Lesson 1: Creating with Technology

Course: ARTificial Intelligence Artists

Grade Level: 3rd to 5th Grade

Time Required: 50 Minutes

Overview & Purpose

This course is focused on artistic uses of AI technology in order to engage students of all backgrounds with this subject. Before students dive into the core concepts of AI, they will be introduced to the general notion of combining art and technology by first brainstorming for definitions and examples of "art" and "technology" and exploring examples of the two combined. They will be introduced to some famous examples of art and technology combined and then they will draw and/or describe their own idea for combining a type of art and a type of technology.

Education Standards

CSTA: 1B-IC-18 3-5 Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.

AI4K12: 1-A-ii: Illustrate how computer sensing differs from human sensing.

Cross Curricular Supporting Standards: This lesson may be used to support the following Common Core standards:

Common Core Math: CCSS.MATH.CONTENT.4.MD.B.4 Represent and interpret data.

Common Core ELA: CCSS.ELA-LITERACY.W.4.2
Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Objectives

- Define art and technology.
- Explore examples of how technology and art result in exciting creations.
- Complete a creativity exercise by combining a type of art with a type of technology to create something new.

Materials Needed

1. Lesson Presentation
2. Crayons/Colored pencils
3. Blank Paper
4. Modeling Clay
5. Small Musical Instruments - such as tambourines, maracas, triangles, etc. (or pencils to use as drumsticks on desk)
6. Printable “Pick Two” Cards
7. Scissors

Engage (5 Minutes)

1. Introduce Slide 1-2 to the class. Explain that in this course they will explore how art and technology can be combined and how we can use artificial intelligence to create art.

2. Present slide 3 and ask: *What is Art?*

   a. Allow students time to discuss their ideas with a partner or small group.

   b. Call on a few students to share their ideas with the class.

3. Define art on slide 4 and help students understand that “the arts” include dance, theater, and music as well as painting, sculpting, etc.
   a. Ask students to name which of the 5 senses each type of art appeals to (Most appeal to sense of sight. Music, theater, cinema, and dance appeal to sense of sound. These, along with sculpture, also appeal to the sense of touch if you are the one performing the art.)

4. Present slide 5 and ask: What is technology?
   a. Allow students time to discuss their ideas with a partner or small group.
   b. Call on a few students to share their ideas with the class.

5. Define technology on slide 6 and discuss the examples shown in the image as well as others the students come up with.
   a. Ask students to name which of the 5 senses these technologies appeal to. (Sight and touch for most, sound for anything that makes a sound, and smell for things like a car’s exhaust.)

6. Present slide 7 and ask: Can you think of some examples of art and technology combined?
   a. Ask students to raise their hands and call on a few students to share out (Students may come up with things such as drawing and painting softwares. Accept any ideas at this point.)
   b. Ask students to name which of the 5 senses each example appeals to (See 3a and 5a for possible answers.).

Explore: Art + Technology (10 Minutes)

7. Read the activity instructions on slide 10. Tell students they will have two minutes to create something with each material. (For musical

instruments, you could pass out things like recorders, triangles, maracas, etc. If you don't have any musical instruments, have the students use pencils as drumsticks on their desks or whistle or sing a tune.)

8. Divide the class into pairs or small groups and complete the activity on slides 11-16, allowing students time to discuss examples of combining each art form with technology.
    a. For each round, ask a few students to share their ideas with the class(Possible answers: Drawing and painting - A drawing app on a tablet or computer, a robot that can draw or paint, writing code that creates a drawing. Sculpting - 3D printing a sculpture, a robot making a sculpture. Music - an app that allows you to play music on your device, an app that recognizes songs, writing code to play musical notes, a robot playing an instrument).
    b. Ask students to name which of the 5 senses their idea appeals to (Sight, sound, touch, possibly smell).

