

Verizon Innovative Learning Lab Program

Artificial Intelligence & Robotics

Lesson Facilitator Guide: MakeCode Project: Test and Submit



Overview

This lesson should take 1 class period, or about 50 minutes to complete.

In this lesson, students will share their projects with their peers, give/receive feedback on each other's projects, export and submit their designs, and answer a series of reflection questions.

Note: the lessons for 2A, 2B, and 2C are almost identical in this section. This is a great chance for students to teach each other about their specific project choice and user.

Lesson objectives

Students will be able to:

- Test their program by running it and showing it to other students in the class.
- Provide feedback to other students using "I like" and "I wonder" statements.
- Submit their project share links and answer the reflection questions.

Materials

To complete this Lesson, students will need:

- A laptop or tablet
- Their MakeCode program from Lesson 3
- A pencil
- Sticky Notes
- Micro:bit

Standards

- Common Core State Standards (CCSS) - ELA Anchors: SL.3
- Common Core State Standards (CCSS) - Mathematical Practice: 1
- Next Generation Science Standards (NGSS) – Science and Engineering Practices: 8
- International Society for Technology in Education (ISTE): 6
- National Content Standards for Entrepreneurship Education (NCEE): 2

Key vocabulary

- **Feedback:** The process of sharing a project with others, recording their thoughts, and improving a design. Feedback can be given using "I like" and "I wonder" statements.

Before you begin

- The goal of this section is to allow students to share their projects with each other and learn about all three users. The activity in this section is a "gallery walk", but you may choose to have students present their projects in front of the class instead.
- Gather necessary materials (or ensure remote students can access needed materials)
- Review the "Lesson 4: Test and Submit" presentation, rubric, and/or lesson modules.

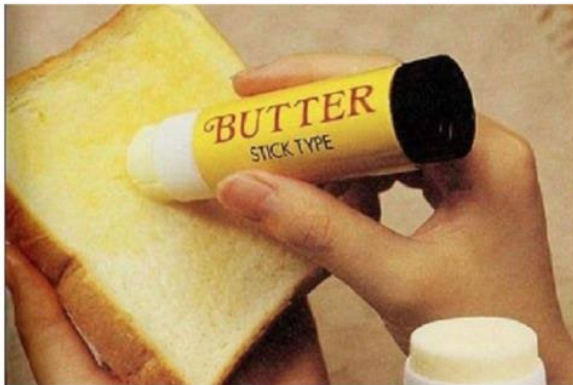
Lesson Procedures

Warm up (5 mins)



- Welcome students to class. Use the included presentations, or direct students to the self-guided SCORM module if you chose to post it on your Learning Management System.
- In this lesson, students will share their projects with their peers, give/receive feedback, export and submit their share links, and answer a series of reflection questions.
- The warm-up question is identical for all three projects. The goal of the warm-up is to show students the importance of giving constructive, not hurtful, feedback. Allow students time to answer the question on their own, then discuss it as a class.

Warm up: The best way to test and refine your design is to receive **feedback**. Do you know how to give good feedback? Read the example below and find out! Alejandro decided to participate in his middle school's "Invention Convention." He loves putting butter on his toast, so he invented a new way to do it: The Butter Stick. His two friends, Roberto and Yadira, offered to give him feedback on his invention. Who's feedback is better?



- ☒ Roberto: "I really like how much easier it is to butter toast now! I wonder what else could be turned into glue-stick form?"
- ☐ Yadira: "Gross, Alejandro. I would never buy a glue stick made of butter."

- After reviewing the warm-up question, review the lesson objectives and materials as a class.

Video: "Test" in design thinking

- Students will watch a video to learn more about testing their designs and receiving/giving feedback. You may watch this video as an entire class, or allow students to watch the video independently or in pairs: <https://vimeo.com/194419129>
- The key takeaway from this video is for students to identify their current location in the Design Thinking process and reflect on how to effectively test their designs and receive feedback.

How to give feedback (5 mins)

- An effective way to give solid feedback without being hurtful is to use "I like" and "I wonder" statements. Review these types of statements as a class and practice some examples! Students will be using these statements to give each other feedback:
 - "I like..." what do you like about the prototype? Pick 1-2 specific things that really stand out to you!



- "I wonder..." what questions do you have about the prototype? Rather than giving suggestions ("I think it should be red."), try asking open-ended questions ("I wonder what other colors it could be?")

Activity: Exchange feedback with five students (15 mins)

- In this activity, students will share their prototypes with each other! When a student shares their prototype, the other students will write "I like" and "I wonder" statements on sticky notes. There are two ways to facilitate this activity, depending on if you are remote or in person:
- **Remote Learning:**
 - If you are completing this class remotely, students can use an online discussion board to post their comments on 5 other student projects. Their comments should include an "I like..." statement and an "I wonder..." statement.
- **In Person:**
 - Set up a "gallery walk" for this activity. Students will display their projects on their desk and rotate to other student projects to leave feedback. Give students about two minutes per project. Here are the activity instructions for students:
 - Display your prototypes on your computer on your desk.
 - Rotate to another student's prototypes.
 - Spend two minutes at their prototypes. Leave a sticky note with an "I like" and "I wonder" statement.
 - Rotate to another student's project and repeat!
- Try to visit at least five other student's projects and leave them feedback sticky notes. Return to your prototype and read the feedback other students left for you

Submit your project (15-20 mins)

Students will now submit their projects. Here is the checklist they should follow:

- Screenshot their Block Code
 - Take a screenshot of your Block Code. You should also take a picture of your pseudocode and sketch and screen record your program running.
- Answer the following reflection questions:
 - How did your prototype meet the needs of your end-user?
 - How did your prototype address a sustainability challenge?
 - What was the most difficult part of this project? How did you overcome this difficulty?
 - Based on the feedback you received from other students: what would you change about your prototype?
 - What other problems could you solve using programming?
 - Insert the image files for your screenshot, sketch and pseudocode and the video file for your program running.
- Double check the project rubric

Wrap up, deliverable, and assessment (5 mins)

- **Wrap up:** If time permits, allow students to review their feedback and make final modifications to their projects! Additionally, reflect on the project as a class and share exemplar projects.



- **Deliverable:** Students will submit their prototype along with answers to the reflection questions.
- **Assessment:** There is no quiz or assessment for this lesson. Student projects will be graded with the project rubric, or a rubric created by the teacher.

Differentiation

- **Additional Support #1:** Some students may feel shy sharing their projects with others for feedback. You may choose to group students in pairs and allow them to exchange feedback in this manner.
- **Additional Support #2:** Students could anonymously post their share links and receive feedback without attaching their name to their project.
- **Extension:** For ambitious students, encourage them to create a prototype for one of the projects they didn't choose.

Additional resources

- [FHIL Feedback and Test Video](#)

