TeachEngineering

Ignite STEM learning in K-12

TAKE A SEAT! MINIMIZING PRESSURE AND OPTIMIZING COMFORT IN SCHOOL CHAIRS

POLL THE CLASSROOM

1. **Rate the comfort of your school desk chair on a scale of 1 (most uncomfortable chair I've ever sat in) to 5 (most comfortable chair I've ever sat in).**

2. **True or False: I am comfortable in my seat right now.**

3. **Improvement: Brainstorm with a partner 1 or more ways that the school desk chair could be improved.**

THE PROBLEM

As identified by our classmates, we can agree that our school desk seats are not as comfortable as they could be.

According to this article in "The Guardian":

- **The average child spends *15,000 hours* sitting on chairs during their school life.**
- **One in five of children suffer back pain and three students from every classroom will see a doctor before their 16th birthday with complaints of back pain.**
- **These chairs are mass-produced without comfort in mind.**

THE CHALLENGE

<u>Your Task:</u> Design a cushion that minimizes the pressure felt when sitting down.

<u>Criteria:</u>

- **Your cushion must be able to fit on a chair and on the capacitance sensor.**
- **Your cushion must be portable to take from class to class.**

<u>Constraints:</u>

- **Your cushion must only use supplies provided by, or approved by, your teacher.**
- **Your cushion must be built within the allotted time.**

ENGINEERING DESIGN PROCESS

Sketch:

Your group will first create a sketch and list of materials needed for your cushion idea.

The sketch must be approved by teacher.

Build:

Your group will create your cushion using materials in-class.

Don't forget about the criteria and constraints while you are building!

Test:

Each group will then test the success of their design using the capacitance sensor they built!

Whose design will be the most successful?