Future Ready Project - Algorithms in Our Daily Lives

Teacher Name:		Duration (in minutes): 90 minutes
Grade Level(s): 1	Subject/Course: Science, ELA	Unit: Algorithms
Resources needed: (On-site people, facilities, tools, technology, materials, community connections)	iPads with Seesaw app for computer science lessons on algorithms. Sphero mats for soccer, and city Marty the Robot: 5 robots Student iPads for Marty work	
Learning Standards: (content + CS & DF)	K-1.CT.6 Follow an algorithm to complete a task. K-1.CT.8 Identify a task consisting of steps that are repeated and recognize which steps are repeated. K-1.CT.9 Identify and fix (debug) errors within a simple algorithm. K-1.CT.10 Collaboratively create a plan that outlines the steps needed to complete a task.	
Big Idea:	How algorithms are applied to our daily lives.	
Authentic Purpose: (Why does this matter to your students?)	Almost everything our students do requires them to follow certain steps or an algorithm, from things they do in school to what they do in the home and community.	
Future-Ready Competencies: ___Collaboration ___Communication ___Critical Thinking & Problem Solving ___Creativity & Innovation ___Other:	Objectives: My students will be able to: • Correctly identify what an algorithm is • Use algorithm to complete Seesaw tasks • Use algorithm to create a path for the Marty robot to follow • Debug their algorithm to get Marty the Robot to follow the correct path.	
Project Statement: (Include: issue, problem or challenge; student role, purpose, beneficiary, and desired outcomes)	The challenge will be for students to create the appropriate algorithm to move the Marty robot to the correct places on the city or soccer mat. The students will be creating the entire process, from choosing the steps in the algorithm in a collaborative process. Those students that find success in creating their algorithms and the process will then mentor the students who are having trouble with this skill and work on debugging their algorithms. Differentiation: students will 3D print possible roadblocks for the mat. They will then have to create alternate paths using differing algorithms.	
Empathy Anchor: (How will students develop empathy and care about this problem)	Students that are successful in creating their algorithms and process will begin to think about how they can guide others in their class or even think about how they might begin teaching this process to a younger grade level.	
Public Audience & Reveal: (Experts, audiences, or product users students will engage with during and at the end of project)	Students will engage with their classmates during the algorithm writing portion of the project. They will share their algorithms to the class when they are completed.	

Knowledge Construction: (How are students going to construct content knowledge and practice it) Students will begin learning about algorithms by using lessons in Seesaw. The students will then turn key this learned skill to using it with the Marty the Robot.	Student Assessment: Can students correctly create algorithms to make the Marty robot travel from point to point.

Design Process: 1. Discover 2. Research & Empathize 3. Brainstorm 4. Choose 5. Build 6. Test 7. Communicate 8. Redesign	Describe what (& how) students are going to do in each step: Discover: Students will discover what an algorithm is and how it is essential to their daily life. Research and Empathize: Students will work together to figure out how best to get Marty the robot to get from one place to another on the Sphero city or soccer mat. Choose: Students will have choice in what mat they want to use to create an algorithm for the Marty robot. Build: Students will build the algorithm they need to make sure the robot follows the algorithm.. Test: Students will then test their algorithm using the Marty robot on the mat. Communicate: Students will work together with their partner to work on debugging their programs if need be and they will redesign the algorithm based on their debugging.