| **Patti Elfers - Computer Talent** | **Maria Napolitano, Assistant Principal** |
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| **Unit of Study: Physical Computing** | **Lesson 1/22 - 6th Grade**  **Class: 6T1, 6T2, 6T3** |
| **Topic: Introduction to Microbit** | **CCLS: 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 topics.**  **Blueprint for the Arts: Digital Media** |
| **Skill: identifying parts and use of the Microbit microcontroller** | **Academic Vocabulary: microcomputer, microcontroller, physical computing** |
| **Warm Up: Think Pair Share - Talk to your partner about (What is a microcontroller?) and in your online journal, list ways you think we can use microcontrollers.) Think Write/Pair Share (rather than Think Pair Share)** | |
| **Connection: (Review with Class)**  **We’ve been working on Scratch learning Block coding. Today we will learn an additional type of block coding used for Physical computing.**  **We want to learn various ways to program devices for physical computing that can control external devices off the computer. It’s important to know these skills for future programming techniques.** | |
| **Mini Lesson: What is a Microbit? 1.** [**https://www.youtube.com/watch?v=ZIW\_6rxYNBg**](https://www.youtube.com/watch?v=ZIW_6rxYNBg)  **Play video with several pauses identifying parts on the board. Have students open the box and find the ports, LED lights, USB port, battery port, bluetooth port, accelerometer, compass, processor, reset button, and the buttons on the LED side labeled A and B. 2. Review coding in JavaScript block editor with the students? Ask if it resembles anything they are familiar with (Scratch, codesters, etc.)** | |
| **Quick Check: How is a microcontroller used?**  **Additional Reflection Questions based on the video: What did you see in the videos?**   * **What things do you think you can make with the Microbit?** * **How is it similar or different to Scratch?** | |
| **Work period: Students will work at their own pace with their neighbor on the beginning project on** [**http://microbit.org**](http://microbit.org) **. Once you access the web page, follow these steps to get to the project examples: Let’s code→ JavaScript Blocks Editor→ Let’s code-->Projects-->Projects. Once you find the Projects Page, choose Hearts or Smiley Face.**  **In pairs, the students will use the language button in Microbit.org for language translations to assist partners with language differences just like the Scratch program has.** | **Task 1a: Follow the steps in either the Hearts Program or the Smiley Program** [**https://microbit.org/guide/quick/**](https://microbit.org/guide/quick/)  **1b: Follow teacher directions for downloading code to the Microbit. (need to download the code to the computer, click on hex code and then click on the file at the bottom of the page located in downloads: show in folder. Copy and paste the file to the Microbit controller option in “Computer.”**  **Assessment: Teacher walks around the room watching students demonstrate their code.**  **Task 2: If you are able to complete the heart or smiley program, try using the LED’s to spell out your name. Try various techniques that might work. Try finding and using a wait block in between each letter to make it appear as if it is scrolling on the screen.** |
| **Assessments/Questions: Students get instant feedback knowing if their code works or not by downloading it to the Microbit. How might you be able to vary the timing of your letters for your name scrolling through the LED lights? What other methods did you use to have your name appear scrolling across the Microbit? How can we create a program to enable this event to occur on movement? What steps would be needed?** | |
| **Share:. Assessment/Question responses** | |
| **Closing/Exit Ticket:**  **Compare and Contrast the Microbit programming and Scratch Programming? What is similar and different between the two? How are each of them used? Post your response in Google Classroom under the Microbit Section.** | |
| **Note on grouping:**  **Students are seated next to a partner with differing ability so the more experienced student can work with the less experienced student.** | |
| **Materials and Scaffolds used: Computer, Internet, PowerPoint:** [**https://docs.google.com/presentation/d/11YsfwESJRHukQ5FK5pM3KKWNf4ESNNOsXvIwgRS5E6A/edit?usp=sharing**](https://docs.google.com/presentation/d/11YsfwESJRHukQ5FK5pM3KKWNf4ESNNOsXvIwgRS5E6A/edit?usp=sharing) **web pages:** [**https://www.youtube.com/watch?v=ZIW\_6rxYNBg**](https://www.youtube.com/watch?v=ZIW_6rxYNBg)[**http://classroom.google.com**](http://classroom.google.com)**(blended learning site for directions and quick check)** [**https://translate.google.com/**](https://translate.google.com/) **(for ELL students needing translation) Google Docs for their online journals. Note: Pacing is student centered due to individual variation within the grouping.** | |

**Individualize this part for individual student needs**

| **Modifications -English Language Learners** | **Modifications-Special Education/Support Group** |
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| * Working with partners * Using visuals/gesture * Total physical response * Rep of modeling * Vocabulary dictionary in the program | * Working with partners * Using visuals/gesture * Total physical response * One/one modeling when needed * Vocabulary dictionary in the program |

Agenda:

**Agenda: Introduction to Microbit for Physical Computing**

**CCLS: 6-8:4**

**Blueprint for the Arts: Digital Media**

**Warm Up: Think Write/Pair Share (rather than Think Pair Share) Describe what you think a microcontroller can do? Answer in your online journal.**

**Mini Lesson: What is a Microbit? How do we program it.**

**Microbit.org-review how block coding works? What program does it remind you of?**

**Task 1a: Follow the steps in either the Hearts Program or the Smiley Program**

**1b: Follow teacher directions for downloading code to the Microbit. (need to download the code to the computer, click on hex code and then click on the file at the bottom of the page located in downloads: show in folder. Copy and paste the file to the Microbit controller option in “Computer.”**

**Assessment: Teacher walks around the room watching students demonstrate their code.**

**Task 2: If you are able to complete the heart or smiley program, try using the LED’s to spell out your name. Try various techniques that might work. Try finding and using a wait block in between each letter to make it appear as if it is scrolling on the screen.**:

**Work period: Students will work at their own pace with their neighbor on the beginning project on** [**http://microbit.org**](http://microbit.org) **. Once you access the web page, follow these steps to get to the project examples: Let’s code→ JavaScript Blocks Editor→ Let’s code-->Projects-->Projects. Once you find the Projects Page, choose Hearts or Smiley Face.**

**Closing: What projects do you think you can make with a Microbit? Why do we consider this type of coding Physical computing?**