PROJECT INTENSIVE
Why a Project?
Why a Project in a Robotics Competition?

You must explain this to your team!

Make these connections:

• Applying knowledge to make a difference
• To learn more about the science behind the Challenge theme
• You need research to solve problems
• Understand what real engineers do in the field
• You need to be able to communicate as a STEM professional
• Make the connection to the engineering design process
FLL Project - Getting Started
Engineering Design Process

Another way to think about it:
1. Identify a Problem
2. Develop an Innovative Solution
3. Share Your Solution
How to Start the Project

- Assess your team’s talents and skills
  - Find what students are good at and what they enjoy doing
  - What can mentors / coaches help with
- Engage students in topic discussion
  - Field trips
  - Speaking with professionals
  - What interests do students have involving challenge
- Identify research sources
  - Within school, organization, community
Structuring the Project

- Have students identify the problem through group discussion and make sure it fits within the project guidelines.
- Set a realistic timeline and goals
  
- Have students choose small clearly defined parts of the project to work on. (Such as research on the problem, the current solutions, project format, etc… )
- Judges often ask who came up with what parts of the project and like to hear that several students participated.
How Far to Take It

- Varying levels of detail and depth and direction (3D projects)
- Some teams will take the project very far:
  - Build a prototype
  - How would you market this idea?
  - What would be a reasonable sale price?
  - What is the cost to manufacture?
  - How would you distribute it?
- Some teams will go through to patent their idea
- Though judges are deciding based on rubric
Your Role

- Coach teaches and upholds the team norms
  - Make sure all the rules and expectations are met
- Coach helps **facilitate, guide, encourage** brainstorming
- Coaches keep the team moving forward with realistic timelines and goals
- Lessons learned:
  - Coaches allowed teams to choose the wrong projects
  - Teams skipped the sharing part
Judging and the Presentation
Project Judging Process

- Judging time varies depending on the qualifier (10-15min)
- However, all project presentations must be 5min!
- Remainder of time is Q&A
- Must be a live presentation
- Don’t expect judges to read ANYTHING you leave behind, or return anything
Do's

- Have a game plan for the scripted and non-scripted parts of the interview
- State the identified problem and be specific
- All team members should talk during the presentation
- Teach team members who do not know the answers to hand the question off to someone who does
- Presentation Styles that Work
  - Short (20 secs or less) video
  - Skits/Plays/Commercials
  - Short Songs
  - Game Shows
  - Mission Briefing
- Let the students be creative!
- Don’t reinvent the wheel! Improve on existing solutions
Don’ts

• Avoid anything that requires a lengthy set-up time
• Presentation styles that do not work:
  • Powerpoint
    • Very difficult for young children to do successfully
    • If using, have it be limited to only a few minutes
  • Just note cards
    • Try to find a presentation style that does not require your students to simply read. Eye contact is a must!
• No 5 minute pre recorded presentations!!!
• Only 1 student speaking
• Forget to follow all the guidelines in the project
• Forget to practice!
More Tips

• Don’t forget to mention sources and existing solutions in the 5 minutes presentation.
  • Use varied, valuable sources (not just wikipedia)
• RUBRIC, RUBRIC, RUBRIC
• PRACTICE, PRACTICE, PRACTICE
  • Give your students constructive feedback on their presentation so they can improve it and identify what they are missing.
  • Practice in front of classmates and parents to get more feedback.
  • You should also use the presentation to share your research and innovation with outside groups.
  • Videotape the presentation in practice. “Wow, I do jump and down a lot”
The Rubric
The Rubric

- Research
  Are there existing solutions? How is your’s different?
  How many sources did you have?
  Did you solve a clear problem?
- Innovative Solution
  Is the solution easy to understand?
  Is the solution realistic?
- Presentation
  Was it effective? Was it shared?
Breakout Scenarios
The Rubrics
Let’s Judge!
Project Case Study
9778: Those Blue Girls
2015 Trash Trek

• Mission: Make less trash or improve the way we handle the trash we make

• Meetings: Generally one robot/core values meeting and one project meeting a week (each 2 hours). More meetings were added as tournaments approached.

• First couple of project meetings were dedicated to brainstorming
The team was asked to do research between each meeting. After 2-3 meetings, one research fact stood out:

There are over 18 billion diapers disposed each year in the U.S alone. That's enough diapers to stack to the moon and back seven times.

After all the expected squeamishness, the girls had their project!
9778: Those Blue Girls
2015 Trash Trek

- Challenges to solve during the next several meetings:
  - Q: What aren’t cloth diapers solving the problem?
  - A: Who wants to deal with all the mess? No way! And it’s bad for the environment.

  - Q: How to make it easy?
  - A: A service will pick up the diapers and return new ones.

  - Q: How to make it good for environment
  - A: Recycle the diapers to make new diapers.
The final output:
The Diaper Wizardz service provides compostable diapers, collects them after use, and composes the diapers for use in growing crops used in manufacture of the compostable diapers. By closing the loop with this service, we help parents make the best choice for the environment.
9778: Those Blue Girls
2015 Trash Trek

● What is a reasonable price? Would people use this service?
  ○ Girls published a survey to ~150-200 people asking several questions and gathering statistics

● Experts:
  ○ Mommy Blogger
  ○ Business Consultant
  ○ Engineer who used to work as a “diaper engineer” for Kimberly and Clark

● Project evolved and matured as the season progressed
9778: Those Blue Girls
2015 Trash Trek

- How to present their solution? After an entire meeting brainstorming the idea the girls decided on recreating an episode of Shark Tank (3 min + 2 min presentation).
  - One girl was the announcer
  - Two girls were sharks and set next to the judges
  - Two girls were the entrepreneurs

- The presentation format allowed them to do a natural Q&A between sharks and entrepreneurs that answered many of the questions the girls thought the judges may ask.
Those Blue Girls were lucky enough to be selected one of 20 finalists for the Global Innovation Award. They spent several days in Washington DC at the US Patent Office hearing from Dean Kamen and various speakers.

The winning global innovation projects:
- **Chipsulation**: Turn chip bags into insulation. Shred it. Spray it with hydrogen peroxide. Tested against R13 insulation.
- **Water Soluble 6 pack rings**: No more risk for wildlife
- **Styro Filter**: turn styrofoam waste into activated carbon filter for removing impurities
Breakout Discussion

What aspect of the project does your team struggle with most?
Let’s I.D. some problems...

Getting the kids out of the design process and into the presentation phase
Applying research in an innovative way and still plausible
Preparing students for the presentation (to judges)
Making research not boring
Deciding on one project
How to get motivated/engaged/focused on the project
Time management
Girls (gender studies)
Make the project exciting, make it cool
Managing expectations – more than just LEGO
Finding an expert/professional
How to narrow your problem/solutions
Judges Comments
Hint - We care a lot that the students had fun!
Hint- We want to see a cohesive team that worked well together!
Hint- We want to see that students went through a process!
Hint- The project should be creative! We see many projects, so make your sure your project is memorable!
What do you think about the Judges feedback?
Project Presentations
Let’s form groups and do a project!
Your Presentation

1. Identify a real-world problem
   a. Discuss and analyze the problem(s) your team finds
   b. Identify possible experts who could help address your problem
   c. Review existing solutions
2. Create an innovative solution
   a. What would be required to implement it?
   b. What would be feasible?
3. Share your research and solution
   a. Who will you share your project with?
   b. What kind of feedback are you looking for?