



## FLL RESEARCH PROJECT 2015 „TRASH TREK“

### Learn about a topic

Before you determine your particular topic, try to learn as much as possible about this area. Use various sources such as: internet, books, newspapers, interviews with experts, etc. In the following you will find some suggestions for this year's theme.

Have you ever thought about the disposable plastic straw in your drink at a restaurant? When you finish your meal and leave, what happens to the straw?

9-year-old Milo Cress started asking these questions when he noticed that restaurants usually gave him a disposable straw with each beverage. The straw was there even if he didn't need or want it. To Milo it seemed like a problem that needed some investigation. From his research, he estimated that people in the U.S. use over 500 million straws every day. That adds up to about 9,300 large busses full of disposable straws. Milo thought that this is too much unnecessary trash in landfills!

To solve this problem, Milo thought maybe restaurants could stop giving straws automatically. Some people would decide not to take a straw, and fewer straws would go into the trash. As Milo said "I'm not the straw police", he just encourages people to consider other options, like buying a reusable or biodegradable straw.

Even if you do not use disposable straws, you definitely make some sort of trash every day. You might call it garbage, rubbish, or even Municipal Solid Waste (MSW). For the "Trash Trek" Challenge, trash is any item you are done with and want to dispose of. This does not include: waste water, human or animal excrement and gasses (e.g. car exhaust).

Have you thrown away any of these items today?

- Food scraps (like a banana peel or a chicken bone)
- Plastic bags or wrappers
- Used items (like a pen that won't write or an old school notebook)
- Clothes that are too small or ruined

Where you live, maybe most trash items go into a recycle bin, a trash bag or are burned. Whatever type of bin you put them into, those pieces of trash go somewhere when they leave your house. Do you know where they go?

**Your Project mission this season is: To find a solution how to make less trash or improve the way people handle the trash we make.**

## Identify a Problem

Not sure where to start? Try the following:

Make a list of various topics that you would like to learn more about. Select one topic. It might be something gross and stinky, something old and worn out, or something left over after you finish a project. It could be an item that is used in manufacturing, building, or some other business. It could be any item that is considered “trash” by the owner.

You might select a problem in one of these areas or find your own:

- Collecting trash
- Finding new uses for old items (repurposing)
- Food waste
- Electronics waste (phones, computers, etc.)
- Hazardous waste (medical, chemical, paint, etc.)
- Landfills
- Making zero-waste products
- Recycling process
- Sorting

Find out where the piece of trash goes after it leaves the owner. How does a electrician, gardener or car mechanic deals with trash? Think about questions like:

- Does someone collect this item from you, or do you need to take it somewhere?
- Could you follow the path your trash takes (either in person or through websites, books, and magazines)?
- What happens to the trash in the end?
- Do you notice any parts of the process that could be better – more efficient, cleaner, or better in some other way?

This might be a great time to interview a professional. The professional could be someone who works in the waste management industry or researches trash problems for their job. Can a professional help you learn about trash collection, recycling, composting, reusing, or processing your trash in some other way?

After you select a problem, find out about the current solutions. Why aren't the current solutions working? Why does this problem still exist?

## Create an Innovative Solution

Create an innovative solution to the problem. Think about 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.**

Think about:

- What could be done better? What could be done in a new way?
- Could your solution make it more cool, fun, or easy to be responsible about trash?
- How can you re-imagine disposing of trash to make it more efficient or safe?
- Could your solution prevent an item from becoming trash in the first place?

Reconsider different ideas! Be prepared that your first idea may not work as you expect. Then turn the problem upside down and think about it in a completely different way. Even a “silly idea” might inspire the perfect solution.

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 would it cost?
- Do you need any special technology to make your solution?
- Can anyone use your solution, or only some people?

Remember, your idea does not need to be completely new. Improving an idea that already exists or using something that exists in a new way is innovative.

## Share with Others

Once you have a plan for your solution, share it with others!

Think about who your solution might help. How can you let them know? Can you present your research and solution to people who recycle, transport, store, reuse, or create trash? Can you share with a professional or someone who helped you learn about your problem? Can you share with a professional or someone who helped you learn about your topic or students in your school? Can you think of any other groups of 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.

## Present Your Solution at a Tournament

Finally, prepare a presentation to share your work with the judges at a tournament. When you share with the audience, use the talents of your team members. Find a creative way to explain your FLL Research Question and solution. Could you perform a skit? Create a website? Make a comic book? Rap? Write a poem, song, or story? Your presentation can include posters, slideshows, models, multimedia clips, your

research materials, and more. Your sharing can be simple or elaborate, serious or designed to make people laugh while they learn. Be creative, but also make sure you cover all the essential information.

To be eligible for Project Awards and advancement, your team must:

1. Identify your team's FLL "Trash Trek" question and explain a solution of the topic.
2. Explain your team's innovative solution and how it can be happen in the real world
3. Describe how your team shared your findings with others.
4. Show different types of research resources (offline, online, experts, etc.)
5. Meet the presentation requirements:
  - Give your presentation live; you may use media equipment (if available) but only to enhance the live presentation.
  - Include all team members; each team member must participate in the Project judging session in some way.
  - Set up and complete your presentation in 5 minutes or less with no adult help.

Do you have questions about the Research Presentation? Send an e-mail to [fill@hands-on-technology.org](mailto:fill@hands-on-technology.org). Important answers to your questions will be published in the Q&A [www.first-lego-league.org/en/faq/fragen.html](http://www.first-lego-league.org/en/faq/fragen.html).

You can find interesting links and background information about the research topic for "Trash Trek" online – go to [www.first-lego-league.org/en/fll/research-project.html](http://www.first-lego-league.org/en/fll/research-project.html).