



**Please have your devices
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**Stay focused,
wait for further instructions
and enjoy!**

THIS SCIENTIST IN FRONT OF YOU HAPPENS TO BE A VERY FAMOUS PHYSICIST ...But she does have a problem... →





Engineering @ CERN

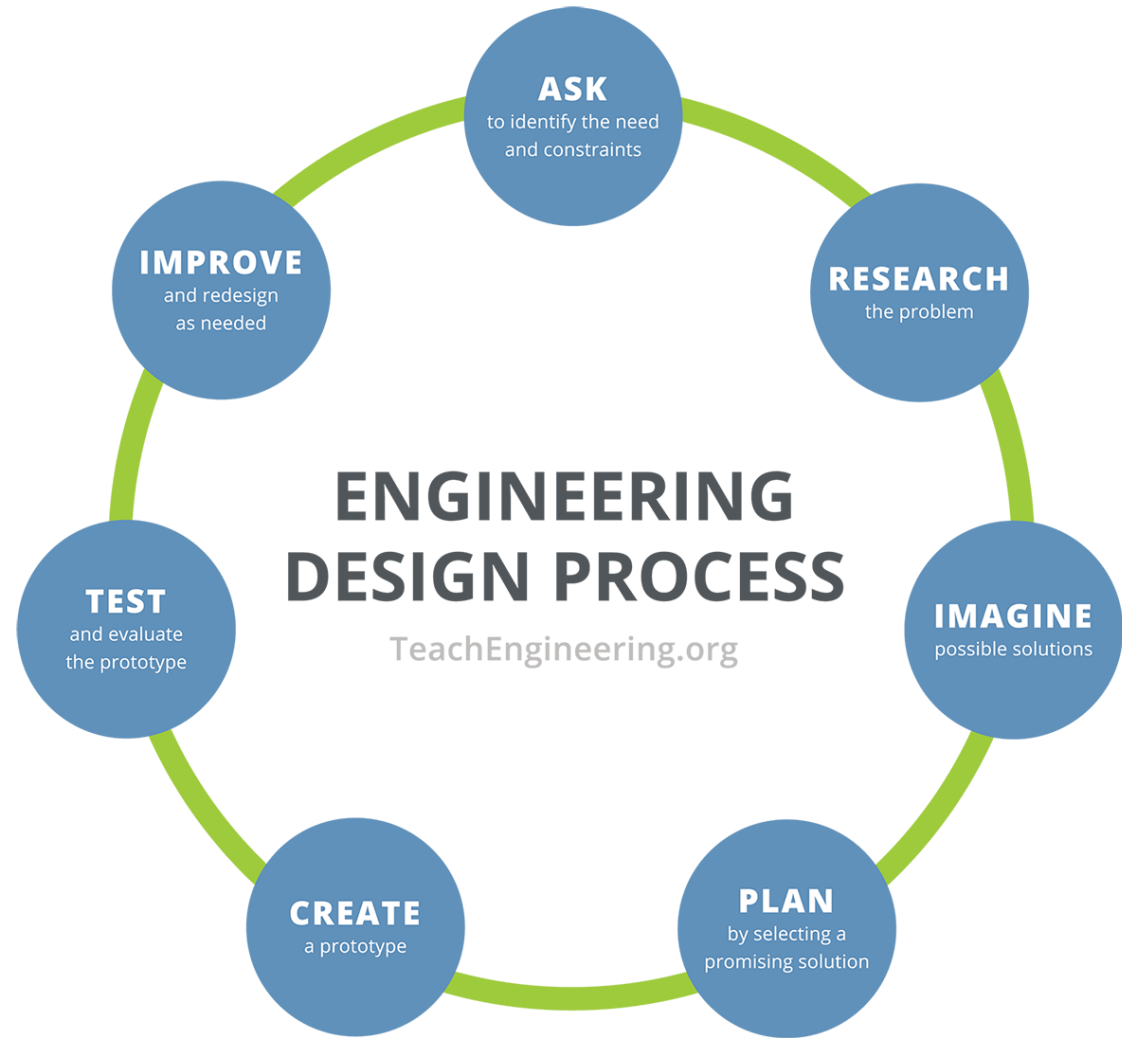
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A photograph of three students in a classroom setting, focused on a hands-on project. They are gathered around a table with a wooden top, where they are working with several small, glowing light bulbs. A white electrical outlet is plugged into the table. One student on the left is wearing safety glasses and a blue shirt. Another student on the right is wearing a black shirt and safety glasses. A third student is partially visible in the foreground. The background shows a white wall with a poster and some equipment. A semi-transparent white box with a black border is overlaid on the image, containing the text '1. Curriculum & class connections'.

1. Curriculum & class connections

- *Bringing engineering to school through **projects***
- *Practical work in class*
- *CERN includes several **projects***

2. THINKING LIKE ENGINEERS



3. CONCEPTIONS & CHALLENGES



- **CONCEPTIONS**

- Planning
- Trial and error method
- Collaboration
- Constant testing
- Improvement
- CERN as an international collaboration

- **CHALLENGE**

- Students may oppose the “learning by doing”
- Time in the classroom
- Material resources available in school

4. Examples of engineering situations to teach at school

Cooling mechanisms

Cooling of the magnets in LHC

Solenoids

CMS Solenoid

Statics

Design of dectetors structure

Rotation

Vacuum Chamber

Friction



5. RESOURCES

- <https://www.teachengineering.org/> - web page with ideas and resources for teaching engineering
- <https://www.sciencebuddies.org/engineering-challenge> - resource for various project challenges and competition



“ARE WE DONE?”

AMAZING 🤖 🤖 🤖