



HIGH MUSEUM OF ART ATLANTA

**STEAM: Science, Technology, Engineering, Art, and Math  
Workshop Lesson Plan for Elementary School Students  
2019-2020 School Year**

**What's the Big Idea?**

Empathy, Creative Problem Solving, and Design Thinking

**STEAM Tour and Workshop Purpose**

Students will use the High's collections as evidence of creative problem solving, learning directly from the objects how artists create innovative solutions to complex problems.

**Essential Questions**

Use the following guiding questions as you lead your students through the workshop:

- How do artists and designers create solutions to problems for themselves and others?
- How is an artist like a designer, explorer, or scientist?
- How do artists use science, technology, engineering, and math?
- How are art and design important to our communities?
- What is a prototype?

**Objectives**

Students will ...

- discover how artists tap into our empathy to raise questions and offer solutions about issues that affect our world
- employ interviewing, listening, and note-taking in researching another student's perspective
- use creative problem-solving techniques to create a design
- consider how art and design affect people in their community
- create a prototype to test solutions to a problem

**Procedures**

Introduction (5 minutes):

**Grades K-2**

Discuss 1 or 2 examples from the High's collection that combine natural elements like plants or animals with a functional design.

- What's going on in this piece? What do you see that makes you say that?
- What do you think this artist might have liked or enjoyed doing? What makes you say that?
- What could this object be used for? What makes you say that? Note the functional design elements of the object (spout, handle, rockers, chair, etc.)

Example 1:



Meissen Porcelain Manufactory, German, established 1710  
*Monkey Teapot*, ca. 1735  
 Porcelain

Example 2:



Jaime Hayon (Spanish, born 1974), designer  
 Lanulfi Models and Molds, Italian, established 1981, fabricator  
 Lacquered fiberglass with metal base

Example 3:



Richard Dial, American, born 1955  
*The Comfort and Service My Daddy Brings to Our Household*, 1988  
 Welded steel, plastic tubing, wheels, and paint

Example 4:



Meissen Porcelain Manufactory, German, established 1710  
*Chicken Teapot and Cover*, ca. 1734  
 Porcelain

### **Grades 3-5**

For grades 3-5 introduce 1 or 2 examples of objects that are “dual-purpose” or perform 2 functions.

- What’s going on in this artwork? What do you see that makes you say that?
- What materials might the artist have used? How might this artist have created the work?
- Where might this artist have drawn inspiration from? What makes you say that?
- What do you think this artist might care about? How can you tell?

Example 1:



El Anatsui, Ghanaian, born 1944

*Taago*, 2006

Aluminum and copper wire

El Anatsui was inspired by traditional Ghanaian fabric called Kente cloth and his care for the environment. He decided to reuse aluminum bottle wrappers to create a beautiful artwork. He works with a team of other artists to create these works.

Example 2:



Nendo, Japanese, established 2002

*Cabbage Chair*, 2008

Unwoven fabric

This Japanese design group was also interested in the benefits of recycling for our planet and concerned with the large amount of waste that was created through using felt sheets to make pleats for skirts and dresses. They decided to recycle the felt strips and create a chair!



Joris Laarman (Dutch, born 1979), designer

*Ivy Climbing Wall*, 2004

Composite concrete

This artist created something functional – a climbing wall! - that also serves as a beautiful wall decoration!

After discussing a couple of examples with your group:

Next, you're each going to partner up and create a NEW DESIGN that will combine each of your interests and desires! You're all going to follow a process called Design Thinking that artists, designers, scientists and more use all the time!:

**LISTEN, BRAINSTORM, PROTOTYPE, AND TEST!**

LISTEN: Interview a partner (5 minutes)

**For K-2 students:**

Keep it simple, as writing and spelling may be challenging for some students, invite students to draw answers as well. Use the worksheet, if you choose to. Model the interview with a teacher or chaperone first.

1. What is your favorite animal (or plant or creature or other thing found in nature)?
2. What is something you use every day?

**For 3-5 students:**

Use worksheet if you choose or provide students scrap paper.

1. What is something that you care about or are interested in?
2. What is something that you use every day?
3. Is there anything you hope to change or improve about number 1 or number 2?

As students are interviewing each other, monitor groups and jump in to help if students are having trouble answering. For example: prompt students with categories such as school, hometown, play, family, food, maker process, communication, environment, etc.

**BRAINSTORM:** Discuss and sketch (10 minutes)

Encourage students to think about the things they and their partner wrote and shared. Model these discussions quickly with a teacher or chaperone.

**For K-2 students:**

Think about your two favorite animals! What features do your favorite animals have? Wings? Arms? Legs? Shell? Etc.

Now, think about the items you use every day! What features do those objects have? A lid? Legs? Handle? Seat? Wheels?

How can we combine one of these animals and one of these items?

Make a list or draw, if it's helpful!

**For Grades 3-5:**

Tell me more about the thing you care about. What are the features of the thing you use every day? Do any of those relate to the thing you care about?

Can we create something that functions as [the thing you use every day], and also makes an impact on [the thing you care deeply about]?

Students will combine one (or both) of the things they use every day with one (or both) of the things they care about.

Each pair will decide on which idea they will draw out. Encourage each to draw, write a short description with the 2 purposes, and label the sketch.

*If time is short, spend a longer time sketching and sharing design ideas, offer students colored pencils, art stix, etc. to embellish their sketches – skip the actual building.*

**PROTOTYPE: Build from your Sketch (15-20 minutes):**

Each pair will translate their drawing into a relief sculpture/prototype by adding color, texture, and attaching materials, embellishments, etc. directly to their sketch, building up from the paper.

**\*\*Students will take their relief sculptures home with them!\*\***

Leave 1 minute for students to TITLE their new design, if they like.

**TEST: Share and Reflect (10 minutes):**

Allow volunteers to share their prototype and solicit feedback from their partner and other groups. Lead a class discussion and reflection. Emphasize that we're back at step 1: LISTEN! Encourage pairs to take constructive advice from partners and other classmates to think about ways they can alter and refine their design.

- Did your design work well for both partners?
- What do you like most about your design?
- What would you change if you could do it again?
- What are some potential problems with your design? How might you test it?

To reflect on process, use these questions, if time allows:

- In what ways are artists like scientists or designers?
- What surprised you during the activity today?
- What was the most challenging aspect of the activity today?

Cleanup (5 minutes):

Allow 5 minutes for students to clean up materials and collect their final designs.

### **Vocabulary**

Purpose/Dual-Purpose

Prototype

Design

Sketch

### **Materials for the Instructor**

Visual Schedule

Timer

Laminated large images of each artwork with tombstone information

Worksheets or Outline with questions

### **Materials**

Pencils

sketching paper

cardboard

Scissors

tape

glue sticks

pipe cleaners

straws

wood

scrap materials