

Marking Period	Unit Title	Recommended Instructional Days
3	Programming/Coding - Sphero	Approximately 10-12 days (Meet Once Per Week)
Disciplinary Concept:	Practice:	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLs-CSDT within Unit
CS AP	Fostering an Inclusive Computing and Design Culture Recognizing and Defining Computational Problems Developing and Using Abstractions	
Core Idea:	Performance Expectation/s:	
<p>The study of human–computer interaction can improve the design of devices and extend the abilities of humans</p> <p>Individuals design algorithms that are reusable in many situations. Algorithms that are readable are easier to follow, test, and debug. Control structures are selected and combined in programs to solve more complex problems.</p> <p>Programs use procedures to organize code and hide implementation details. Procedures can be repurposed in new programs.</p> <p>Defining parameters for procedures can generalize behavior and increase reusability.</p> <p>Individuals design and test solutions to identify problems taking into consideration the diverse needs of the users and the community</p> <p>A computing system involves interaction among the user,</p>	<p>8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices.</p> <p>8.1.8.AP.1: Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.</p> <p>8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.</p> <p>8.1.8.AP.4: Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.</p> <p>8.1.8.AP.9: Document programs in order to make them easier to follow, test, and debug.</p> <p>8.1.12.CS.2: Model interactions between application software, system software, and hardware.</p>	<p>Essential Question/s:</p> <p>How can I compose simple shapes to form larger shapes?</p> <p>How can I use programming/coding to maneuver the Sphero?</p> <p>How can I use a robot to calculate perimeter?</p> <p>What are loops and conditionals?</p> <p>How can sensors be utilized to control a robot?</p> <p>Activity Description:</p> <p>Code Sphero robot to differentiate between the movements by the robot to drive forward, drive in reverse, turn left, turn right, and wait.</p> <p>Drawing shapes that represent code and executing that code using the Sphero robot. Students create varying shapes and sizes to represent varying people.</p> <p>Program Sphero to navigate around an obstacle and return to the start.</p> <p>Use data to calculate the perimeter of a square, rectangle, triangle, and rectangle with unknown side length.</p> <p>Define and use conditionals, including if/then/else statements in programming.</p>

hardware, application software, and system software.		Use a gyroscope to calculate rotational velocity to build a spinning top program with sphero. Create and execute a Blocks program from pseudocode to build a hot potato game using Sphero.
<p>Social and Emotional Learning: <i>Competencies</i></p>	<p>Social and Emotional Learning: <i>Sub-Competencies</i></p>	Use prior knowledge to debug code to get Sphero through a maze. Play a game of bowling and program your robot ball when collision occurs.
<p>Self Awareness</p> <p>Self-Management</p> <p>Social Awareness</p> <p>Responsible-Decision Making</p> <p>Relationship Skills</p>	<ul style="list-style-type: none"> ● Recognize one’s feelings and thoughts ● Recognize the impact of one’s feelings and thoughts on one’s own behavior ● Recognize the importance of self-confidence in handling daily tasks and challenges ● Understand and practice strategies for managing one’s own emotions, thoughts, and behaviors ● Recognize the skills needed to establish and achieve personal and educational goals ● Recognize and identify the thoughts, feelings, and perspectives of others ● Demonstrate an understanding of the need for mutual respect when viewpoints differ ● Develop, implement, and model effective problem-solving and critical thinking skills ● Identify the consequences associated with one’s actions in order to make constructive choices ● Evaluate personal, ethical, safety, and civic impact of decisions 	<p>Interdisciplinary Connections: Content: CCSS.Math.Content.2.MD.A.1, CCSS.Math.Content.3.MD.D.8, CCSS.Math.Content.4.MD.A.3 NGSS: 3-PS2-2, K-2-ETS1-2</p>

	<ul style="list-style-type: none"> • Establish and maintain healthy relationships • Utilize positive communication and social skills to interact effectively with others • Identify ways to resist inappropriate social pressure • Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways • Identify who, when, where, or how to seek help for oneself or others when needed 		
<p align="center">Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i></p>		<p align="center">Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i></p>	
<p><u>Formative Assessments:</u></p> <ul style="list-style-type: none"> • Exit Slips • Quizzes • Self Assessments/Reflection • Lesson Activity Worksheets 		<p><u>Benchmarks:</u></p> <ul style="list-style-type: none"> • Performance Assessment • Unit Assessments <p><u>Summative Assessments:</u></p> <ul style="list-style-type: none"> • District/Department Assessments 	
<p align="center">Differentiated Student Access to Content: Teaching and Learning Resources/Materials</p>			
<p align="center">Core Resources</p>	<p align="center">Alternate Core Resources <i>IEP/504/At-Risk/ESL</i></p>	<p align="center">ELL Core Resources</p>	<p align="center">Gifted & Talented Core Resources</p>
<p>edu.sphero.com http://youtube.com sites.google.com</p>	<p>Reteaching worksheets Spanish version of lesson activities</p>	<p>Dictionary for native language</p>	<p>Enrichment/Extension activities</p>
<p align="center">Supplemental Resources</p>			
<p>Technology:</p> <ul style="list-style-type: none"> • Chromebooks, MacBook • Projector • Smartboard 			

<ul style="list-style-type: none"> • Pens, Pencils, Paper • Sphero <p>Other:</p> <ul style="list-style-type: none"> • Schoology • Sphero EDU • GAPE (Docs, Sheets, Slides, Drawings, Sites) • Youtube 			
Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> • Deliver instruction utilizing varied learning styles including audio, visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat instructions as needed. 	<ul style="list-style-type: none"> • Special Education: Adhere to IEP/504s. Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks. 	<ul style="list-style-type: none"> • Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of online or paper bilingual dictionary, and modified assessment and/or rubric. 	<ul style="list-style-type: none"> • Provide extension activities related to the topic being discussed. Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.

	Disciplinary Concept: Career Awareness and Planning (CAP), Creativity and Innovation (CI), Critical Thinking and Problem-Solving (CT), Technology Literacy (TL)
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NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	<i>Core Ideas:</i>	<ul style="list-style-type: none"> • Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions. • Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills. • The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills. • Different digital tools have different purposes. • Collaborating digitally as a team can often develop a better artifact than an individual working alone.
	<i>Performance Expectation/s:</i>	<ul style="list-style-type: none"> • 9.4.5.CI.1, 9.4.5.CI.2, 9.4.5.CI.3, 9.4.5.CI.4, 9.4.5.CT.1, 9.4.5.CT.2, 9.4.5.CT.3, 9.4.5.CT.4, 9.4.5.TL.1, 9.4.5.TL.2, 9.4.5.TL.3, 9.4.5.TL.4.
	Career Readiness, Life Literacies, & Key Skills Practices	
	<ul style="list-style-type: none"> • Demonstrate creativity and innovation • Utilize critical thinking to make sense of problems and persevere in solving them: • Use technology to enhance productivity, increase collaboration and communicate effectively • Work productively in teams while using cultural/global competence 	

New Jersey Legislative Statutes and Administrative Code
(place an "X" before each law/statute if/when present within the curriculum map)

Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>	X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>	X	Standards in Action: <i>Climate Change</i>
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