

## Novel Engineering: Peter's Chair

### Lesson Overview:

This activity is based on the book *Peter's Chair* by Ezra Jack Keats. The class will need to read the book to do the activity. Although the book is for early elementary students, it has been done with older grades with less focus on literacy.

**Suggested Time:** 45-120 minutes, depending on ages of students

Students will pick a problem from the story and design a solution to solve a problem for one or more of the characters.

### Learning Objectives:

- To gain experience identifying problems
- To gain experience problem scoping
- To design a solution for a client based on criteria and constraints that have been identified

### Materials:

- Scissors

### Recyclable Materials:

- thin cardboard (like cereal box thickness)
- old magazines
- paper towel rolls
- empty small plastic containers such as yogurt containers
- empty water bottles

### Purchased Materials:

- Tape (masking seems to work the best)
- foil
- popsicle sticks
- Felt or fabric
- plastic wrap
- string
- pipe cleaners
- paper clips
- coffee filters

### Directions:

1. Read the book with the students. Tell them that they will build a solution to solve a problem for one of the characters. Have them keep a list of problems they find as they read. For younger students, stop at each page and discuss what is happening in the picture. For older students, remind them to look at the images for information about the characters. As you read, ask the students to share what they think the different characters are feeling at different times in the story.
2. As a group, list the problems that the students found on an anchor chart. Talk about which problems could be solved with engineering and which are more social. For example, students could build quieter blocks through engineering.

3. Pick one of the problems and talk about how that problem affects each member of the family. Talk about constraints and criteria in the story. Brainstorm possible solutions.
4. Tell students that they will be pick a problem, design and then build an engineering solution to solve that problem. Introduce students to the materials.
5. Put students into pairs and have each pair pick a problem.
6. Have students brainstorm possible solutions and then begin planning using a planning document. Make sure they outline the constraints, criteria, and how they will test their design.
7. Students can begin building.
8. Stop for a mid-design share-out after students have built something, but still have work to do. Use the mid-design share-out for students to share what is working well and what they are trying to figure out. Have groups share advice with each other.
9. Students continue to build and test.
10. Students can share their designs through a presentation and/or another method such as an advertisement for the device.

Possible Discussion Topics:

- What about your design works well?
- What would you like help with?
- How will this solve the problem for your character(s)?
- How would the characters use it?