



FIRST LEGO LEAGUE CHALLENGE

Innovation Project Worksheets



TEAM NAME:

TEAM NUMBER:

Updated: August 2022

Instructions: Read the challenge text carefully. What are the key words? What are the requirements? See next page for tips/solution



START

Explore your energy journey. How can you reimagine a better energy future? It starts here, with your critical thinking and innovation leading the way to tomorrow's energized world with *FIRST*® **ENERGIZE**™ presented by Qualcomm.

→ Identify a specific problem related to improving your energy journey.

An energy journey is where energy comes from and how it is distributed, stored, and used. The Project Sparks (see Sessions 1-4) explore problems related to different energy journeys. Your problem could come from a Project Spark, or it could be a different problem you want to solve.

→ Research your problem and solution ideas.

Explore energy sources and how energy is stored, distributed, and used in your community. Can you find ways to make part of your energy journey better? Can you improve one step to be more efficient, reliable, affordable, accessible, or sustainable? What solutions already exist? Are there any experts or users you could interview?

→ Design and create a solution that could improve your energy journey.

Use your research and explorations to either improve an existing solution used in your energy journey or design a new innovative solution. Can you make different energy technology choices? Make a drawing, model, or prototype of your solution.

→ Share your ideas, collect feedback, and iterate on your solution.

The more you iterate and develop your ideas, the more you will learn. What impact will your solution have on your community?

→ Communicate your solution with a live presentation at an event.

Prepare a creative and effective presentation that clearly explains your Innovation Project solution and its impact on others. Make sure your whole team is involved in sharing your progress.

Instructions: Read the challenge text carefully. What are the key words? What are the requirements?

Specific problem related to the Energy Journey

Create or Improve the energy journey - where energy comes from/how it's distributed, stored, used

Requirements: Check existing solutions, share with experts/users, iterate solution, make a creative/effective presentation, know project impact, create drawing/model/prototype, whole team must present

→ Identify a specific problem related to improving your energy journey.

An energy journey is where energy comes from and how it is distributed, stored, and used. The Project Sparks (see Sessions 1-4) explore problems related to different energy journeys. Your problem could come from a Project Spark, or it could be a different problem you want to solve.

→ Research your problem and solution ideas.

Explore energy sources and how energy is stored, distributed, and used in your community. Can you find ways to make part of your energy journey better? Can you improve one step to be more efficient, reliable, affordable, accessible, or sustainable? What solutions already exist? Are there any experts or users you could interview?

→ Design and create a solution that could improve your energy journey.

Use your research and explorations to either improve an existing solution used in your energy journey or design a new innovative solution. Can you make different energy technology choices? Make a drawing, model, or prototype of your solution.

→ Share your ideas, collect feedback, and iterate on your solution.

The more you iterate and develop your ideas, the more you will learn. What impact will your solution have on your community?

→ Communicate your solution with a live presentation at an event.

Prepare a creative and effective presentation that clearly explains your Innovation Project solution and its impact on others. Make sure your whole team is involved in sharing your progress.

Creating a Plan

Name: _____

Instructions:

1. The next step is to come up with a plan. Start with the rubrics and think about how you will address each of the areas
2. How will you split the work? What deadlines do you want to give yourself?

