

"Creating with KIBO" Curriculum Learning Objectives - Idaho Computer Science Standards Crosswalk

KinderLab Robotics, Inc. - 26 Nov 2018

Idaho Computer Science Standards at <http://www.sde.idaho.gov/academic/computer-science/>

Lesson	#	Learning Objective	ICS Standard	Add'l Info / Notes
1: Sturdy Building	1	Understand that craft and recycled materials can fit together to form sturdy structures.	N/A (engineering standard)	
	2	Understand that the engineering design process is useful for planning and guiding the creation of structures.	K-2.AP.02: Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map). (Grades K-2)	
	3	Understand that there are many different kinds of engineers.	K-2.IC.02: Understand that a wide range of jobs require knowledge or use of computer science. (Grades K-2)	
	4	Be able to build sturdy structures	N/A (engineering standard)	
	5	Be able to use the engineering design process to facilitate the creation of their structure.	K-2.AP.02: Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map). (Grades K-2)	
2: What is a Robot?	1	Understand that robots need moving parts, such as motors, to be able to perform behaviors specified by a program.	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	
	2	Understand that the robotic 'brain' has the programmed instructions that make the robot perform its behaviors.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.DA.02: Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted. (Grades K-2)	
	3	Be able to describe the components of a KIBO robot.	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	
	4	Be able to scan a program onto the KIBO robot using the wooden blocks.	K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2) K-2.IC.01: Practice responsible digital citizenship (legal and ethical behaviors) in the use of technology systems and software. (Grades K-5)	Responsible use (K-2.IC.01) is addressed through teacher-facilitated first use of the robot; an opportunity to teach good tech. practices.
	5	Be able to build sturdy, robotic vehicles that move.	N/A (engineering standard)	
3: Hokey Pokey	1	Understand that each icon or "block" corresponds to a specific instruction.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2)	
	2	Understand that a program is a sequence of instructions that is followed by a robot.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.DA.01: Classify and sort information into useful order without using a computer (e.g. sorting objects by various attributes). (Grades K-2) K-2.DA.02: Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted. (Grades K-2) K-2.AP.04: Follow the sequencing in an algorithm. (Grades K-2)	Unplugged sequencing (K-2.DA.01) is supported through "KIBO Says" game
	3	Understand that the order of the instructions dictates the order in which the robot executes the instructions.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.DA.01: Classify and sort information into useful order without using a computer (e.g. sorting objects by various attributes). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5) K-2.AP.04: Follow the sequencing in an algorithm. (Grades K-2)	Unplugged sequencing (K-2.DA.01) is supported through "KIBO Says" game
	4	Be able to point out or select the appropriate block corresponding to a planned robot action	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	5	Be able to connect a series of wooden KIBO blocks	K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2) K-2.DA.01: Classify and sort information into useful order without using a computer (e.g. sorting objects by various attributes). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	Unplugged sequencing (K-2.DA.01) is supported through games with KIBO programming blocks prior to actual scanning/programming the robot

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	6	Be able to scan a program onto the robot	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2) K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2) K-2.DA.02: Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted. (Grades K-2) K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5)	
	7	Be able to fix the sequence as they see it doesn't work (debugging)	K-2.CS.04: Identify, using accurate terminology, simple hardware and software problems and apply strategies for solving these problems (e.g. rebooting the device, checking the power, access to the network, read error messages, discuss problems with peers and adults). (Grades K-5)	
4: What are Repeats?	1	Understand that an instruction or sequence of instructions may be modified to repeat.	K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	2	Understand that some programming instructions, like 'Repeat,' can be qualified with additional information called parameters.	K-2.AP.04: Follow the sequencing in an algorithm. (Grades K-2)	Repeat loops are beyond traditional K-2 CS standards.
	3	Be able to recognize a situation that requires a loop.	K-2.AP.02: Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	4	Be able to make a program that loops with the "Repeat" block.	K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	5	Be able to use number parameters to modify the number of times a loop runs.	K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5)	
5: What are Sensors? (Part 1)	1	Understand that a robot can sense its surroundings with a sensor.	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	
	2	Understand that there are different kinds of sensors.	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	
	3	Be able to use a sound sensor with KIBO	K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2)	
	4	Be able to program with the Wait For Clap Block	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5)	
	5	Be able to compare and contrast human senses and robot sensors	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2) K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2)	Partial mapping only; these standards are not explicitly related to the correspondence between human senses vs. robotic sensors.
6: What are Sensors? (Part 2)	1	Understand that a robot can sense its surroundings with a sensor.	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	
	2	Understand that a robot can react to collected data by changing its behavior.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.DA.02: Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted. (Grades K-2)	
	3	Understand that certain instructions (like "Repeat") can be modified with sensor data.	K-2.AP.04: Follow the sequencing in an algorithm. (Grades K-2)	
	4	Be able to use distance and light sensors with KIBO	K-2.CS.02: Demonstrate how to operate a variety of computing devices (e.g. turn on, navigate, open/close programs or apps). (Grades K-2)	
	5	Be able to compare and contrast human senses and robot sensors	K-2.CS.01: Locate and identify computing, input, and output devices in a variety of environments (e.g. desktop and laptop computers, tablets, mobile devices, monitors, keyboards, mouse, printers). (Grades K-2)	Partial mapping only; these standards are not explicitly related to the correspondence between human senses vs. robotic sensors.

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	6	Be able to program with the Until Near/Far and Until Light/Dark parameters for the Repeat block	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
7: What are "ifs"?	1	Understand that a robot can change its behavior depending on information from a sensor.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.DA.02: Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted. (Grades K-2)	
	2	Be able to identify a situation that needs a branched program.	K-2.AP.02: Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	Conditional programming is beyond traditional K-2 CS standards.
	3	Be able to make a program that uses a branch.	K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	4	Be able to program with the Near/Far and Light/Dark parameters for the If block.	K-2.CS.03: Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps). (Grades K-2) K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
8: Final Project	1	Create a final project integrating robotics with a cross-curricular subject	(The final project integrates all the work done previously, and it can address all of the standards identified above. The standards listed here are the ones most directly reinforced during the final project.)	Digital citizenship (K-2.IC.01) is reinforced primarily through the sharing component of the final project
	2	Share and discuss the design process	K-2.AP.01: Construct and test problem solutions using a block-based visual programming language, both independently and collaboratively (e.g. pair programming). (Grades K-5) K-2.AP.02: Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map). (Grades K-2) K-2.AP.03: Construct an algorithm to accomplish a task, both independently and collaboratively. (Grades K-5)	
	3	Share and discuss the final project	K-2.IC.01: Practice responsible digital citizenship (legal and ethical behaviors) in the use of technology systems and software. (Grades K-5)	

12.00 ICS K-2 Standards represented
92% Coverage of ICS K-2 Standards

Unmapped

K-2.DA.03: Explain that networks, like the Internet, link people using computers and other computing devices allowing them to communicate, access, and share information. (Grades K-2)