COOPER HEWITT

DESIGN
K-12

EXCEPTIONAL EVERYDAY DESIGNS

TEACHER RESOURCE PACKET

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September 20, 2016

Dear Educator,

Thank you for registering for Design Field Trips! This exciting program is designed to present Cooper Hewitt, Smithsonian Design Museum's compelling content to your class(es) through an interactive tour and workshop.

Students are invited to discover our permanent collection to examine how design is a part of our everyday life, and that an exceptional design is one that balances aesthetics and function while adding quality to our lives. On this 45-minute inquiry tour of three exhibitions, they will identify attributes that make a good design. Also included in the program is a 45 minute workshop where students will be given the opportunity to prototype their own exceptional designs.

This packet provides several resource activities to help your students prepare for the program and ideas to continue integrating design thinking connections into your classroom. We enjoy receiving feedback from teachers about their experience with the program, so within a month of your museum visit you will be e-mailed a brief survey. Thank you in advance for taking time to provide your feedback so that we can continue to offer high-quality programs for all K-12 schools.

Sincerely,

Kimberly Cisneros-Gill   *Schuyler Schuler*

Kimberly Cisneros-Gill   Schuyler Schuler
School Programs Manager   Education Assistant

Activities in collaboration with Museum Educator, Cara-Lynne Thomas.

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PREPARING FOR YOUR DESIGN FIELD TRIP

During your Design Field Trip, the Design Educator assigned to your group will need your support in helping students stay on task. You must remain with the group at all times with the Design Educator. Please review the following museum guidelines and share them with your chaperones and students.

ARRIVAL & DEPARTURE

- Please arrive 10 minutes before your scheduled start time to check in; you will be greeted at the main entrance (91st Street between Fifth and Madison Avenues)
- Non-NYC teachers with a cash payment, please remit to the Visitor Experience Desk
- Coat check will provide large bins to quickly store and retrieve coats and backpacks
- Please call your bus in advance to meet you in front of the main entrance, and exit through the main entrance

MUSEUM RULES AND POLICIES

- Please do not touch the objects or lean on the walls; view the objects at a safe distance
- Use only pencils for taking notes or sketching; pens are not permitted
- Food, drinks, and chewing gum are NOT permitted in the museum
- All items entering and leaving the museum are subject to inspection
- Please remain with your assigned group at all times
- Please leave all backpacks and large purses on the bus or at the coat check
- Photography without flash is welcomed; no tripods or selfie-sticks, please

TAKE AN ACTIVE ROLE

TEACHER & CHAPERONES

The classroom teacher and chaperones are essential to the success of a group's visit; they can enhance the success of the tour and the amount of learning that can take place by showing active interest in the objects while supervising student behavior.

- Please ensure that you and your group of students (10 students or fewer per chaperone) stay together during your time in the museum (this includes the Shop)
- You and the group chaperones are responsible for keeping track of each student in your group, and for students' proper behavior (including their respect of museum rules and policies)
- If you have questions, ask a museum staff member for help

STUDENTS

- Students will be encouraged to share their ideas and work in teams
- Students must stay with their chaperones at all times while in the museum and Shop
- Please do not allow students to touch anything unless signs, museum staff members, or designated volunteers let you know it's okay

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DESIGN THINKING CONNECTION

The following pages include pre- and post-Design Field Trip activities. The pre-visit activities are suggestions for how to help your students prepare for their trip; they are designed to introduce students to concepts that will be discussed during the program. The post-visit activities are suggestions for how to extend your students' thinking beyond the program and reinforce your classroom curriculum. For teachers who would like additional ideas, we recommend our free Educator Resource Center (ERC), which offers 400 design-focused lesson plans (available at: http://dx.cooperhewitt.org/lesson-plans/).

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PRE-VISIT ACTIVITIES

ELEMENTS EVERYDAY | K-5

SUBJECTS: Language Arts, Art | DESIGN PROCESS: Getting Ideas

ACTIVITY TYPE: Scavenger Hunt and Discussion | 45 mins.

YOUR DESIGN CHALLENGE

How might we find design elements in our everyday lives?

