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PLTW

Emoji
Facilitator Guide

Overview

The focus of this experience is for learners to develop a STEM mindset. Students will use critical thinking, creativity, collaboration, and communication skills to create an emoji. The Vectr graphics software used in this activity helps students develop a STEM mindset. It is important to allow students to work through the process as independently as possible with the facilitator acting only as a guide.

Materials

Computer or laptop

Vectr graphic design tools. Find the online version at https://vectr.com/ .

Preparation

1. Read through the facilitator and learner guides and documents.
2. Download the Vectr graphic design tool onto their computers or laptops. If they wish to save their projects, they will need to create a Vectr account.
3. Practice using the Vectr graphic design tool with the Vectr Reference Chart as a guide. Become familiar with each tool on the chart.

Essential Questions

- How do you overcome challenge and persist when solving problems?
- What are ways you can use programming skills to help yourself and others.

Session Length

60 minutes.

Facilitation Notes

Begin by watching the Emoji Design video to find out more on how graphic designers use vector graphics.

STEM Mindset

Allow students to follow the directions in the Student Guide. Stress that this is a new learning experience. Let students know that evaluation does not on solely rely on how their experience works out, but – more importantly – on how each one participates in the learning process. You will need to model a STEM mindset by stressing the idea that effort builds skill.

The following are some phrases to use with students who struggle despite their strong effort:

- Mistakes are normal. This is new material. We learn by fixing our mistakes.
- You are not there, yet.
- You might be struggling, but you are making progress.
- Do not give up until you feel proud.
- You can do it. It can be tough or confusing, but you are making progress.
- I admire your persistence.

The following are some strategies to help students without giving them the solution to a problem:

- Which part is not working as expected? What was the expected behavior and how is it different from what is happening right now? What can be causing the issue?
- What part is difficult for you? Let us look at it.
- Let us think together about ways to improve this.
- Let me add this new bit of information to help you solve this.
- Here is a strategy to try so that you can begin to figure this out.
- Let us ask _____ for advice. She/he may have some ideas.

Explore

Students will practice using the Vectr tools and create an emoji.

Create

Students start by drawing an ellipse then begin personalizing their emojiby adjusting the hues through Vectr's Colorpicker. The color panel and hue slider allow them to choose red, green, and blue (RGB) intensities.

The Learner Guide details how students create an emoji and shows them how to "make it their own" using RGB intensities. They learn the basics on how computers represent colors. The activity includes challenging students to move beyond Vectr to find and apply RGB values to their emojis using the Pantone Guide.

Your Next Move

Encourage students to think about the practical uses of their emoji.

Real World Connection

1. What was the question you had to address for this activity? Answer: How can we use a program to create an emoji?
2. What graphic design program did you explore to create your emoji? Answer: Vectr
3. What did you learn from making each model? Answers will vary
4. What helped you decide which of your emojis was the best model? Answer: The decision matrix
5. How did you share and explain your emoji?

Your Next Move

1. List three things your emoji could be used for: Answers may include use in memes, personal stationery, messaging, or a variety of other things.
2. What could you do to get other people to start using your emoji? Answer may include things such as start using the emoji yourself, turn it into a meme, and apply to Unicode to get it accepted as a standard.

Extension: The Story of Bits and Bytes

1. Why do you think this system is called binary? Answer: It is called binary because the prefix bi means two.
2. Name some devices which use 1s and 0 on their on off switch. Answer: Computer, power outlet bar, clock, and other electrical devices.
3. Complete the chart.

	3 bits			Resulting Binary Numbers
Possible Bit Combinations	0	0	0	000
			1	001
		1	0	010
			1	011
	1	0	0	100
			1	101
		1	0	110
			1	111

4. A byte has 256 values in it. How does this relate to the Pantone Guide? Answer: The Pantone Guide has 256 numbers in it ranging from 1 to 255.

Extension: Decode Unicode

1. What other platforms use the grin emoji? Answer: FB(Facebook), Wind, Twtr (Twitter), Joy, Sams, Gmail
2. Which shortcodes did you find? Answers will vary.

Standards

Next Generation Science Standards (NGSS)

MS-ETS 1-1 Engineering Design

Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

MS-ETS1-2 Engineering Design

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

MS-ETS1-3 Engineering Design

Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

MS-ETS-1-4

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

ELA Common Core Standards

CCSS.ELA-LITERACY.RI.6.7

Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

CCSS.ELA-LITERACY.W.6.1, 7.1 and 8.1

Write arguments to support claims with clear reasons and relevant evidence.

CCSS.ELA-LITERACY.W.6.2, 7.2 and 8.2

Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

CCSS.ELA-LITERACY. SL6.1, 7.1 and 8.1

Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.6.2

Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

CCSS.ELA-LITERACY.L.6.1, 7.1 and 8.1

Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

CCSS.ELA-LITERACY.RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

CCSS.ELA-LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical task.

CCSS.ELA-LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topic.

CCSS.ELA-LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

CCSS.ELA-LITERACY.RST.6-8.9

Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

CCSS.ELA-LITERACY.WHAT.6-8.2

Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

CCSS.ELA-LITERACY.WHST.6-8.9

Draw evidence from informational texts to support analysis, reflection, and research.

Computer Science Teachers Association Standards (CSTA)

3A-IC-27

Use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields.

3B-DA-07

Evaluate the ability of models and simulations to test and support the refinement of hypotheses.

3B-IC-25

Evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society.

3B-IC-27

Predict how computational innovations that have revolutionized aspects of our culture might evolve.