Eighth Grade Technology Curriculum 2022

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

August - October Data and Analysis	8.2.8.EC.2: Examine the effects of ethical and unethical practices in product design and development. 8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose. 8.1.8.DA.2: Explain the difference between how the computer stores data as bits and how the data is displayed. 8.1.8.DA.3: Identify the appropriate tool to access data based on its file format. 8.1.8.DA.4: Transform data to remove errors and improve the accuracy of the data for analysis. 8.1.8.DA.5: Test, analyze, and refine computational models. 8.1.8.DA.6: Analyze climate change computational models and propose refinements.	-Discuss and explore: cyber ethics, what is ethical and unethical in product design and development -Gather data and use Google Sheets to graph and calculate it (Engage in a Stock Market Simulator to buy, sell, and trade "Green" stocks then gather data, calculate results, graph results) -Display data in a variety of ways -Present to class on gathered and analyzed data -Create a database query, sort and create a report -Describe the process, and explain the report results -Test, analyze and refine computational models. -Analyze climate change models and propose refinements **Instructional Resources:** GSuite Teacher Created Resources **Teacher Technology:** Computer Activ Panel	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessment:** Student chosen project applying Google Suite tools and skills **Benchmark Assessment:** BOY Benchmark Accommodations and Modifications	**Interdisciplinary Standard: SL 8.1** Students will participate in discussions on cyber ethics, safety and appropriate use.

			Formative Assessments:	Interdisciplinary
October-November Computing Systems, Ethics-Drones, Lego Mindstorms	8.1.8.CS.1: Recommend improvements to computing devices in order to improve the ways users interact with the devices. 8.2.8.EC.1: Explain ethical issues that may arise from the use of new technologies. 8.1.8.CS.2: Design a system that combines hardware and software components to process data. 8.1.8.CS.3: Justify design decisions and explain potential system trade-offs. 8.1.8.CS.4: Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.	-Teacher will lead students in review of drone/Lego Mindstorm use and safety. -Discuss the moral implications to devices like a drones/using robots and the possible real world problems that come with such devices -Establish norms and safety procedures for using a drone in school and on school grounds -Lead a google hangout discussion on the positives and negatives of drone use in society -Demonstrate mastery of robots by using drones/Lego Mindstorms to accomplish a teacher given task Propose, plan, develop, test and evaluate an activity using drones/Lego Mindstorms. **Instructional Resources:** GSuite Teacher Created Resources Drones Lego Mindstorms **Teacher Technology:** Computer Activ Panel Acitiv View	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessment:** Student chosen project applying drone skills and knowledge Accommodations and Modifications	**Interdisciplinary Standard: Math 8.G.A.1.B.** While working with drones,students will have to map out a course and take into account angles and directions.

December/ January Networks and the Internet- Green screens	• 8.1.8.NI.1: Model how information is broken down into smaller pieces, transmitted as addressed packets through multiple devices over networks and the Internet, and reassembled at the destination. 8.1.8.NI.2: Model the role of protocols in transmitting data across networks and the Internet and how they enable secure and errorless communication.	-Understand how green screens work and are used in media -Discuss the moral implications to green screens and the possible real world applications that come with its use -Teacher will lead students in review of greescreen use and how to use green screen to enhance communication. -Propose, plan, develop, test and evaluate an activity using greenscreen. **Instructional Resources:** GSuite Teacher Created Resources **Teacher Technology:** Computer Activ Panel Acitiv View YouTube Videos GSuite **Student Technology:** Computer; iPads Google Classroom Green Screen Green Screen App	**Formative Assessments:** Classwork Student Participation Teacher Observation **Summative Assessment:** Student chosen project applying Green Screen skills and knowledge Project based rubrics Accommodations and Modifications	**Interdisciplinary Standard:** . **Visual Arts** **1.1.5.C.2** I Part of working with a green screen involves acting and physical/vocal behaviors that are related to stage.

| February -March

Algorithms and Programming- Coding | 8.1.8.AP.1: Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.

8.1.8.AP.3: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.

8.1.8.AP.4: Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs.

8.1.8.AP.5: Create procedures with parameters to organize code and make it easier to reuse.

8.1.8.AP.6: Refine a solution that meets users' needs by incorporating feedback from team members and users. | -Students will use Scratch/Lego Mindstorm to design and develop a multi code presentation

-Use flowcharts and/or pseudocodes

-Collaborate with classmates to get feedback to refine coding program made

Instructional Resources:
GSuite
Teacher Created Resources

Teacher Technology:
Computer
Activ Panel
Acitiv View
YouTube Videos
GSuite

Student Technology:
Computer; iPads
Google Classroom | **Formative Assessments:**
Classwork
Student Participation
Teacher Observation

Summative Assessment:
Student chosen project applying coding skills and knowledge

Accommodations and Modifications | **Interdisciplinary Standard:**
.CCSS.MATH.CONTENT. 8.F.B.5 Students will be working on the concept of functions in coding which parallels the math form of functions. Students will be working in a workspace that is organized by a graph and manipulating data in that area. |

April-June	8.2.8.ED.1: Evaluate the function, value, and aesthetics of a technological product or system, from the perspective of the user and the producer.	-Students will establish norms and safety procedures for using a 3D printer	**Formative Assessments:** Classwork Student Participation Teacher Observation	**Interdisciplinary Standard:** 1.2.8.Cr1c: Critique plans, prototypes and production processes considering purposeful and expressive intent.
Engineering Design: 3D printer, Bridge Design		-Understand safe use of a 3-D Printer		
	8.2.8.ED.2: Identify the steps in the design process that could be used to solve a problem.	-Discuss the moral implications to devices like a 3-D printer and the possible real world problems that come with such devices	**Summative Assessment:** Student chosen project applying 3D skills and knowledge	
	8.2.8.ED.3: Develop a proposal for a solution to a real-world problem that includes a model (e.g., physical prototype, graphical/technical sketch).		**Benchmark Assessment:** EOY Benchmark	
	8.2.8.ED.4: Investigate a malfunctioning system, identify its impact, and explain the step-by-step process used to troubleshoot, evaluate, and test options to repair the product in a collaborative team.	-Develop an understanding of how 3-D printers can create solutions to real world problems	[Accommodations and Modifications](#)	
	8.2.8.ED.5: Explain the need for optimization in a design process.	-Students will lead a google hangout discussion on the positives and negatives of 3-D printers		
	8.2.8.ED.6: Analyze how trade-offs can impact the design of a product.	-Students will use Tinkercad to create an item that will be made using Makerbot		
	8.2.8.ED.7: Design a product to address a real-world problem and document the iterative design process, including decisions made as a result of specific constraints and trade-offs (e.g., annotated sketches).	**Instructional Resources:** GSuite Teacher Created Resources 3D Printer Tinkercard Makerbot **Bridge Designer: https://bridgedesigner.org/download/**		

Alternative Assessment: Completed Capstone Projects, Worksheets/Activities
21st Century Standards: 9.1.8.A.3 and 9.2.8.B.4
21st Century Skills: Creativity, Innovation, Critical Thinking and Media Literacy
Career Ready Practice: CRP6, CRP 8, CRP 10 and CRP12