

ENGINEERING DESIGN PROCESS

Ask:
Identify
the need &
constraints

Research
the problem

Imagine:
Develop
possible
solutions

Plan:
Select a
promising
solution

Create:
Build a
prototype

Test and
evaluate
prototype

Improve:
Redesign
as needed

 **TEACH ENGINEERING**

Engineering...because dreams need doing.

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Ask: Identify the Need & Constraints

Engineers ask critical questions about what they want to create, whether it be a skyscraper, amusement park ride, bicycle or smartphone. These questions include: What is the problem to solve? What do we want to design? Who is it for? What do we want to accomplish? What are the project requirements? What are the limitations? What is our goal?

Research the Problem

This includes talking to people from many different backgrounds and specialties to assist with researching what products or solutions already exist, or what technologies might be adaptable to your needs.

Imagine: Develop Possible Solutions

You work with a team to brainstorm ideas and develop as many solutions as possible. This is the time to encourage wild ideas and defer judgment! Build on the ideas of others! Stay focused on topic, and have one conversation at a time! Remember: good design is all about teamwork!

Plan: Select a Promising Solution

For many teams this is the hardest step! Revisit the needs, constraints and research from the earlier steps, compare your best ideas, select one solution and make a plan to move forward with it.

Create: Build a Prototype

Building a prototype makes your ideas real! These early versions of the design solution help your team verify whether the design meets the original challenge objectives. Push yourself for creativity, imagination and excellence in design.

Test and Evaluate Prototype

Does it work? Does it solve the need? Analyze and talk about what works, what doesn't and what could be improved.

Improve: Redesign as Needed

Discuss how you could improve your solution. Make revisions. Draw new designs. Iterate your design to make your product the best it can be.

And now, REPEAT!