



TeachEngineering

Engineering a Ping Pong Ball Retriever



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Engineers Needed!

A wheelchair table tennis team in Egypt needs your help! The team practices multiple times a week and uses a tub of ping pong balls to practice. However, the team struggles to pick up the balls after practice. The team does have some able-bodied people to help, but the team would love a device that they could easily use from their wheelchairs to pick up the ping pong balls.

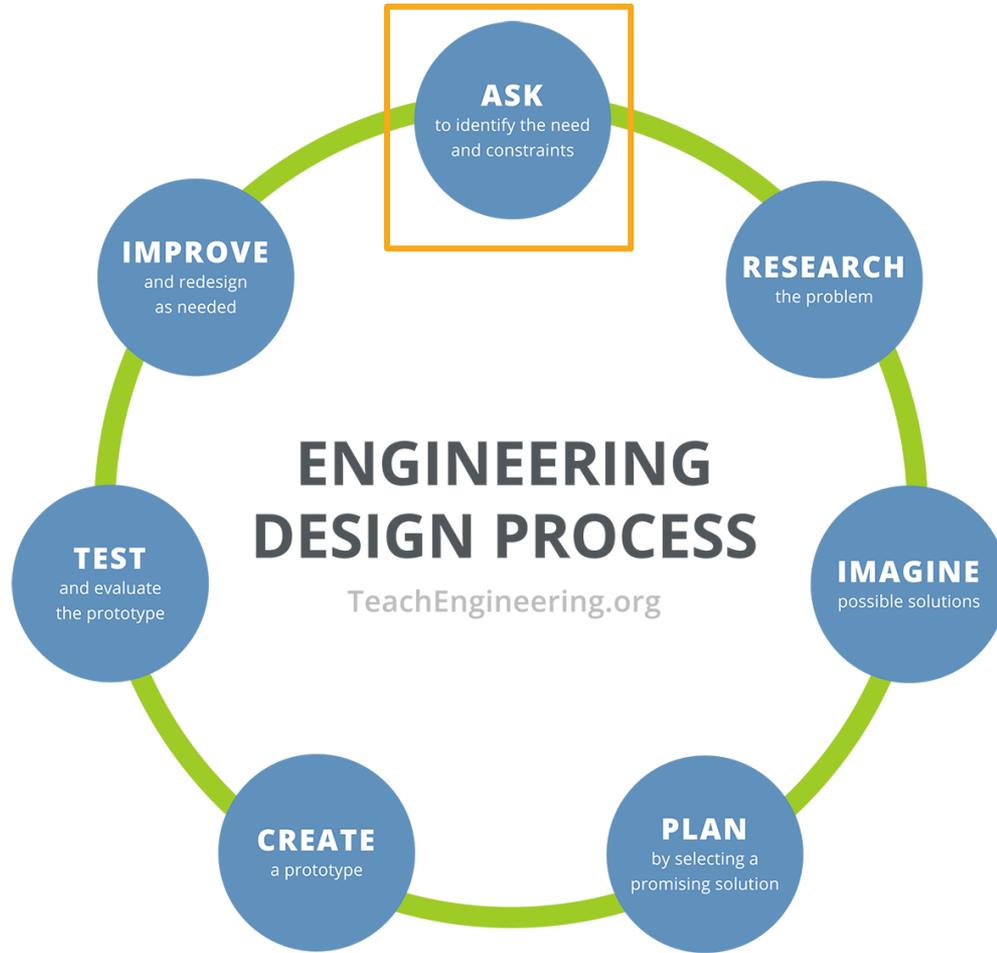


Your Job!

Here is where you come in... Your job is to use common, reusable materials found in Egypt to create a prototype to pick up as many ping pong balls at one time as possible. Your device must be able to be used without putting your hand lower than the seat of your chair and must be built with the user in mind.

At the end of the build, your group will pitch your prototype to the company, so be sure to meet the requirements listed above.





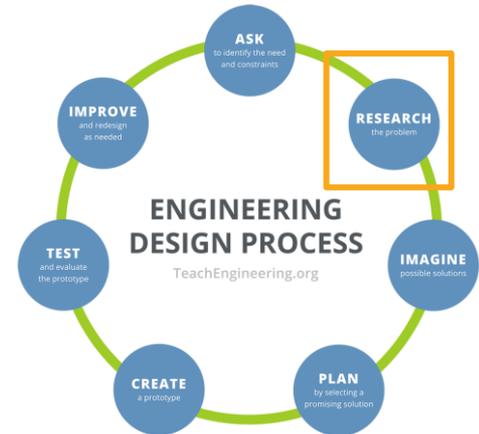
Egypt: Background Information

Video 1: [Tackling plastic waste in Egypt – DW – 11/10/2022](#)

While watching the video above, write down some common materials that are used in Egypt in the research box on your worksheet.

Article 1: [Learning and Earning in Zabaleen](#)

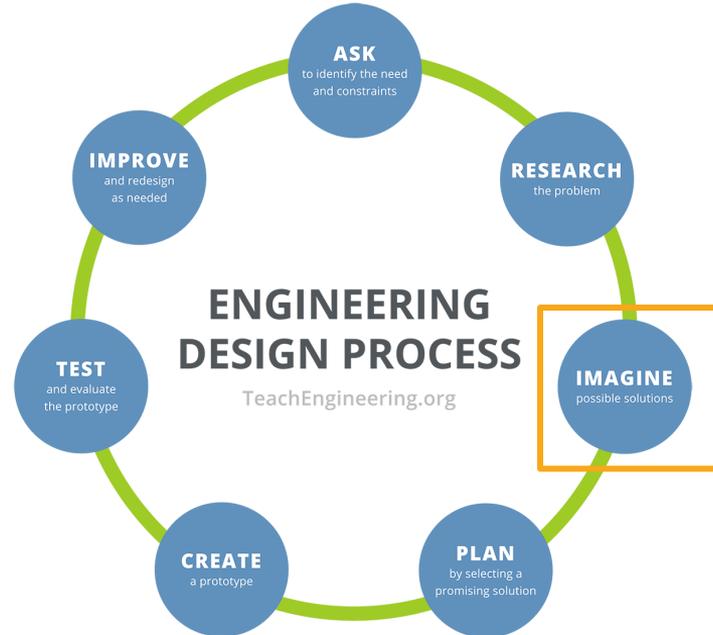
Check out the article on page 41 and write down at least two positive things that are going on in Zabaleen.