Explain (5 Minutes)

9. Show students slide 17 and point out that adding technology to an art form will make it more appealing overall and can sometimes help that art form to appeal to more of their senses.
10. Show slides 18-30 to introduce examples of art and technology combined. For each example, have students:
    a. Name the art form shown on the first slide.
    b. Describe how technology is being used to create art on the second slide with the same picture(s).
    c. Name which of the 5 senses these examples appeal to.
    d. Possible Answers:
        i. Slides 19-20 - Drawing, a stylus is used to create a digital drawing on a tablet, sight.
        ii. Slides 21-22 - sculpture, a 3D printer is making a sculpture, sight and touch.

iii. Slides 23-24 - music, guitar peddles can change the sound or record and play back portions of the song, sound.
iv. Slides 25-26 - dance, led suits can be programmed to light up with the choreography the dancers perform, sight and sound.
v. Slides 27-28 - photography, computer programs can be used to digitally alter photographs, sight.
vi. Slides 29-30 - cinema or film, a green screen is used to show the actors against any background the filmmaker desires, sight and sound.

11. Show slide 31 and ask students to think about their 5 senses. Ask:
    a. Can a computer sense things too? (yes!)
    b. How do computers see and hear things? (using the computer's webcam and microphone)
    c. How does a computer's sensing differ from a human? (computers cannot touch, smell, or taste things, but computers can sense things like magnetism, infrared red light, and extremely low or high frequency sounds that humans cannot hear)

Elaborate: Pick Two (20 Minutes)

12. Pass out the printable "Pick Two" cards, scissors, and blank paper to the students.
13. Explain the setup instructions on slide 33:
    a. Carefully cut out your cards.
    b. Shuffle the Art cards and place them in a pile, face down.
    c. Shuffle the Technology cards and place them in another pile, face down.
14. Explain the activity instructions on slide 34:
    a. Take one card from the Art pile and one card from the Technology pile.
    b. Think of an idea combining the Art form and the Technology on your cards.
    c. Draw a picture and/or describe your idea in words.

15. Show and explain the example on slide 35:
    a. This student pulled the art card: Dance
    b. This student pulled the technology card: Robotics
    c. The student came up with the idea to program a robot to perform a modern dance routine.
16. Allow students time to draw and describe their ideas on paper.
17. Call on a few students to share their ideas **OR** hang up students' work and allow time for students to do a "Gallery Walk" to see their classmates' ideas. Remind students to think about which senses are appealed to in each creation and how technology may add to the senses that are appealed to.
18. **Extension:** If students finish early, they can choose two more cards and come up with another idea, or they can try to actually create a work of art using technology - either the idea they came up with from the cards they chose, or another idea.

Evaluate (5 Minutes)

19. Allow students to answer the exit ticket question on slide 38 on paper or verbally.
    a. Describe one way that art and technology can be combined.
        i. *Sample response: Dancers can wear suits with LED lights that are programmed to light up different ways during their performance.*

Differentiation

Options for students who struggle to come up with an idea in the "Pick Two" activity:

- After the student turns over an Art card, allow them to look at the technology cards and choose whichever they wish.

- Allow students to look at both sets of cards and choose the one they wish from each pile.

Note: Depending on the level of your students, you may choose to require students to write a description of their idea (perhaps in paragraph form), simply label their drawing, or just complete a drawing.

For additional rigor / extension , ask students to create some kind of art using technology. It could be the idea they came up with in the “Pick Two” activity, or another idea. Have the students present their artwork to the class and describe how they used technology.

Additional Standards Alignment

This lesson aligns with the following national and state standards:

ISTE Standards

1.6.A Students choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication.

Illinois

3-5.IC.18 Discuss computing technologies that have changed the world and express how those technologies influence, and are influenced by, cultural practices.

New York

4-6.IC.1 Describe computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.

Texas

126.7.b.1 Creativity and innovation. The student uses creative thinking and innovative processes to construct knowledge and develop digital products. The student is expected to:

(B) analyze trends and forecast possibilities, developing steps for the creation of an innovative process or product; and

126.7.b.6 Technology operations and concepts. The student demonstrates knowledge and appropriate use of technology systems, concepts, and operations. The student is expected to:

(A) demonstrate an understanding of technology concepts, including terminology for the use of operating systems, network systems, virtual systems, and learning systems appropriate for Grades 3-5 learning;

California

3-5.IC.20 Discuss computing technologies that have changed the world, and express how those technologies influence, and are influenced by, cultural practices.

Florida

SC.35.CS-PC.2.1 Explain how computers and computing devices are used to communicate with others on a daily basis.

SC.35.CS-PC.2.6 Communicate about technology using appropriate terminology.

P21

Creativity and Innovation: Think Creatively: Create new and worthwhile ideas (both incremental and radical concepts)