IDENTIFY

DESIGN

CREATE

ITERATE

COMMUNICATE

BEGINNING 1		DEVELOPING 2		ACCOMPLISHED 3		EXCEEDS 4	
						How has the team exceeded?	
IDENTIFY – Team had a clearly defined problem that was well researched.							
<input type="checkbox"/> Problem not clearly defined	<input type="checkbox"/> Partially clear definition of the problem	<input type="checkbox"/> Clear definition of the problem	<input type="checkbox"/>				
<input type="checkbox"/> Minimal research	<input type="checkbox"/> Partial research from more than one source	<input type="checkbox"/> Clear, detailed research from a variety of sources	<input type="checkbox"/>				
DESIGN – Team generated innovative ideas independently before selecting and planning which one to develop.							
<input type="checkbox"/> Minimal evidence of an inclusive selection process	<input type="checkbox"/> Partial evidence of an inclusive selection process	<input type="checkbox"/> Clear evidence of an inclusive selection process	<input type="checkbox"/>				
<input type="checkbox"/> Minimal evidence of an effective plan	<input type="checkbox"/> Partial evidence of an effective plan	<input type="checkbox"/> Clear evidence of an effective plan	<input type="checkbox"/>				
CREATE – Team developed an original idea or built on an existing one with a prototype model/drawing to represent their solution.							
<input type="checkbox"/> Minimal development of innovative solution	<input type="checkbox"/> Partial development of innovative solution	<input type="checkbox"/> Clear development of innovative solution	<input type="checkbox"/>				
<input type="checkbox"/> Unclear model/drawing of solution	<input type="checkbox"/> Simple model/drawing that helps to share the solution	<input type="checkbox"/> Detailed model/drawing that helps to share the solution	<input type="checkbox"/>				
ITERATE – Team shared their ideas, collected feedback, and included improvements in their solution.							
<input type="checkbox"/> Minimal sharing of their solution	<input type="checkbox"/> Shared their solution with user OR professional	<input type="checkbox"/> Shared their solution with user AND professional	<input type="checkbox"/>				
<input type="checkbox"/> Minimal evidence of improvements in their solution	<input type="checkbox"/> Partial evidence of improvements in their solution	<input type="checkbox"/> Clear evidence of improvements in their solution	<input type="checkbox"/>				
COMMUNICATE – Team shared a creative and effective presentation of their current solution and its impact on their users.							
<input type="checkbox"/> Presentation minimally engaging	<input type="checkbox"/> Presentation partially engaging	<input type="checkbox"/> Presentation engaging	<input type="checkbox"/>				
<input type="checkbox"/> Solution and its potential impact on others unclear	<input type="checkbox"/> Solution and its potential impact on others partially clear	<input type="checkbox"/> Solution and its potential impact on others clear	<input type="checkbox"/>				

Creating a Plan

Name:

Instructions:

1. Create a plan
2. Below is a high-level example to give you ideas. Customize a plan for your team/project.

IDENTIFY

DESIGN

CREATE

ITERATE

COMMUNICATE

Weeks 1-5

Name(s):

Everyone

Weeks 5-7

Name(s):

Everyone

Tasks:

Everyone to
Research
Problems and
Existing Solutions

Due Date:

Weeks 8-10

Name(s): Student 3, 4, 5

Tasks:

Develop solution
Create model/prototype
Share with a user/expert
Use feedback to improve solution

Due Date:

Weeks 11-12

Name(s): Student
1 and 2





Tasks:

Select
skit/method of
communication as
a team
Write Script
Practice as a team

Due Date:

IDENTIFY

Instructions: Use this template to assist in better understanding the mission models and how they might provide inspiration for a project topic. For each model, complete the table. The goal is to understand what the model represents, what it represents in the real world, if there are weaknesses in the design and how your team might improve the process.

Model	What does it represent	What are problems associated with it?	How could you improve this process?
<p>Example:</p> 	Turbine - energy generated via wind	<p>Need to have wind.</p> <p>Turbines kill animals (article)</p>	<p>Can we create models to accurately predict where and when wind will be present?</p> <p>Article</p>
			
			
			

Problem Identification

Name:

Instructions:

1. Read the challenge and project description carefully
2. What problems do you know about related to the topic?
3. What experts can you talk to? What field trips can you go on?
4. Share your ideas with the rest of your team members

Project Ideas/Problems

Field Trips (Virtual or In Person)

Experts

Source (Author, Title, Link)**List the facts you discovered from this source****Did you identify any problems related
to our team's research topic?****Did you discover any solutions related
to the team's research topic?**

Interview Notes

Name:

Who are we meeting?

What is his/her expertise?

Questions you want to ask the expert?

Existing Solutions

Name: _____

Instructions:

1. As a team, find as many similar products/solutions and compare them to your team's solution
2. The goal is to gather enough information to be able to explain how the team's solution is innovative (different or an improvement on something that exists). You should be able to fill in the bottom-most row after you have come up with a solution.

Product	Costs	How can it be implemented	Pros	Cons	Other
Our Solution					

DESIGN/CREATE

Instructions:

1. Once your team has picked a problem, think about how to solve this problem
2. You have looked at what solutions exist already. How will your solution be different?
3. How will you test out your idea?
4. Share your ideas with the rest of the team and then work together to pick a solution.