Using the "Elements Everyday" presentation, introduce students to design elements that enhance everyday objects. Students will look for design elements in their classroom (including their school supplies and personal objects like backpacks) based on the scavenger hunt on page 15 of this Teacher Resource Packet. The design elements include: color, form, line, texture, and pattern (all defined on page 13 of the Teacher Resource Packet).

After students have found and recorded objects on their scavenger hunt, discuss what they found.

GUIDING QUESTIONS (to be done after the scavenger hunt)

A. Functionality

- What types of objects did you find during the scavenger hunt?
- Did you pick up or feel any of the objects? What information did this give you about them?
- Do any of the elements improve the function of objects that you found?

B. Exploring the design elements

1. Color

- What colors did you find in the classroom?
- How did that color make the object more unique?
- Did the bright color make the object easier to see? Why or why not?
- Did the dark color make the object easier to see? Why or why not?
- What clear object did you find? Was there anything inside that object?
- Why do you think the object was clear?

2. Pattern

- What patterns did you find?
- How did the pattern make the objects more fun or interesting?
- Did the pattern make the object stand out more? Why or why not?
- Do you think patterns would be good to use in all our school supplies? Why or why not?

3. Texture

- What textures did you find in the classroom?
- Does that texture make the object easier to use? How?
- Does the texture make the object more interesting? Why?
- Do you think the object would look or work differently if it had a different texture?

4. Line

- What right angle or corner did you find in the classroom?
- Where else have you seen right angles or corners?
- Why do you think an object would be designed with straight corners?

- What lines did you see in the patterns you found?
- Were those lines all straight? What type of lines were they?

5. Form

- What circular object did you find?
- What irregular shape did you find?
- How did these shapes add to the objects?
- Do the different shapes make the object easier to use?
- Did the irregular shape make the object more fun or interesting to look at?
- If the circular object were square instead, would it be easier or more difficult to use? Why?

C. Connecting to the user: The user is the person who operates the design.

- Who is the user of the designs that you found in the classroom? What about the design makes you think that?
- Why do you think designers need to think about all these different elements when they create these objects?
- Did anyone find objects with the same function (that do the same thing) that look totally different? Why do you think the design elements are so different between the objects if they do the same thing?
- How do these elements make the objects you found helpful in our classroom?

VARIATIONS AND EXTENSIONS

- Students can look at home for the design elements. How are the objects with these elements at home different from the ones at school?
- Plan a math investigation into 2-D and 3-D shapes. What types of shapes are found in the classroom and throughout the school? What are the mathematical properties of these shapes?

MATERIALS AND RESOURCES NEEED

Scavenger Hunt, see page 15 of Teacher Resource Packet for a template.

Pencils

Crayons or Colored Pencils

If available, a projector and internet connection

Our "Elements Everyday" slideshow at www.cooperhewitt.org/education/school-programs

VOCABULARY

See Cooper Hewitt's design vocabulary on page 13 of Teacher Resource Packet.

STANDARDS

Common Core

CCSS.ELA-LITERACY.SL.K-5.1; CCSS.ELA-LITERACY.SL.K-5.4; CCSS.ELA-LITERACY.SL.K-5.5; CCSS.ELA-LITERACY.L.K-5.6; CCSS.MATH.CONTENT.K.G.B.4; CCSS.MATH.CONTENT.K-2.G.A.1

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TIME FOR DESIGN | 6-12

SUBJECTS: Language Arts, Art | DESIGN PROCESS: Getting Ideas

ACTIVITY TYPE: Drawing, Discussion, and Presentation | 45 mins.

YOUR DESIGN CHALLENEGE

How might we help students be on time for school?

Using the "Time for Design" presentation and guiding questions, discuss designs that have a special feature which helps the user more than a basic design would. Designs such as these are exceptional designs. Following discussion, students will work in teams to brainstorm and draw their own exceptional design that aids a student in getting to school on time. These designs also need to have a second function that will help students as they get ready for school. Teams share their designs with the class and receive feedback.

