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NATIONAL HIGH SCHOOL DESIGN COMPETITION

# 2018 TEACHER RESOURCES: LESSON PLANS

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| **GRADE LEVEL** | 9-12 |
| **LESSON TIME** | 4 class periods |
| **INTRODUCTION** | Nearly 56.7 million people in America are challenged by the environments in which they live and work.*<br><br>While great strides have been made to design for accessibility, many of our everyday tasks and surroundings still remain a challenge for people of varying abilities. This is where designers (and you!) step in. Designers are creative problem solvers who work to improve all aspects of daily life. They design solutions that eliminate barriers and improve access for all.<br><br>This series of lesson plans was developed to support teachers in facilitating the 2018 National High School Design Competition.<br><br>* According to a 2010 US Census Bureau Report https://www.census.gov/content/dam/Census/library/publications/2012/demo/p70-131.pdf |
| **CHALLENGE** | Design a solution that makes the everyday accessible. |
| **OBJECTIVES** | Students will be able to:<br>• Identify a place, process, or object that they use regularly.<br>• Define a problem that a user with a disability might have with it.<br>• Design and prototype a solution for the problem. |
| **RESOURCES** | PowerPoints: www.cooperhewitt.org/design-competition-teacher-and-student-resources<br><br>Additional Resources: http://learninglab.si.edu/q/ll-c/BFfPCHJkxehr9HGH |

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## ENTRIES

Design Competition Website: www.cooperhewitt.org/designcompetition

**Deadline to Enter: February 12, 2018, 11:59 p.m. ET**

Students can enter individually or in teams of up to three.

Entries will only be accepted online beginning December 1, 2017, and they must consist of a **sketch** and **answers** to the following three questions:

1. Tell us about the place, process, or object in your everyday life that you had in mind when you were designing your concept.
2. Tell us about the challenge you identified with this place, process, or object that a user with a disability might have with it.
3. Tell us about your design idea and how it works.

Further details on entry requirements can be found in lesson 4 and on the design competition website.

## VOCABULARY

Accessibility
Disability
Empathy
Brainstorm
Design
Designer
Prototype
User
Process

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# LESSON 1

**RESOURCES**

"What is Design?" PowerPoint

Photocopies of "Assumption Matrix" worksheet

**INTRODUCTION**

Using the "What is Design?" PowerPoint, introduce students to the concept of design:

- Review the PowerPoint and worksheet with the class.
- Facilitate discussion around the questions presented in the PowerPoint.

**ACTIVITY**

"Assumption Matrix" worksheet

Every place, process, or object is designed for a user. People are diverse and complex, so designers often make assumptions about the user to simplify their design process. For example, they make assumptions about the user's physical ability, cognitive understanding, and preferences.

Instructions:

1. Using the slides from the "What is Design?" PowerPoint, guide students through the "Assumptions Matrix" worksheet. Using the example of a bike, fill out the worksheet together.
2. Students can work in groups to complete the worksheet for the peeler, backpack, and getting the teacher's attention in class.
3. Ask each group to share assumptions the designer of these objects has made about the user.

Note: Students' entries to the competition may address challenges related to any type of disability. Disabilities come in many forms. They can be physical, cognitive, or sensory, or have a combination of effects. They may be related to age, caused by an illness or injury, or be something a person is born with. Disabilities may be permanent or temporary.

**EXPLORE**

Introduce the Cooper Hewitt Design Process through the "What is Design?" PowerPoint (slide 12). Guide students through the design process in relation to the OXO Good Grips Peeler.

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**SUMMARY**

WHY DESIGN SHOULD INCLUDE EVERYONE

In this TED talk, Sinéad Burke shares what it is like to navigate the world at 105 centimeters (or 3' 5") tall. She is acutely aware of details that are practically invisible to many of us, and observes that the designed world—from the height of a lock to the range of available shoe sizes—often inhibits her ability to do things for herself.

https://www.ted.com/talks/sinead_burke_why_design_should_include_everyone

**TAKE HOME ACTIVITY**

Sinéad Burke asked the question "Who are we not designing for?"

Choose a place that you interact with regularly, such as a bedroom, classroom, library, or restaurant. Complete the following:

1. Draw a sketch of the place, including any features that are relevant to the use of the room.
2. On the sketch label at least five assumptions the designer of the chosen place has made about the user.
3. Answer Sinéad Burke's question, "Who are we not designing for?" in relation to the place you have chosen.

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# LESSON 2

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| **RESOURCES** | "Empathy" PowerPoint<br>Winter gloves, disposable plastic gloves, peelers, potatoes, blindfolds |
| **INTRODUCTION** | Empathy is the centerpiece of the design process. It is important for the designer to understand the way a user does things and why, their physical and emotional needs, how they think about the world, and what is meaningful to them. |
| **ACTIVITY** | This activity will assist students in taking on another perspective by experiencing a variety of objects, processes, and places in a new way.<br>Using the "Empathy" PowerPoint, guide students through the activities and questions. |
| **SUMMARY** | Discuss how the various activities and conversations have supported empathy with a variety of users:<br>• Sinead Burke's TED Talk about ways places, processes, and objects are inadvertently designed to inhibit her ability to do things for herself<br>• Our experiences during this lesson and what it feels like to be limited in our capacity to access places, processes, and objects.<br>• The trailer for the 2016 Paralympics (below), in which people with disabilities demonstrate ways they live fulfilled lives and achieve their goals.<br>• Aimee Mullins's TED talk (below) about how language around disability is limiting, and how adversity provides opportunities for achievement. |
| **TAKE HOME ACTIVITY** | Watch the videos below and think about how they highlight the capabilities of people with disabilities.<br>WE'RE THE SUPERHUMANS<br>This trailer was created for the 2016 Rio Paralympics and is a celebration of the talents of those involved.<br>https://www.youtube.com/watch?v=IocLkk3aYlk |

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## THE OPPORTUNITY OF ADVERSITY

Athlete, model, and actress Aimee Mullins gave this presentation at a 2009 TEDMED conference. She talks about redefining the word "disabled" and how adversity provides an opportunity to achieve more.

https://www.ted.com/talks/aimee_mullins_the_opportunity_of_adversity

Complete the following:

1. Create a table by dividing a piece of paper into three sections and give each section a heading: Place, Process, Object.
2. Watch the videos and observe the places, processes, and objects that people use or talk about throughout the videos.
3. Take notes on how these places, processes, and objects are used for empowerment and achievement.

