Teacher(s): Drew Brown in collaboration with Julie Whelan, Lynn Watson and Guest Teacher, Wendy Aracich
Unit: 3 (Art is a Personal Experience)
Grade Level: 5th grade
Lesson Title: STEAM UNIT
Medium Focus: Traditional art forms of sketching/sculpting and 3D modeling with CADS

CURRICULUM STANDARDS:
MEANING and CREATIVE THINKING
VA5MC.1 Engages in the creative process to generate and visualize ideas.
   a. Uses a sketchbook for visual/verbal planning and self-reflection.

VA5MC.2 Formulates personal responses to visual imagery.
   a. Responds to big ideas, universal themes, and symbolic images to produce images with richer, more personal meaning.
   b. Applies images from a variety of sources (e.g., personal experience, social and/or academic interests, books, visual resources, popular culture) and transforms them in free and open-ended ways.

VA5MC.3 Selects and uses subject matter, symbols, and/or ideas to communicate meaning.
   b. Develops visual images by combining or modifying open-ended themes/topics in unique and innovative ways.

CONTEXTUAL UNDERSTANDING
VA5CU.1 Investigates and discovers the personal relationship of artist to the community, the culture, and world through making and studying art.
   a. Explores and articulates ideas and universal themes from diverse cultures of the past and present.

VA5CU.2 Views and discusses selected artworks, cultures, and artists (to include a minimum of six artists/cultures per year, one of which should include a Georgia artist or art form).
   a. Identifies elements, principles, themes, and/or time period in a work of art.
   d. Discusses relationship between artists and their cultures (geographic, political, religious, economic).

PRODUCTION
VA5PR.1 Creates artworks based on personal experience and selected themes.
   b. Makes design decisions as the result of conscious, thoughtful planning and choices.
   f. Produces artworks emphasizing one or more elements of art: space, line, shape, form, color, value, and texture.
   g. Creates artworks emphasizing one or more principles of art: balance, proportion, rhythm,
emphasis, unity, variety, movement, contrast, and pattern.

VA5PR.2 Understands and applies media, techniques, and processes of two-dimensional art processes (drawing, painting, printmaking, mixed-media) using tools and materials in a safe and appropriate manner to develop skills.

h. Creates art using spatial concepts to show depth. Methods to include overlapping, size variation, placement in picture plane, linear perspective, and atmospheric perspective.

VA5PR.3 Understands and applies media, techniques, and processes of three-dimensional works of art (ceramics, sculpture, crafts, and mixed-media) using tools and materials in a safe and appropriate manner to develop skills.

f. Understands and applies additive and subtractive sculpting techniques.

ASSESSMENT and REFLECTION

VA5AR.3 Explains how selected elements and principles of design are used in an artwork to convey meaning and how they affect personal responses to and evaluation of the artwork.

a. Uses art terminology in oral and written language with emphasis on the elements of art: space, line, shape, form, color, value, texture.

b. Uses art terminology in oral and written language with emphasis on the principles of design: balance, proportion, rhythm, emphasis, unity, variety, movement, contrast, and pattern.

CONNECTIONS

VA5C.1 Applies information from other disciplines to enhance the understanding and production of artworks.

c. Describes and discusses design in daily life (e.g., clothing, houses, cars, furniture).

VA5C.2 Develops life skills through the study and production of art.

a. Manages goals and time.

c. Demonstrates persistence; problems have more than one solution.

d. Takes care in craftsmanship.

VOCABULARY: STEAM, shape, form, two-point perspective, 3D printing, TinkerCad, additive sculpture.

STUDENT SUPPLIES: learning log, pencils, colored pencils, computers, TinkerCad log online, 3D printer, filament, recyclable materials, wood scraps, glue, tape etc for construction of sculptures.