GUIDING QUESTIONS

For the power point presentation:

- What is the function of all of these designs?
- What makes these designs exceptional?
- How have designers thought about the user's needs in these designs?
- What aesthetic or decorative additions do you see? What do they add to the design?

While students work on their drawings:

- How does your design help a student be on time?
- How is your design exceptional? What sets your design apart from a more basic design?
- Have you added any elements, such as color or shape, to make your design more exceptional?
- What additional functions did you add to your design that help a student in the morning? How does this enhance the design?
- What was challenging about creating this design?
- What type of materials would you need to create a prototype of this design?

VARIATIONS AND EXTENSIONS

- Design something to help people who share a room, but need to get up at different times.
- Design a device that would help students go to bed on time, so that they are less tired in the morning.

MATERIALS AND RESOURCES NEEED

Paper

Pencils

Crayons or colored pencils

If available, a projector and internet connection

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Our "Time for Design" slideshow at www.cooperhewitt.org/education/school-programs

VOCABULARY

See Cooper Hewitt's design vocabulary on page 13 of Teacher Resource Packet.

STANDARDS

Common Core

CCSS.ELA-LITERACY.SL.6-12.1; CCSS.ELA-LITERACY.SL.6-12.4; CCSS.ELA-LITERACY.L.6-12.6

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POST-VISIT ACTIVITIES

HOMEWORK HELP| K-5

SUBJECTS: Language Arts, Art | DESIGN PROCESS: Getting Ideas, Prototyping and Making

ACTIVITY TYPE: Discussion, Brainstorming and Prototyping | 45 mins

YOUR DESIGN CHALLENGE

How might we create a tool to help students focus when doing homework?

During the tour and workshop, students discussed how designers consider a user's needs in their work. Using the guiding questions, discuss challenges with focusing on homework and ways that students could focus more easily on their homework. Students will work in teams to brainstorm and create a prototype of a tool to improve focus when users (themselves) are doing homework.

GUIDING QUESTIONS

- When you do your homework is it easy to focus? Why or why not?
- What distracts you when you do your homework?
- What are some tools you use to help you get your homework finished?
- How could you keep from getting distracted?
- What are some things in the classroom that help you focus? How could you create an "at-home" version of them?
- What would make doing your homework more exciting?

During brainstorm and prototyping:

- How have you thought about your needs in this design?
- What have you included to help students focus?
- Does your idea make homework more exciting? How?
- Would any of the design elements we have talked about enhance your design?

VARIATIONS AND EXTENSIONS

- Students create a special planner that helps them remember their homework.
- Students add a special function to their tool that rewards them for finishing their homework.
- Students create a version of the tool to use in the classroom. How are a user's needs at school different from when they are doing homework?

MATERIALS AND RESOURCES NEEED

Pencils

Paper

Materials for prototyping: construction paper, scissors, glue, markers, cardboard, tape, rubber bands

VOCABULARY

See Cooper Hewitt's design vocabulary on page 13 of Teacher Resource Packet.

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MODERNIZING HISTORY | 6-12

SUBJECTS: History, Art | DESIGN PROCESS: Getting Ideas, Prototyping and Making

ACTIVITY TYPE: Drawing and Prototyping | 45 mins

YOUR DESIGN CHALLENEGE

How might we reimagine historical designs to create a new place to sit?

Using seating from the Cooper Hewitt collection as inspiration, students will work in teams to brainstorm, draw, and create prototypes of their own place to sit that features two design elements (color, line/shape, form, pattern, or texture) and appeals to a specific user (such as a student, an office worker, a gamer, an elderly person) today. Review these elements before students begin brainstorming, if needed.

GUIDING QUESTIONS

- What historical designs did we see at Cooper Hewitt?
- Why do you think the museum displays the historical pieces?
- Where have you seen a design that looked like it was inspired by another time period?
- When do people sit today?
- What activities require sitting for a long time?
- What needs do you think people have today that they may not have had in the past?
- What special features could be added to a seat design to make it more functional for users?

