ENGINEERING DESIGN PROCESS

Environmental Science
Engineering Design Process

Series of steps that guide engineers to solve problems.

The process is repeatable.

https://www.teachengineering.org/design/designprocess
01 Ask
02 Research
03 Imagine
04 Plan
05 Create
06 Test
07 Improve

7 STEPS
Step 1: Ask
Identify the needs and constraints of a problem

What problem is needing to be solved?

Who is it for?

What are the requirements for success?
Step 2: Research
Research the problem and find resources

Who are the experts?

What information is already known about the problem?
Step 3: Imagine

Brainstorm ideas that could solve the problem.

List all possible solutions

Build off of others ideas
Step 4: Plan
Choose one solution and make a plan

Choose the most promising design and begin planning for a prototype.
Step 5: Create
Create a model of your solution.

Use your creativity to make your idea real
Model should be accurate to your idea
Step 6: Test

Test your model and evaluate the results

Test your model to see how it performs

Evaluate how well your model did based on the success criteria outlined in step 1
Step 7: Improve

Redesign your solution/model to make it even better

What went well on your model?

What didn’t go well?

How can we change it to make it even better than before?
The work is never done...

The engineering and design process can repeat as many times as needed to accomplish the goal. Good engineers evaluate their solutions over and over, looking for ways to improve on a design.
In Action

What does this process look like when designing a road network?
What problem have we identified?
Once we’ve identified our problem, we need more information.

What type of information might help us solve the problem?

Where can we find the information?
After your research is complete, what comes next?
Brainstorming Solutions

No solution is off limits. Be open to new ideas and embrace creative solutions.
Exit Ticket

Question #1
Which step in the Engineering Design Process is most important? Why?

Question #2
Which step in the Engineering Design Process is the most difficult? Why?