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# LESSON 3

**RESOURCES**

"Define, Empathize, Brainstorm" PowerPoint

Photocopies of "Place, Process, Object" worksheets

**INTRODUCTION**

In lesson 1, we defined the following problem: designers make assumptions about users, and these assumptions can make the everyday inaccessible for some people.

Use the "Define, Empathize, Brainstorm" PowerPoint (Slides 1–5) to remind students of the design process and Design Competition challenge, and to introduce the "How might we" question that will address this challenge.

The 2018 National High School Design Competition challenge is to design a solution that makes the everyday accessible. This lesson will focus on the question:

How might we redesign a place, process, or object to address a challenge for a person with a disability, to make the everyday accessible?

**ACTIVITY**

"Place, Process, Object" worksheets

Brainstorming is a technique used in the design process to quickly generate multiple ideas with a non-judgmental mindset. These ideas are then evaluated, and one idea is chosen to prototype.

Use the "Define, Empathize, Brainstorm" PowerPoint (Slides 6–7) to introduce Brainstorming.

Instructions:

1. Each individual or team will brainstorm multiple places, processes, or objects that they use regularly and add them to the "Place, Process, Object" worksheet, under the relevant heading.
2. Choose three things from the "Place, Process, Object" chart, and write them across the first row of the "Assumptions Matrix" worksheet.
3. Complete the "Assumptions Matrix" for the three chosen places, processes, or objects.
4. Each individual or team will discuss the "Assumptions Matrix" and choose one every day place, process, or object to redesign to address a challenge for a user with a disability.

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| | 5. Each individual or team will brainstorm ways to redesign the chosen place, process, or object and will choose one idea to work on in Lesson 4. |
| **SUMMARY** | Students can share out the place, process, or object they will redesign and how it will make the everyday more accessible. |
| **TAKE HOME ACTIVITY** | Read the following information about the, "More legible highway signage:"<br>https://www.cooperhewitt.org/2013/11/29/more-legible-highway-signage/<br>1. Who is the user of this designed object?<br>2. How did the design solve a problem?<br>3. How does everyone benefit from this design? |

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# LESSON 4

**RESOURCES**

Cooper Hewitt National High School Design Competition Website: www.cooperhewitt.org/designcompetition

8 1/2 x 11" sheets of paper

**INTRODUCTION**

In lesson 3, students came up with an idea of a place, process, or object that they will now prototype. A prototype is an initial sample of an idea. To enter the Design Competition, the idea will need to be expressed as a sketch.

Spend this lesson working on the Design Competition entry requirements, outlined below.

**ENTRY REQUIREMENTS**

Students can enter individually or in teams of up to three.

**Entries must consist of the following:**

**One sketch of your design idea on an 8 1/2 x 11" sheet of paper.**

Your sketch can be drawn in any medium by hand or on a computer. The quality of the sketch will not be judged, but it should help illustrate the design concept. Remember, you will have to create a .jpg or .png file of your drawing when it's time to enter. *If you are a student with a disability, you may submit a written description of your idea as a .pdf or an audio description of your idea as an .mp3 as needed.*

**Written responses to the challenge questions.**

The online entry form will include a box where you can copy and paste your responses. *If you are a student with a disability, you may submit audio files of your responses as .MP3 files as needed.*

1. **Tell us about the place, process, or object in your everyday life that you had in mind when you were designing your concept.**
   *What is it and how or when do you use it? Is this also used by others or a broader public, and if so, in what ways? (30 words)*
2. **Tell us about the challenge you identified with this place, process, or object that a user with a disability might have with it.**
   *What specifically about it makes it challenging for the user you had in*

*mind? Is this something you observed or experienced? Is this also a challenge for people who do not have a disability? (50 words)*

3. **Tell us about your design idea and how it works.**
   *Think about how your design improves access to the place, process, or object that you described above for the user you identified, and consider the impact for a broader public. (50 words)*

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# ASSUMPTIONS MATRIX

Users are diverse! Designers make assumptions about the people who will use the objects, processes, or places they design. Fill out the table below with the assumptions the designer has made about the person using the object or process listed.

| **Assumptions about the user** | **Bike**  | **Peeler**  | **Backpack**  | **Getting the teacher's attention in class**  |
|---|---|---|---|---|
| **PHYSICAL** | | | | |
| **COGNITIVE** | | | | |

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# PLACE, PROCESS, AND OBJECT

Fill out this worksheet with your group to identify as many places, processes, or objects that you use regularly.

| Place | Process | Object |
| --- | --- | --- |
| | | |

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# PLACE, PROCESS, AND OBJECT ASSUMPTIONS MATRIX

Choose three things from your "Place, Process, and Object" worksheet and write them across the first row of the table. List physical and cognitive assumptions about the user made by the designer.

| **Assumptions about the user** | | | |
|---|---|---|---|
| **PHYSICAL** | | | |
| **COGNITIVE** | | | |