As students draw and prototype:

- Who is the user for your seat? In what setting do you imagine your seat being used?
- What did you include to make your design appealing to that user?
- Does your historical design look comfortable? How could you make it more comfortable for your user?
- How did you incorporate the design elements into your seat?
- From what materials would a final version of your design be made?
- What changes did you make from the initial idea you had to your final prototype?
- How was this design inspired by the historical piece?
- What did you add to make your design more modern?
- How could you test your prototype?

VARIATIONS AND EXTENSIONS

- Collect images of furniture from a historical period or culture that students are studying, use these furniture designs as inspiration to create furniture for students' homes.
- Student can look around their own home for furniture with historical inspiration. They can take a picture of the piece and research the time period that inspired the design.

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MATERIALS AND RESOURCES NEEED

Paper

Pencils

Crayons or colored pencils

Materials for prototyping: scissors, tape, glue, hot glue, cardboard, foam, yarn, wire, construction paper

If available, a projector and internet connection

Links to pre-selected chairs from the Cooper Hewitt collection:

https://collection.cooperhewitt.org/objects/18458645/

https://collection.cooperhewitt.org/objects/18635987/

https://collection.cooperhewitt.org/objects/18616265/

https://collection.cooperhewitt.org/objects/18805039/

https://collection.cooperhewitt.org/objects/18693705/

https://collection.cooperhewitt.org/objects/420556915/

https://collection.cooperhewitt.org/objects/68244087/

https://collection.cooperhewitt.org/objects/18654615/

https://collection.cooperhewitt.org/objects/18496741/

https://collection.cooperhewitt.org/objects/18631973/

https://collection.cooperhewitt.org/objects/18638263/

https://collection.cooperhewitt.org/objects/68244043/

https://collection.cooperhewitt.org/objects/18467801/

https://collection.cooperhewitt.org/objects/18699857/

https://collection.cooperhewitt.org/objects/68244051/

https://collection.cooperhewitt.org/objects/18463833/

VOCABULARY

See Cooper Hewitt's design vocabulary on page 13 of Teacher Resource Packet.

STANDARDS

Common Core

CCSS.ELA-LITERACY.SL.6-12.1; CCSS.ELA-LITERACY.SL.6-12.4; CCSS.ELA-LITERACY.L.6-12.6

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VOCABULARY

Brainstorming	A group conversation for producing ideas and potential solutions for a design challenge. All group members contribute and collaborate to think of solutions.
Color	Color can convey a message. Designers must understand their audiences' perception of color as part of effective design plans.
Design	To make an object that solves a problem
Design challenge	A difficulty or challenge that can be solved through design
Design process	The steps that you take to solve your challenge: 1. Defining problems 2. Getting ideas 3. Prototyping and making 4. Testing and evaluating
Design solution	The way, idea, or answer to a design challenge or problem
Designer	A person who creates a new object, idea, or plan
Empathy	The ability to understand what another person is feeling without adopting that emotion as your own.
Form	The shape and structure of any three dimensional object and can be defined by light and dark.
Function	The way something works, or a purpose of an object *e.g., the function of a paper clip is to fasten things together*
Historical Design	Objects that were created for the needs and aesthetics of users at a specific time in the past. Historical designs reflect cultures, economics and technologies of the past.
	The visual communication of messages through images and words
Line	An element of art used to define shape, contours, and outlines. Also to suggest mass and volume. It may be a continuous mark made on a surface with a pointed tool or implied by the edges of shapes and forms.
Materials	The items you are using to represent your ideas
Modern Design	Focuses on the needs and concerns of modern users. Modern design often incorporates neutral colors, sustainable or recycled materials and clean lines.
Needs	What the user must have in order to use the design successfully
Pattern	Uses the art elements in planned or random repetitions to enhance surfaces. Patterns often occur in nature.

Prototype	An original model on which something is patterned
Solution	The way, idea, or answer to a problem. There can be more than one
System	A group of related parts that work together
Texture	The surface quality of an object; roughness or smoothness.
	The design or process of working with type; the general character or appearance of type.
Team	A group working together on a common goal or activity
User	A person who operates or experiences the design
User-centered design	An approach to design that considers the needs of the user throughout the design process

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Name:

Look for objects around the classroom that have certain traits. Designers call these traits design elements, and they use them to make their ideas more special or easier to use.