INSTRUCTIONAL MATERIALS (teacher supplies): BrainPop on 3D printing, PPT, learning logs, computers

OPENING:

Step 1 (Communication of Learning Intentions):

Essential Questions:

- How can I engage in the creative process to generate and visualize ideas?
- How can I use a learning log and/or sketchbook for visual/verbal planning and self-reflection?
- How can I investigate and discover the personal relationship of artist to the community, the culture, and world through making and studying art?
• What can I learn from viewing and discussing selected artworks from Iris Van Herpen? What is the relationship between the artist and her culture?
• How can I use perspective drawing in my learning log?
• How can I apply the processes of three-dimensional works of art using technology tools and traditional art materials?
• How can I apply additive sculpting techniques?
• How can I connect science, technology, engineering, art, and math?
• How can I use and apply selected elements and principles of design to convey meaning in my art? (To include: space, line, shape, form, balance, proportion)

Step 2 (Communication of Success Criteria):
Student Objectives:
• The student will engage in the creative process to generate and visualize ideas in a learning log.
• The student will use a learning log and/or sketchbook for visual/verbal planning and self-reflection.
• The student will investigate and discover the personal relationship of artist to the community, the culture, and world through making and studying art.
• The student will view and discuss selected artworks from Iris Van Herpen and discuss the relationship between the artist and her culture.
• The student will use perspective drawing to sketch a robot (or figure made of forms!)
• The student will apply the processes of three-dimensional works of art using technology tools and traditional art materials.
• The student will apply additive sculpting techniques in both traditional building and 3D printing.
• The student will connect science, technology, engineering, art, and math in their project.
• The student will use and apply selected elements and principles of design to convey meaning in their art. (To include: space, line, shape, form, balance, proportion)

Step 3 (Build Commitment and Engagement):
Hook or Activator:
• BrainPop on 3D printing; PPT; Learning Logs.

Step 4 (Teacher Presentation Strategies):
Instructional Steps:
• Media, art, and computer teachers will collaborate with the digital artist-in-residence to create and execute the lesson.
• Art teacher will introduce the unit and the learning log. Media and Computer teachers will work with students in the lab to explore and create on TinkerCad. Art and computer teacher will work with Wendy Aracich to create files and print sculptures on 3D printer. Art teacher will follow with a traditional sculpture project executed in teams of 5th graders.

WORK PERIOD:
Step 5: (Guided Practice):
Student Steps:
• Day 1: ART CLASS: Students will view and discuss a BrainPop and PPT including the work of Iris Van Herpen. Students will sketch in learning logs utilizing the element of form and technique of perspective drawing.
• Days 2/3: COMPUTER CLASS: Students will create using TinkerCad incorporating concepts of physics, technology, engineering, art and math.
• Day 4: Students will write a reflection in the learning logs while they view the 3D printer producing their sculptures.
• Days 5-7: Students will create a traditional sculptures using recyclables. The sculpture should emanate principles learned thus far in the unit. Teams of 5th graders will function as a team of engineers and artists in the workplace.
• Day 8: SHOW AND TELL ASSESSMENT (“Lessons Learned”): Recap and reflect in a critique style setting.

CLOSING:
Step 6 (Summary):
Review Essential Questions, Standards, and Objectives.

Step 7 (Independent Practice):
How students will maintain what they have learned (classwork, homework, etc.)
• Students will be provided log-in information for their account with TinkerCad, so that they may practice at home and eventually set up another account with their parent if they desire.

DIFFERENTIATION (some strategies will be embedded in to instruction):
• Small group arrangement (peer help/teaching, etc.)
• Students will differentiate their own work by making creative choices within the parameters of the lesson.
• Teacher will circulate around the room to meet individual needs for remediation, scaffolding, or enrichment.
• Small groups will be determined and developed by diagnostic assessments and/or formative assessments.
  o Students who need remediation will work in a small group with the teacher for chunked instructions (1-2 step instructions), scaffolding, repetition and clarification of instructions, adapted use of materials, direct modeling, etc.
  o Students who need enrichment will work in small groups with the teacher to come up with ideas for furthering details and embellishments to their work.

ASSESSMENT:
Diagnostic: class discussion

Formative: teacher feedback, teacher observation of students at work and work in learning logs

Summative: Learning Logs and Class Critique

NOTE:
While the above lesson plan was actually taught during the 2015-16 school year and is provided as a prototype, it should be noted that multiple pieces in the High collection are excellent inspiration pieces for working with TinkerCad and the 3D printer. Three suggested works are:

Clouds by Ronan Bouroullec
Untitled by Felipe Benito Archuleta
Mnemonic Vehicle by Vik Muniz

Each of these three works of art could be used as inspiration for a 3D printing project, as well as many other works in the permanent collection.