STEM Education Works®

Scope & Sequence
Coding with micro:bit - Foundations of Design and Innovation

CODING WITH MICRO:BIT – Foundations of Design and Innovation

Grade Band	Unit	Overview
K-5	Meet the Technology	Students play "Twinkle, Twinkle, Little Star" on a micro:bit and learn programming basics, including looping for easier repetitive tasks and identifying multiple solutions.
K-1	Coding Constellations	Students code both real and imaginary constellations while working in pairs, exploring their stories and acting as astronomers.
K-1	Coding Matter	Students code a game about states of matter, incorporating conditional statements.
2-3	Digital Storytelling	Students code original stories, using show icon blocks as story prompts and following the writing process of creating a beginning, middle, and end. They recognize the similarities between the writing process and digital storytelling.
2-3	Sound the Sirens	Students learn about severe weather and its dangers, discussing the effects it can have on communities and how alert systems, like sirens, save lives. They use micro:bit to design a visual and auditory alert system.
2-3	Simulating Sensory Responses	Students learn about animals' sensory responses to stimuli and their roles as predators or prey. They use micro:bits to simulate sensory responses as inputs and outputs.
4-5	Sensing the World Around Us	Students differentiate between automation and autonomous systems by examining self-driving cars, smart thermostats, and robot vacuum cleaners. They use micro:bits to create a sensor-based pedometer to count steps.
4-5	Saving Crashy Bird	Students expand their block-based coding skills and explore problem-solving. They apply this knowledge to debug code in a video game.

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NGSS Standards Alignment	NGSS Discipline	Connected Subjects	Time Required
3-5-ETS1-3	Engineering, technology, and applications of science	ELA, science, math, art, SEL	2 hours
1-ESS1-1 K-2-ETS1-1	Earth and space science	ELA, science, math, social studies, art, SEL	3 hours
2-PS1-1 K-2-ETS1-1	Physical science	ELA, science, math, SEL, movement	3 hours
K-2-ETS1-1 K-2-ETS1-2	Engineering, technology, and applications of science	ELA, science, art, SEL	2.5 hours
3-5-ETS1-1 3-ESS-2 3-ESS3-1	Earth and space science	ELA, science, art, SEL	2.5 hours
3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Life science	ELA, science, social studies, SEL, movement	3.5 hours
3-5-ETS1-1 3-5-ETS1-2	Engineering, technology, and applications of science	Science, math, social studies, SEL, movement	6 hours
3-5-ETS1-1 3-5-ETS1-2 3-5-ETS1-3	Engineering, technology, and applications of science	Science, math SEL, movement	5 hours