1. Find something in the classroom that is a bright color.

   Name of object:
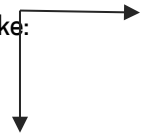
   What color is it:

2. Find something that has a pattern.
   Name of object:
   Draw the pattern:

3. Find something that has a right angle. This is what a right angle looks like:
   Name of object:

4. Find something that is a dark color.
   Name of object:
   What color is it:

5. Find something that has a texture. If you can, pick up the object and feel it.
   Name of object:
   Describe the texture. Is it rough? Smooth? Bumpy?:

6. Find something that is circular. If you can, pick up the object and hold it.
   Name of object:
   Is it easy or difficult to hold:

7. Find something else that has a pattern.
   Name of object:
   Draw the pattern:

8. Find something that is clear.
   Name of object:

9. Find something that is an irregular shape. If you can, pick up and hold the object.
   Name of object:
   Is it easy or difficult to hold:
   Draw or describe the shape:

10. Find something that has a texture that is different than what you found before. If you can, pick up and feel the object.

Name of object:

Describe the texture:

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PRESENTATION NOTES

"ELEMENTS EVERYDAY" PRESENTATION

Slide 2
Color is everywhere in the classroom. Sometimes it makes supplies more fun to use. Sometimes it is practical, such as showing what color a crayon is. Sometimes it directs attention or provides a background.

Slide 3
Patterns use color and repetition to enhance an object. Patterns make objects more fun or interesting to use. Sometimes patterns are on one object like the pencils or lunch box; sometimes they are larger and involve repetition across a space, like with the classroom sign.

Slide 4
Texture is how something feels. Is it rough or smooth? What is the texture of the bulletin board border? Would the ribbon feel the same?

Slide 5
Form is the shape and structure of an object. Some shapes, like the tissue box, are simple. Others are more complex, like the pencil sharpener that combines round shapes at the top with a rectangular shape at the bottom. Other forms are created to improve the function of an object, like on the pencil grips.
Design elements are not isolated from each other. Where do you see color in these forms? What about textures?

Slide 6
Lines define shapes and outlines. On 3-D objects, lines create edges. These tables use line and form in different ways, even though they all have the same function. Shelves use lines to add to their function by creating spaces to put things.

"TIME FOR DESIGN" PRESENTATION

Slide 2
These traditional alarm clocks have a buzzer or radio alarm and a snooze button. Similarly, the alarm on a cell phone can be set and snoozed.

Slide 3
The Clocky alarm clock beeps like a regular alarm clock, but it rolls away when the alarm goes off. The user has to get out of bed to turn it off.

Slide 4
These alarm clocks imitate natural light to help the user wake up more naturally and feel more refreshed. It begins to glow prior to the time the alarm is set, so that users feel more energized when the alarm goes off.

Slide 5

These are silent alarms that vibrate instead of making sound when the alarm goes off. These designs are worn around the wrist while the user sleeps. Several companies make versions like the one on the left which only function as an alarm; this alarm can be set on the inside of the band or via a phone app. Others, like the one on the right are a feature on some fitness trackers, like Up by Jawbone or FitBit.

Slide 6

Getting enough sleep helps people wake up in the morning and feel energized. Designers have created many solutions to help people sleep more. The image on the left is a machine that plays soothing sounds and special hums that lull the brain to sleep. The image on the right is of a phone app that helps track sleep. Often these apps require the user to sleep with their phone on their bed or for them to place a special sensor under the mattress.

Slide 7

Getting up late may not be the only reason a student is late to school. Some apps help users be less distracted by their phones. The Forest app encourages people not to use their phone for a set amount of time to limit distractions. If a user successfully do not use the phone, the app plants a digital tree in a personal forest. Users can see all their trees in the app as a fun way to track their progress.

Slide 8

Some people spend too much time in the shower. Shower timers help users limit their shower time so that they are not late. Some are digital and programmable, like the one on the left. Others are simple, like the one on the right.   These products also help conserve water.