Fifth Grade Technology and Computer Science Curriculum Map 2022

Pacing Guide	Standard Code & Indicator	Sample Learning Activities	Assessment	Additional Standards

August- September Computing Systems/GSuite Review	8.1.5.CS.1: Model how computing devices connect to other components to form a system. 8.1.5.CS.2: Model how computer software and hardware work together as a system to accomplish tasks. 8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies. 9.4.5.TL.1: Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each. 9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings. 9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images graphics, or symbols.	-Complete orientation of Windows 10, Google classroom/GSuite -Use Google platform programs effectively within the scope of class needs. -Demonstrate mastery of Google classroom, docs, slides, sheets and forms -Create a budget using sheets complete with graphs and equations to calculate and balance the budget -Independently use a variety of graphics and symbols in doc/slides/sheets -Participate in class discussions via Google Classroom -Keyboard Typing Practice **Instructional Resources:** Gsuite training Grow with Google **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Videos GSuite	**Formative Assessments:** Classwork Student Participation Teacher Observation Google Doc Writing Budget Sample **Summative Assessments:** Symbol and graphic based Doc Using equations properly on Google Sheets **Benchmark Assessment:** BOY Benchmark Accommodations and Modifications	**Interdisciplinary Standard:** SL.5.5: Include multimedia components (e.g. graphics, sounds) and visual displays when appropriate to enhance work.

October-December Interaction of Technology and Humans	8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes. 8.1.5.IC.2: Identify possible ways to improve the accessibility and usability of computing technologies to address the diverse needs and wants of users. 8.2.5.EC.1: Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects. 8.2.5.ITH.1: Explain how societal needs and wants influence the development and function of a product and a system. 8.2.5.ITH.2: Evaluate how well a new tool has met its intended purpose and identify any shortcomings it might have. 8.2.5.ITH.3: Analyze the effectiveness of a new product or system and identify the positive and/or negative consequences resulting from its use. 8.2.5.ITH.4: Describe a technology/tool that has made the way people live easier or has led to a new business or career. 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.	-Compare man made and nature based products -Create a venn diagram using online tools comparing a natural product from a human made product -Create a slide presentation or Green Screen video on a product over a period of time and what impacts the development and progress of the product (include materials science and materials availability -Explain how external factors influence making a product -Relate external influences (political, economic, social, cultural) on a product over time -Explain how better resources and material science impact technology -Compare and contrast technology/tools that have led to new businesses or careers in society. -Google Slide presentation or Green Screen video on a new piece of	**Formative Assessments:** Classwork Student Participation Teacher Observation Google Doc Writing **Summative Assessments:** Completed Venn Diagram Slides Presentation Accommodations and Modifications	**Interdisciplinary Standard: Science** **5-ESS3-1** When learning about human use of resources in the making of products, it should be mentioned that resources are limited and need to be replenished.

January-February Nature of Technology/ Engineering Design	8.2.5.ED.1: Explain the functions of a system and its subsystems. 8.2.5.ED.4: Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints). 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process. 8.2.5.NT.1: Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem. 8.2.5.NT.2: Identify new technologies resulting from the demands, values, and interests of individuals, businesses, industries, and societies. 8.2.5.NT.3: Redesign an existing product for a different purpose in a collaborative team. 8.2.5.NT.4: Identify how improvement in the understanding of materials science impacts technologies.	-Develop a product using an online simulation that uses the design process -Develop a product using design process (Dragster Car): identify specs and limitations -Redesign Dragster Car though collaboration -Present a venn diagram of the differences between 2 generations of a product -Troubleshoot a broken product -Create a commercial via Green Screen/iMovie to sell a product for a non-customary use (wall telephone used as a room mic) -Develop a product using an online simulation that explores the design process. -Examine a malfunctioning tool and use a step-by-step process to troubleshoot and present options to repair the product. -Troubleshooting a product.	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Project based rubrics Accommodations and Modifications	**Interdisciplinary Standard: Science 3-5-ETS1-1 and 3-5-ETS1-3.** The design process is an engineering program that calls on users to follow a cyclical plan of identification of problems and constraints along with creating and testing solutions.

March- April Algorithms and Programming	8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. 8.1.5.AP.2: Create programs that use clearly named variables to store and modify data. 8.1.5.AP.3: Create programs that include sequences, events, loops, and conditionals. 8.1.5.AP.4: Break down problems into smaller, manageable sub-problems to facilitate program development. 8.1.5.AP.5: Modify, remix, or incorporate pieces of existing programs into one's own work to add additional features or create a new program. 8.1.5.AP.6: Develop programs using an iterative process, implement the program design, and test the program to ensure it works as intended.	-Students will use code.org unit F to learn application and development of codes -Develop understanding of how computers work through code -Create an algorithm -Develop a program that includes variables, sequences, conditionals and gain the ability to debug mistakes -Create a game for younger students to play **Instructional Resources:** Code.org Tynker familycodenight.org Snap Scratch **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Video GSuite **Student Technology:** Computer; iPads Google Classroom	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Coding Challenge Accommodations and Modifications	**Interdisciplinary Standard: Math 5.OA.B.3** Coding is a focus on using algorithms to make a program. Often, there are patterns that can be found and used when building a program.

May June Engineering Design/Robots	8.2.5.ED.2: Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models. 8.2.5.ED.3: Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task. 8.2.5.ED.4: Explain factors that influence the development and function of products and systems (e.g., resources, criteria, desired features, constraints). 8.2.5.ED.5: Describe how specifications and limitations impact the engineering design process. 8.2.5.ED.6: Evaluate and test alternative solutions to a problem using the constraints and tradeoffs identified in the design process.	-Students will get an orientation on how to use sphero -Students will use Sphero Robots to develop code including but not limited to Morse Code -Students will use sphero to engage in grade appropriate activities located on https://edu.sphero.com/ -Develop an understanding of how robots work through coding (block) **Instructional Resources:** Sphero Sphero Supplemental material **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Video Sphero GSuite **Student Technology:** Computer; iPads Google Classroom	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessments:** Robot Challenge **Benchmark Assessment:** EOY Benchmark Accommodations and Modifications	**Interdisciplinary Standard:** **Math 5.MD.A.1** In using Robots students will have to work concepts like angle and distance. Many times, Conversion is needed to get the desired outcome of the device.

Alternate Assessments: Google Orientation Video; Design Process Flowchart; Creation of Coding Game
21st Century Standards: 9.1.8.E.8 9.2.8.B.7 and 9.2.8.B.**3**
21st Century Skills: Innovacation, Media Literacy, Communication, Creativity
Career Ready Practices: CRP 6, CRP 8, CRP 11 and CRP 12