

The Engineering Notebook guides you through each session. Use it to document your thoughts, sketches, and ideas. It serves as a proof of learning and is a great resource to use when presenting your Robot and Innovation Project solution. Also document Core Values concepts you see demonstrated by your team.

Each session has a series of tasks listed in by Group 1 and Group 2. Mark off each task as you complete them.

Here are some ideas of what could be captured in the Engineering Notebook.

- Sketches
- Designs
- Notes
- Calculations
- Pictures and drawings
- Processes
- Thoughts
- Code explanations
- Software development
- Discussions

On the next few pages, you will find out what you need to design, program and build your Robot for the Robot game. There is also an explanation of the missions for this year and the rules for playing the game. These are both really important to read carefully and understand.

**SESSION 2:
The Client**

Model	Expert	Client	Site
Treasure house	Aziza	European hotel chain	Scandinavia

Hand-drawn sketch of a treasure house. A ladder leads up to a box labeled 'A box to have your treasure in.' A lamp is hanging from the ceiling. The sketch is labeled with 'Treasure house', 'Ladder', 'Hangers', 'Lamp', 'Picture', and 'Table'.

Group 1 tasks

- Review Project Spark 1.
- Discuss the questions below and record your ideas.
- Sketch your solution and label each part of your sketch.
- Create a prototype from the materials provided by your coach.
- Provide a status update to the other group.

Group 2 tasks

- Complete the EV3 Robot Educator tutorial called Straight Move, or the SPIKE Prime lesson Training Camp 1.
- Discuss the question below and record your ideas.
- Provide a status update to the other group.

What is the problem identified in the Project Spark? How does this problem relate to the Challenge? Identify the Mission Model, the Expert, the Client, and the Site.

How would you design a solution to the problem presented? Sketch and label your solution, and then build a prototype*.

How do the Game Rules and field setup impact your strategy in the Robot game?

What skills did you learn? How would these skills apply to your Robot design and the Challenge?

* A prototype is a model of your solution that shows how it will work. You can create a prototype from LEGO bricks and elements, or other items provided by your coach.

**SESSION 3:
Site Survey**

Model	Expert	Client	Site
Playground Equipment	Jessica	Towns people	NE US

Hand-drawn sketch of a playground. A wheel chair is shown on a path. A swing is shown with a person sitting on it. The sketch is labeled with 'You drive the wheel chair up this close the flap now you can swing'.

Group 1 tasks

- Complete the EV3 Robot Educator tutorial called Curved Move, or the SPIKE Prime lesson Training Camp 2.
- Discuss the question below and record your ideas.
- Provide a status update to the other group.

Group 2 tasks

- Review Project Spark 2.
- Discuss the questions below and record your ideas.
- Sketch your solution and label each part of your sketch.
- Create a prototype from the materials provided by your coach.
- Provide a status update to the other group.

What skills did you learn? How would these skills apply to your Robot design and the Challenge?

What is the problem identified in the Project Spark? How does this problem relate to the Challenge? Identify the Mission Model, the Expert, the Client, and the Site.

How would you design a solution to the problem presented? Sketch and label your solution, and then build a prototype*.

* A prototype is a model of your solution that shows how it will work. You can create a prototype from LEGO bricks and elements, or other items provided by your coach.

Fun:
We enjoy and celebrate what we do!

Meet the Experts!



AZIZA

Civil engineer, Architect

Expertise: Making buildings fit surroundings
Creating sustainable buildings and public places

Goals: Help people enjoy beauty of nature



JESSICA

Architect

Expertise: Designing and constructing hospitals

Goals: Make buildings and public spaces that are accessible and functional for everyone by looking at the world through the eyes of people with different abilities



WEI

Civil Engineer, Environmental Engineer

Expertise: Designing building envelopes that allow the correct flow of air, heat and humidity

Goals: Create energy efficient buildings that keep people comfortable



LELLI

Structural Engineer, Professor

Expertise: Designing buildings and structures to resist earthquakes

Goals: Ensure that people and the things survive earthquakes by testing structural designs and inspecting how seismic damage occurs

SESSION 2:

The Client

Model

Expert

Client

Site

What is the problem identified in the Project Spark? How does this problem relate to the Challenge? Identify the Mission Model, the Expert, the Client, and the Site.

How would you design a solution to the problem presented? Sketch and label your solution, and then build a prototype*.

How do the Game Rules and field setup impact your strategy in the Robot game?

What skills did you learn? How would these skills apply to your Robot design and the Challenge?

Group 1 tasks

- Review Project Spark 1.
- Discuss the questions below and record your ideas.
- Sketch your solution and label each part of your sketch.
- Create a prototype from the materials provided by your coach.
- Provide a status update to the other group.

Group 2 tasks

- Complete the EV3 Robot Educator tutorial called Straight Move, or the SPIKE Prime lesson Training Camp 1.
- Discuss the question below and record your ideas.
- Provide a status update to the other group.

* A prototype is a model of your solution that shows how it will work. You can create a prototype from LEGO bricks and elements, or other items provided by your coach.