Instructional Technology
Grade 5
Canterbury Public Schools

Subject	Technology
Grade Level	5th
Unit Title	Dash and Dot Robotics
Unit Goals	(Work collaboratively in a group to) create, test, and debug an algorithm/program that transports a load around obstacles. (Work collaboratively in a group to) create, test, and debug an algorithm/program that creates an alarm (operates lights and sounds for a minimum amount of time) .
Pacing (# of weeks)	(8 sessions @ 45 min.) 4 weeks.
Standards	**Computer Science Standards (ISTE) International Society for Technology in Education** **1B-AP-15** **Test and debug (identify and fix errors) a program or algorithm to ensure it runs as intended.** ● As students develop programs they should continuously test those programs to see that they do what was expected and fix (debug), any errors. Students should also be able to successfully debug simple errors in programs created by others **1B-CS-02** **Model how computer hardware and software work together as a system to accomplish tasks.** ● In order for a person to accomplish tasks with a computer, both hardware and software are needed. At this stage, a model should only include the basic elements of a computer system, such as input, output, processor, sensors, and storage. Students could draw a model on paper or in a drawing program, program an animation to demonstrate it, or demonstrate it by acting this out in some way. **1B-CS-03 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies.** ● Although computing systems may vary, common troubleshooting strategies can be used on all of them. Students should be able to identify solutions to problems such as the device not responding, no power, no network, app crashing, no sound, or password entry not working. Should errors occur at

	school, the goal would be that students would use various strategies, such as rebooting the device, checking for power, checking network availability, closing and reopening an app, making sure speakers are turned on or headphones are plugged in, and making sure that the caps lock key is not on, to solve these problems, when possible. **1B-AP-16 Take on varying roles, with teacher guidance, when collaborating with peers during the design, implementation, and review stages of program development.** I can create a program that demonstrates how to transport a load around obstacles from one point to another I can debug a program I can troubleshoot hardware, software and programs to find errors and make adjustments to meet the desired outcome I can transfer my knowledge of programming to learning new technologies and programming languages Explore other apps on my computer that can do these things like I did in school
Content/Conceptual Knowledge (know)	● Robots are programmed to do a variety of tasks and all are programmed by people. ● Creating program loops can save a programmer time as it runs the same set of code over and over. ● Loops can be given conditions that communicate how many times a code should be repeated. ● A program is needed in order to operate a robot. ● A computer executes code in a specific sequence from Left to right from top to bottom
Skills (be able to do)	Students will be able to: Create a program ● Use block code to program the robot to perform a task. ● Save work on a tablet ● Basic operation and use of a tablet ● Work with peers collaboratively in an effectively. Reflect and problem solve to find new solutions to an existing problem with design
Essential Questions	How can robots be used to automate simple tasks? How can looping be used to streamline an algorithm/code? How can my group work productively to program a solution to this task?

Enduring Understandings	These are general statements or take aways from all the study. Robots have replaced many tasks that people once did. Computer hardware and software have to work together to accomplish a task For example ● Over time robots will be used to do the work of more and more people ● More people will be needed to create programs to fulfill the jobs of the future ● Debugging is a central part of programming ● Trial and error is necessary to produce a quality produce ● Programs have numerous of iterations
Vocabulary	Program, Algorithm, bug, debug, loop, tablet, block programming, unit of measurement, iterations
Common Learning Experiences broken down by standard addressed in the unit	These are your lesson plan activities: Explore tablet usage and robot functions Explore the Blockley program Try out program, push buttons, Explore the functionality of the robot and tablet Work in groups Move the robot from point to point Make sound effects and lights introduce the actual project..explanation of outcomes and share rubric
Assessments	Performance Based/ Project Based/Checklists
Resources	Blockly App
Student Resources	Blockly App, 8 tablets, 8 robots (4 dash robots and 4 dot robots)
Teacher Resources	Blockly App, 8 tablets, 8 robots (4 dash robots and 4 dot robots), stop watch
Strategies	Think, pair, share, jigsaw writing,
Behaviors or dispositions	Persevere, follow directions, work with precision, listen to others ,provide Constructive feedback, learn how to use a rubric, use strategies that will use work Strategies that will increase productivity, learn to be cooperative and collaborative When working with peers, manage conflicts when necessary , reflect and problem Solve to find new solutions to existing problems