



PLTW Engineering

12/Choosing a Research Topic

April 15, 2020



12/EDD

Lesson: **4/15/2020**

Objective/Learning Target: Students will be able to explain how to choose a good topic for a research problem.



Choosing a good topic

Things to consider when choosing a good topic:

Think about topics you would have a vested interest in. Meaning something that relates to your every day life. Think about things that affect you personally.



Choosing a good topic

Pick something that is a Valid problem.

A **valid** problem is a problem that other credible sources (such as consumers, users, and experts) also believe is a real problem and for which there are other products and/or patents that attempt to solve the problem.



Choosing a good topic

Pick a problem that you can Justify

A problem can be described as **justifiable** if there is evidence that the value of a successful solution is worth the time, money, and effort necessary to find a solution to the problem.



Choosing a good topic

Finally, pick something that has the potential to make a difference.

The most important role any engineer or designer can take is one in which the lives of those who use their product are improved.



Brainstorming

A really good question to ask yourself when brainstorming for a new research topic is:

I hate it when...



Brainstorming

Before you begin brainstorming, review the rules from the earlier lesson:

- **No criticism allowed**
- **Work for quantity**
- **Piling on of ideas welcome**
- **Free-for-all**



Brainstorming

Brainstorm a list of what *you* know best or in what areas you have expertise.

- Rank them based on your interest.
- Note some areas that might need improvement or redevelopment related to the items on your list.



Brainstorming

Think about your favorite activities, hobbies, pets, and belongings. What sports do you like? What consumable products can you not live without?

Other ways to phrase the questions include:

- What kinds of magazines would you purchase at a news stand?
- What do you spend money on?
- What do you do for enjoyment?



Brainstorming

What annoys you? When you think about it, you can probably list a number of instances in which things didn't go as expected or as you would have liked.

In the last week, what has happened that has caused you irritation? Did something not work correctly or break at an inopportune time? Was it difficult to operate something or complete a task that should have been much simpler than it was? Does a task take too long? Is the operation of a product too difficult, messy, loud, inefficient, etc.? What situations/products have resulted in damage or injury?



Helpful Links

[Everyday problems begging for Innovation](#)

[The nature of engineering problems and how to justify them](#)