What is the problem we are solving?

Can we solve the problem in a new or better way?

How can we test the idea or demonstrate its impact? What kind of "model or prototype" can we make to show the solution?

Instructions:

1. What kind of model or prototype can you make to share or test the solution your team has designed?
2. Brainstorm below

SHARE

Sharing

Name:

Shared with (expert)

Feedback

Improvements Made

Sharing

Name:

Shared with (user)

Feedback

Improvements Made

COMMUNICATE

Instructions:

1. As you start to think about how you will present your project to judges, begin with the Innovation Project Rubrics
2. In your 5 min presentation, you need to give the judges information requested in the rubric.
3. Think about how you demonstrate to the judges that you have reached the “accomplished” level.

BEGINNING 1		DEVELOPING 2		ACCOMPLISHED 3		EXCEEDS 4	
						How has the team exceeded?	
IDENTIFY – Team had a clearly defined problem that was well researched.							
<input type="checkbox"/> Problem not clearly defined	<input type="checkbox"/> Partially clear definition of the problem	<input type="checkbox"/> Clear definition of the problem	<input type="checkbox"/>				
<input type="checkbox"/> Minimal research	<input type="checkbox"/> Partial research from more than one source	<input type="checkbox"/> Clear, detailed research from a variety of sources	<input type="checkbox"/>				
DESIGN – Team generated innovative ideas independently before selecting and planning which one to develop.							
<input type="checkbox"/> Minimal evidence of an inclusive selection process	<input type="checkbox"/> Partial evidence of an inclusive selection process	<input type="checkbox"/> Clear evidence of an inclusive selection process	<input type="checkbox"/>				
<input type="checkbox"/> Minimal evidence of an effective plan	<input type="checkbox"/> Partial evidence of an effective plan	<input type="checkbox"/> Clear evidence of an effective plan	<input type="checkbox"/>				
CREATE – Team developed an original idea or built on an existing one with a prototype model/drawing to represent their solution.							
<input type="checkbox"/> Minimal development of innovative solution	<input type="checkbox"/> Partial development of innovative solution	<input type="checkbox"/> Clear development of innovative solution	<input type="checkbox"/>				
<input type="checkbox"/> Unclear model/drawing of solution	<input type="checkbox"/> Simple model/drawing that helps to share the solution	<input type="checkbox"/> Detailed model/drawing that helps to share the solution	<input type="checkbox"/>				
ITERATE – Team shared their ideas, collected feedback, and included improvements in their solution.							
<input type="checkbox"/> Minimal sharing of their solution	<input type="checkbox"/> Shared their solution with user OR professional	<input type="checkbox"/> Shared their solution with user AND professional	<input type="checkbox"/>				
<input type="checkbox"/> Minimal evidence of improvements in their solution	<input type="checkbox"/> Partial evidence of improvements in their solution	<input type="checkbox"/> Clear evidence of improvements in their solution	<input type="checkbox"/>				
COMMUNICATE – Team shared a creative and effective presentation of their current solution and its impact on their users.							
<input type="checkbox"/> Presentation minimally engaging	<input type="checkbox"/> Presentation partially engaging	<input type="checkbox"/> Presentation engaging	<input type="checkbox"/>				
<input type="checkbox"/> Solution and its potential impact on others unclear	<input type="checkbox"/> Solution and its potential impact on others partially clear	<input type="checkbox"/> Solution and its potential impact on others clear	<input type="checkbox"/>				

Presentation

Name:

STEP 1: Pick a Style of Presentation: What type of presentation should we give?

Shark Tank? Talk Show?

STEP 2: Write the script:

Student 1:

Student 2:

Student 3:

Impact

Name:

How can we demonstrate the impact that our solution will have?

Survey results? Tests? Expert

Judging Preparation

Name:

Judges will ask you questions to help them fill the rubric. Here are some practice questions. Can you think of others?

Why did you decide on this topic?

Whom did you share your solution with?

Did you consult any experts?

Did you get any feedback and improve your solution?

How did you split the work and plan your season?