List of Available Supplies

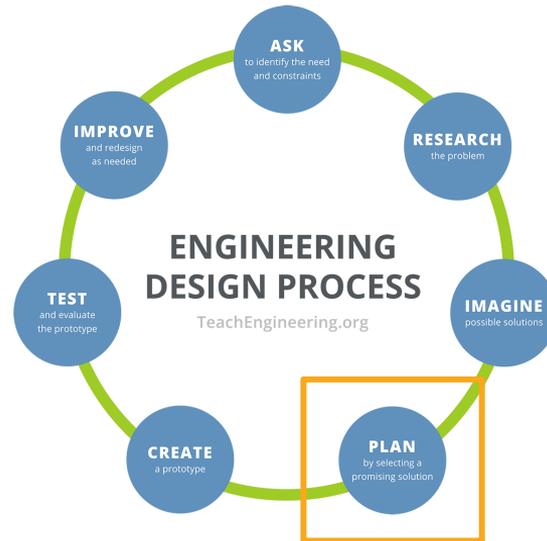
- plastic bottles
- plastic bags
- takeout containers (plastic plates/tin foil pans)
- aluminum foil
- straws
- rubber bands
- tape
- plastic silverware
- cardboard boxes
- scissors
- plastic cups
- string
- anything else you bring in/get approved

Using the supplies listed on the previous slide, **imagine** (sketch out) at least **TWO** different designs for your prototype on your case file paper.



Teamwork Makes the Dream Work!

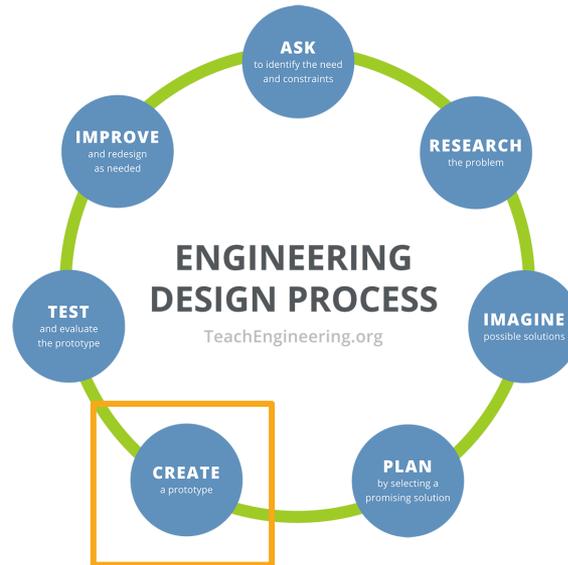
Get together with your engineering team and **plan** (sketch) **ONE** prototype that you think will be the most successful based off of all of your individual sketches.



***See your teacher when ALL group members have a sketch drawn in the plan box.**

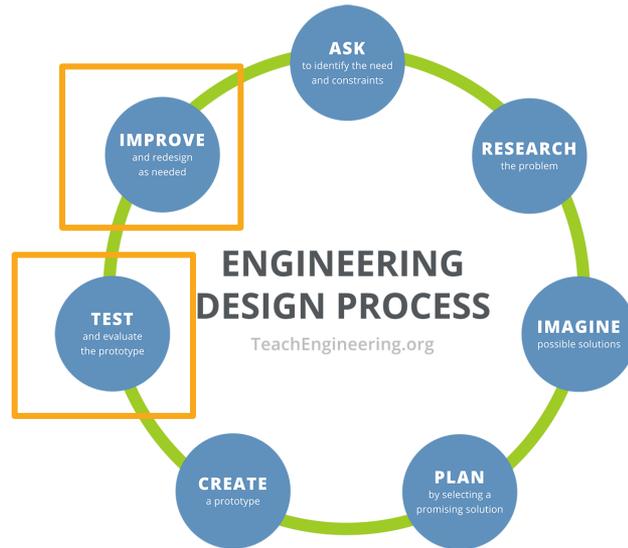
Get to Work!

Work together with your group to **create** your first prototype. Make sure you are meeting the needs and **constraints** you listed at the beginning of the process.



Time To Test!

With your teacher's approval, pick up a tub of ping pong balls and get started testing and improving.



| | Expectation Not Met | Expectation Partially Met | Expectation Met | Score |
|--|---------------------|---------------------------|-----------------|-------|
| Explain how you used the engineering design process | 0 | 1 | 2 | |
| Picks up balls | 0 | 1 | 2 | |
| Users' needs considered <small>*Remember your hand cannot be lower than the seat of your chair.</small> | 0 | 1 | 2 | |
| Use of common Egyptian materials | 0 | 1 | 2 | |
| Aligns to at least 2 SDG goals | 0 | 1 | 2 | |



But what is an SDG goal?..

Total Score: _____ / 10

Follow the link to research the Sustainable Development Goals and pick two goals to incorporate into your prototype.

<https://www.undp.org/sustainable-development-goals>