

Your Project Challenge this season is to identify a problem with a building or public space in your community, design an innovative solution, share the solution with others and then refine it.

Step 1: Think About It

In the meeting, explain the project challenge. For homework, have the students, think about your community. Are there any issues that come to mind about buildings, parks, recreation spaces, etc.? If they need help, read pages 20-21 in the Engineering Notebook, which offers 4 ideas to “spark” their imagination.

Step 2: Identify a Problem

1. Each team member brings 2-3 ideas for the project back to the next meeting and is prepared to explain them to the team.
2. Next meeting the team discusses the ideas and votes. Sometimes everyone agrees on one! If not, narrow down to 2-3.

Step 3: Research each problem/maybe involve experts if need clarification.

Step 4: Finalize the Team’s Problem

Step 5: Research Current Solutions and why they are not working/involve experts to explain current solutions

After the research is complete, the current solutions are presented to the team to figure out why the current solutions aren’t working? Why does the problem still exist? What could be improved?

Step 6: Summarize sources

Remember: Your team should have at least five different sources, including some from categories such as these: News Articles, Documentaries or movies, Interviews with professionals working in the field, ask your local librarian, books, online videos, websites.

Step 7: Check your work.

Do you need further research to answer the questions listed below? If so, assign the research to current team members and have them report back next meeting.

- a. Do we fully understand the problem we identified?
- b. Have we figured out all current solutions to the problem and why they aren’t working?

Step 8: Design an innovative solution/ask experts for their opinion

An innovate solution is a solution that adds value to society by improving something that already exists, using something that exists in a new way, or inventing something totally new.

1. To help you come up with some innovative solutions ask yourselves:
 - What could be done better? What could be done in a new way?
 - Does your solution balance the needs of the people, the planet, and prosperity?
2. Brain Storm for a Solution! Think of your problem like a puzzle. Then turn the problem upside down and think about it in a completely different way. Imagine! Get silly! Even a “silly idea” might inspire the perfect solution. Try one idea (or more), but be prepared that each idea may need some improvements.
3. Have you thought about how someone could make your solution a reality? The research you have done will help you answer questions like:
 - Why would your solution succeed when others have failed?
 - What information would you need to estimate its cost?

- Do you need any special technology to make your solution?
- Can anyone use your solution or only some people? Who would be able to use it specifically?

Remember your idea does not need to be completely new. Inventors often improve an idea that already exists or use something that exists in a new way.

4. Final Check: Make sure that your idea is different in some way from all the other solutions you learned about this problem. Write down the ways it is different and innovative. Why do you like the idea? Why did you pick it?

Step 9: Share your idea with others

- Think about who your solution might help. How can you let them know that you solved their problem?
- Can you share with an expert who helped you learn about your problem?
- Can you think of any other people who might be interested in your idea?

Consider sharing with someone who could provide feedback about your idea. Getting input and improving are part of the design process for any engineer. Don't be afraid to revise your idea if you receive some helpful feedback.

Step 10: Develop your presentation

When you present use the talents of your team members. Find a creative way to explain your problem and solution. Your sharing can be simple or elaborate, serious or designed to make people laugh while they learn.

No matter what presentation style you choose, remember to have fun!

Step 11: Present your solution at your Qualifier

Finally, prepare a presentation to share your work with the judges at a qualifier. Your presentation can include posters, slideshows, models, multimedia clips, props, costumes, and more. Be creative, but also make sure you cover all the essential information.

Rules for presentation at tournament:

Your team must

1. Identify your team's problem that meets this year's criteria
2. Explain your team's innovative solution
3. Describe how your team shared your findings with others.
4. Meet the presentation requirements:
 - a. Give your presentation live
 - b. Include all team members; each member must participate in the Project judging session.
 - c. Set up and complete presentation in 5 minutes or less with no adult help.
 - d. Use your presentation to tell the Judges about their sources of information, problem analysis, review of existing solutions, elements that make their idea innovative, and any plans or analysis related to implementation.