

# ***FIRST<sup>®</sup> LEGO<sup>®</sup> League***

# ***TUT******RIALS***

teach

share

learn

## RESEARCH PROJECT OVERVIEW

SESHAN BROTHERS

# ABOUT THE AUTHOR

- Seshan Brothers were on team Not the Droids You Are Looking For
- Our research project for Trash Trek was a Global Innovation Award semi-finalist project (Top 20 out of 30,000 teams).
- Our research project in Nature's Fury won Innovative Solution at the FIRST LEGO League International Open in Toronto.
- Our research project for World Class was EV3Lessons.com! ;-)
- We are the Champion's award winners from World Festival 2018

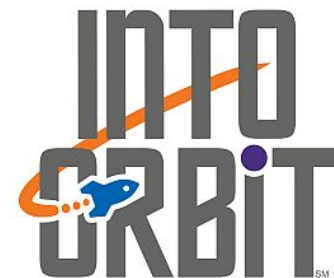


# WHAT IS THE RESEARCH PROJECT?


- A group research project related to the year's theme
- Come up with an innovative solution to a real-world problem

- **Themes:**

- 2011: Food Factor (food safety)
- 2012: Senior Solutions (senior citizens)
- 2013: Nature's Fury (natural disasters)
- 2014: World Class (education)
- 2015: Trash Trek (garbage)
- 2016: Animal Allies (animals)
- 2017: Hydro Dynamics (water)
- 2018: INTO ORBIT (space)



# NEW RUBRICS FOR 2017



## Project

Team Number \_\_\_\_\_  
Judging Room \_\_\_\_\_

Directions: For each skill area, clearly mark the box that best describes the team's accomplishments. Teams should demonstrate everything at the level; if they are missing part, mark the level below. If the team does not demonstrate an area, put an "X" in the first box for Not Demonstrated (ND). Please provide as many written comments as you can to acknowledge each team's hard work and to help teams improve. When you have completed the evaluation, please circle the team's areas of strength.

		Beginning	Developing	Accomplished	Exemplary
Research	<b>Problem Identification</b>	Clear definition of the problem being studied			
		ND unclear; few details	partially clear; details missing	mostly clear; detailed	clear; very detailed
	<b>Sources of Information</b>	Quality and variety of data/evidence and sources cited			
		ND minimal quality; variety limited	quality OR variety need improvement; did not include professional(s)	sufficient quality and variety; included professional(s)	extensive quality and variety; included multiple professionals
Comments	<b>Problem Analysis</b>	Depth to which the problem was studied and analyzed by the team, including extent of analysis of existing solutions			
		ND minimal study; no analysis	minimal study; some analysis	sufficient study and analysis	extensive study and analysis
Innovative Solution	<b>Team Solution</b>	Clear explanation of the proposed solution and description of how it solves the problem			
		ND difficult to understand	some parts confusing	understandable	easy to understand by all
	<b>Innovation</b>	Degree to which the team's solution makes life better by improving existing options, developing a new application of existing ideas, or solving the problem in a completely new way.			
		ND existing solution/application	solution/application contains some original element(s)	original solution/application; potential added value	original solution/application; demonstrated added value
Comments	<b>Solution Development</b>	Systematic process used to select, develop, evaluate, test, and improve the solution (implementation could include cost, ease of manufacturing, etc.)			
		ND process AND explanation need improvement	process OR explanation need improvement	systematic process included evaluation	systematic process included evaluation; implementation considered
Presentation	<b>Sharing</b>	Degree to which the team shared their Project before the tournament with others who might benefit from the team's efforts			
		ND shared within the team and/or relatives	shared once outside the team	shared with one audience who may benefit OR one professional	shared with multiple audiences who may benefit OR multiple professionals
	<b>Creativity</b>	Imagination used to develop and deliver the presentation			
		ND minimally engaging OR unimaginative	engaging OR imaginative	engaging AND imaginative	very engaging AND exceptionally imaginative
Comments	<b>Presentation Effectiveness</b>	Message delivery and organization of the presentation			
		ND unclear OR disorganized	partially clear; minimal organization	mostly clear; mostly organized	clear AND well organized
<b>Strengths:</b>		Research	Innovative Solution	Presentation	

\*Required for Award Consideration

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## ■ Research

- Identify a problem and analyze existing solutions

## ■ Innovative Solution

- Develop a solution to your problem and understand what it would take to implement this idea.

## ■ Presentation

- Share your project with people/organizations
- Create an effective presentation for judges

# PROJECT PROCESS



Look for lessons on each of these topics on [FLLtutorials.com](http://FLLtutorials.com)

# SAMPLE PROJECTS

- **2011: Food Factor (food safety)**
  - Detecting spoiled milk
- **2012: Senior Solutions (senior citizens)**
  - Helping seniors remember where they left their possessions
- **2013: Nature's Fury (natural disasters)**
  - An early-warning ash detection system for airplanes
- **2014: World Class (education)**
  - A better way to learn to program the EV3 ([EV3Lessons.com](http://EV3Lessons.com))
- **2015: Trash Trek (garbage)**
  - A more efficient way to recycle batteries
- **2016: Animal Allies (animals)**
  - Bats getting killed by wind turbines
- **2017: Hydro Dynamics (water)**
  - Detecting leaking pipes



## CREDITS

- This lesson was written by Sanjay and Arvind Seshan
- More lessons available at [www.ev3lessons.com](http://www.ev3lessons.com) and [www.flitutorials.com](http://www.flitutorials.com)



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