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Getting to Know You, CPU: Lesson Plan

Lesson Summary:

Students will be introduced to Micro:Bit technology and have the opportunity to program the Micro:Bit to share some personal information about themselves. This activity is intended to be a beginning of the year, get to know you activity, and introduction to Micro:Bit programming.

Materials Needed:

- Micro:Bit (ideally, one per student)
- Chromebook/Computer/iPad (ideally, one per student)
- Access to Computer/Projector for Modeling/Presentations
- Optional Google Slides
- Access to https://makecode.microbit.org/

Standards Addressed:

ELA

SL.4.1 - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly.
SL.4.4 - Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace

COMPUTER SCIENCE

5.CS.HS.01 - Model how information is translated, transmitted, and processed in order to follow through hardware and software to accomplish tasks.
5.AP.V.01 - Create programs that use variables to store and modify data.
5.AP.C.01 - Create programs that include sequences, events, loops, and conditionals, both individually and collaboratively.
5.AP.M.02 - Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features
5.AP.PD.03 - Test and debug (i.e., identify and fix errors) a program or algorithm to ensure it runs as intended.

Lesson Objectives:

Students will be able to:

- Use the Micro:Bit to write a code to share the following information:
    - Button A is pressed: Name
    - Button B is pressed: Favorite Color
    - Button AB is pressed: Favorite Animal
- Work collaboratively to fix or debug their code.
- Make a short presentation, introducing themselves to the class

Problem:
How can we use the Micro:Bit to introduce ourselves to the class?

Hook:
Prompt students to tell the person next to them what their favorite color is, without using their voice. After a few minutes, reconvene the class to discuss what they noticed/observed, and share various strategies used for non-verbal communication.

Lesson Procedure:

1. Complete the hook, then set the stage for the day's activity. Tell students that they will be learning about a Micro:Bit and then learning to write a code to introduce themselves and tell about some of their favorite things.

Part 1: Micro:Bit 101

This part could be done live, or utilizing the following video.
https://www.youtube.com/watch?v=Wuza5WXiMkc

1. Introduce students to the Micro:Bit technology. Show them the device and walk through the different buttons and connections available.
    a. Points of Interest: battery connection, microUSB port, buttons (A, B, and AB), LED screen
2. Walkthrough Micro:Bit Make Code Software
    a. Using the tutorial, NAME TAG, work through steps to create code and discuss with students the function that each block serves in the code.
    b. https://makecode.microbit.org/

Part 2: Challenge

3. Tell students that they are going to be doing a similar code, but want their Micro:Bit to show certain information when a specific button is pressed. Introduce the INPUT tab in the toolkit, and discuss the "on button ___ pressed" block versus the "on start" or "forever" block.
4. Challenge students to use the Make Code interface to write a code that shares the following information:
    a. Button A: Name
    b. Button B: Favorite Color
    c. Button AB: Favorite Animal
5. As students are working, walk around and help answer questions or troubleshoot. Encourage students to talk to one another as they troubleshoot and debug. Remind students to test out their programs on the webpage display.
6. Reconvene the class and show how to send the working program to the Micro:Bit.
7. Walk around and help students download programming to their Micro:Bit.
8. Once downloaded, have students find a partner and ask the following questions, answering with their Micro:Bit:
    a. What is your name? (A)
    b. What is your favorite color? (B)

c. What is your favorite animal? (AB)
d.

Review:

Reconvene the class and discuss:

- What worked?
- What was frustrating?
- Did you find any ways to fix problems along the way?
- How might a programmed device be helpful in everyday life?

Things Other Educators Should Know:

- If possible, working with WySLICE staff to Zoom in, or come in to help support students in initial exploration and debugging would be extremely helpful, especially if the lead teacher is not as comfortable with the Micro:Bit technology.
- Prompts can be adjusted to meet the needs of individual classrooms, or changed as extensions to initial activity.
- Possible Extensions: challenge students to see if they can write a code that will ask a question on their Micro:Bit, and a partner to write a code to answer the question on another Micro:Bit.

Sample Solutions-