Events and Inputs: Microbit Happy/Sad

Content Area:	Coding & Technology
Course(s):	Coding & STEM
Time Period:	Marking Period 1
Length:	2 days
Status:	Published

Big Idea

Technology today is all about hardware and software. This unit will allow students to explore the capabilities of a specific type of hardware (The Microbit) while exploring the limitless potential and creativity afforded by the software (block coding, Javascript, Microsoft MakeCode).

The micro:bit itself is considered hardware. It is a physical piece of technology. In order to make use of hardware, we need to write software (otherwise known as “code” or computer programs). The software “tells” the hardware what to do, and in what order to do it using algorithms. Algorithms are sets of computer instructions.

Enduring Understanding

SWU the basic structure and capabilities of The Microbit and similar technologies; SWU how basic coding works and how it functions with basic hardware; SWU how to identify software events and inputs on this and other devices; SWU how to code different events for specific inputs and upload that code to the device; SWU the debugging process i.e. “ABSTRACTION” as a debugging strategy.

Skills

SWBAT create new code in the provided **IDE** *(Integrated Development Environment)*
SWBAT evaluate and edit code in the provided IDE
SWBAT upload and transfer code to and from a hard drive on their device
SWBAT identify “events” and “inputs” in the provided IDE
SWBAT hypothesize and experiment with code
SWBAT test their code and use strategies to debug broken code in the provided IDE

Standards

ISTE 1c	Students use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways.
ISTE 1d	Students understand the fundamental concepts of technology operations, demonstrate the ability to choose, use and troubleshoot current technologies and are able to transfer their knowledge to explore emerging technologies.
ISTE 5d	Students understand how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions.
ISTE 6d	Students publish or present content that customizes the message and medium for their intended audiences.

Assessments

Formative Assessment	Ss will receive a check, check plus, or check minus based on their completion of the activity, effort displayed, and academic attitude.
Summative Assessment	Ss will answer questions about this activity and its involved technologies on a summative assessment once per quarter.
Project	Ss will display artifacts of learning on their websites.

Resources/Instructional Materials

- MakeCode IDE
- Teacher-prepared materials (enrichment activity cards, support cards)
- Chromebooks
- Microbits
- Batteries and related accessories

Modifications

1. Individual accommodations per student IEPs
2. Enrichment Cards- challenges for advanced students
3. Support Cards- tips and hints for struggling students
4. Peer Tutoring- students paired in high/low tandems or high/med/low trios

Integration of 21st Century Skills

Focus on the development of 21st Century Content Skills:

- Global awareness

Focus on the Development of Learning and Thinking Skills:

- Critical Thinking and Problem Solving Skills

- Communication Skills
- Creativity and Innovation Skills
- Collaboration Skills
- Contextual Learning Skills

Focus on the Development of Life Skills:

- Leadership
- Accountability
- Personal Productivity
- Personal Responsibility
- People Skills
- Self Direction

Interdisciplinary Connections

- Academic and Technical Rigor - Projects are designed to address key learning standards identified by the school or district.
- Authenticity - Projects use a real world context (e.g., community problems) and address issues that matter to the students.
- Applied Learning - Projects engage students in solving problems calling for competencies expected in high-performance work organizations (e.g.,teamwork, problem-solving, communication, etc.).
- Active Exploration - Projects extend beyond the classroom by connecting to community explorations.
- Adult Connections - Projects connect students with the wider community.
- Assessment Practices - Projects involve students in regular, performance-based exhibitions and assessments of their work; evaluation criteria reflect personal, school, and real-world standards of performance.