Fifth Grade Technology

Course Description: Technology at Wall Township employs an integrated approach where students learn to harness the power of technology for learning, creativity, and innovation to develop and deepen knowledge and understanding not just within the discipline of computer science, but also within multiple disciplines throughout the curriculum. This curriculum provides the base from which to develop the skills and knowledge needed to be successful communicators, problem-solvers, global citizens, and innovators.

Course Sequence & Pacing

Unit Title	MP/Weeks
Unit 1: Digital Communication This unit aims to develop effective communicators that can use a variety of technology tools and transfer their skills into new contexts.	MP 1 and year-long integration
Unit 2: Computer Science/Coding This unit aims to develop computational thinking, or the thought process involved in expressing solutions as computational steps that can be carried out by a computer. Students must demonstrate an ability to understand the capabilities of computers, formulate problems addressed by a computer, and design algorithms that a computer can execute.	MP 2 and year-long integration
Unit 3: Digital and Global Citizenship This unit aims to develop good digital citizens who are a part of a global society of interconnected users. As such, students must demonstrate an ability to behave safely, responsibly, and respectfully when communicating and collaborating in their virtual environments. As global citizens, students explore concerns about the impact of technology on the natural world.	MP 3 and year-long integration
Unit 4: Research, Data, and Innovation This unit aims to empower learners to access, retrieve and produce well managed resources. Learners will pursue and create relevant information using the opportunities of high-quality materials. A basic understanding of ethical use of information will develop. In addition to digital research, students will recognize both data collection and the engineering design process as relevant ways to gather information.	MP 4 and year-long integration

The following colors are used throughout this document to indicate areas in which the curriculum is aligned with the following NJSA requirements:

Holocaust and genocides (N.J.S.A. 18A:35-28)
History and contributions of African-Americans (Amistad Law) (N.J.S.A. 18A:35-4.43)
(Diversity & Inclusion Law) (N.J.S.A. 18A:35-4.36a)

Climate Change - Please click here for specific examples (by subject)
Technologies that either reduce or optimize the use of natural resources while reducing the negative effect that technology has on the planet and its ecosystems, is essential for developing a populace with the knowledge and skills necessary to mitigate the effects of climate change. In this unit, students will participate respectfully and responsibly in digital environments, which will help move society away from older forms of communication and collaboration that promote a reliance on and over-consumption of natural resources.

Unit 1: DIGITAL COMMUNICATION

Stage 1: Desired Results

Unit Title: Digital Communication

Unit Summary: In this cross-curricular year-long unit, our 21st Century Learners need to have basic understandings of general technology to be able to navigate their digital lives. To communicate effectively in a digital world, students need to have an understanding of general technology vocabulary as well as an essential general understanding of the contents of their digital lives. The use of online digital tools allows students to create, share, and collaborate. Students in grades K- 1 will be introduced to the keyboard layout, and then students in grades 2 - 5 will be using a typing program on a weekly basis to improve their speed and accuracy. Students will be introduced to the Google Education Suite in grades 2 - 5 as they begin to use Google Docs, Google Drive, and Google Classroom. At the conclusion of this unit, students will be able to explore their digital world collaboratively and creativity using the digital tools they have learned.

Unit 1 Learning Targets

NJSLS Grade Level Standards:

W.5.6. With some guidance and support from adults and peers, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.

5.1.C. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.

SL.5.4. Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

SL.5.5. Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.

SL.5.6. Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.

L.5.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

   A. Use punctuation to separate items in a series.

   B. Use a comma to separate an introductory element from the rest of the sentence.

C. Use a comma to set off the words yes and no (e.g., Yes, thank you), to set off a tag question from the rest of the sentence (e.g., It's true, isn't it?), and to indicate direct address (e.g., Is that you, Steve?).

D. Use underlining, quotation marks, or italics to indicate titles of works.

E. Spell grade-appropriate words correctly, consulting references as needed.

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions

9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity

9.4.5.DC.1: Explain the need for and use of copyrights.

9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media. 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.

9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

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.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Curricular Connections

Career Readiness, Life Literacies, & Key Skills *(CLKS)*:

Main focus of this unit: Included above.

Computer Science & Design Thinking *(CS & DT)*:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

Interdisciplinary Connections:

ELA Anchor Standards

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.

NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

NJSLSA.W3. Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

NJSLSA.W10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

NJSLSA.SL3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric

NJSLSA.SL4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NJSLSA.SL6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

NJSLSA.L2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

NJSLSA.L3. Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

VPA

1.2.5 Media Arts Anchor Standard 1: Generating and conceptualizing ideas.

1.2.5 Media Arts Anchor Standard 2: Organizing and developing ideas.

1.2.5 Media Arts Anchor Standard 3: Refining and completing products.

1.2.5 Media Arts Anchor Standard 4: Selecting, analyzing, and interpreting work.

1.2.5 Media Arts Anchor Standard 5: Developing and refining techniques and models or steps needed to create products.

1.2.5 Media Arts Anchor Standard 9: Applying criteria to evaluate products.

1.2.5 Media Arts Anchor Standard 10: Synthesizing and relating knowledge and personal experiences to create products.

1.2.5 Media Arts Anchor Standard 11: Relating artistic ideas and works within societal, cultural, and historical contexts to deepen understanding.

Unit Essential Questions:	Unit Enduring Understandings:
How do I choose which tech tools to use and when to use them? How can technology be used to communicate?	The form of communication (i.e., text, verbal, visual) is influenced by the limits and capabilities of the channel used to communicate.

How can I communicate so others can understand me?	Communication is a two-way interactive process between the message sender and the message receiver.
How can I transfer what I know to new technological situations/experiences?	The message sender's word choice, visual choices, use of conventions, and chosen channel of communication all affect how effective they are in communicating their message.
How can digital tools be used for creating original and innovative works, ideas, and solutions?	

Content-Students will know:	**Skills-Students will be able to:**
Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions.	Type using the home row on a keyboard.
	Compose text digitally.
Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.	Type using grade level conventions.
	Differentiate between contexts that call for formal English and situations where informal discourse is appropriate.
Intellectual property rights exist to protect the original works of individuals. It is allowable to use other people's ideas in one's own work provided that proper credit is given to the original source.	Use spelling and grammar check features.
	Identify and use common formatting tools transferring knowledge across several applications including, but not limited to, tools that change the page setup, enhance the text, and include and properly resize graphics, symbols, and images.
Digital identities must be managed in order to create a positive digital footprint.	
Digital tools have positively and negatively changed the way people interact socially.	Create a cohesive design scheme by carefully selecting colors, fonts, and design layouts to enhance the overall message.
Digital tools can be used to modify and display data in various ways that can be organized to communicate ideas.	Use tools for editing or collaborating (e.g., highlighting and commenting features).
Different digital tools have different purposes.	Identify and use common multimedia tools transferring knowledge across several applications including, but not limited to, tools that record or upload audio and video, and create slideshows.
Collaborating digitally as a team can often develop a better artifact than an individual working alone.	Compare and contrast communication tools and select the appropriate tool for the task.
	Add CC0 or other Creative Commons media.
	Cite sources.
	Question, respond to, or comment on another's work or ideas adding new ideas to the conversation.
	Communicate respectfully and responsibly.

Stage 2: Evidence of Student Learning

Summative Assessments:

Present information using Google Slides: Slides presentation rubric

Multimedia presentation project: Use rubrics within Google Classroom to assess final Multimedia work samples.

Formative Assessments:

Monthly typing tests with self-reporting, self-evaluation, and goal setting.'

Monthly Goal Sheet with self reporting accuracy and speed.

Seesaw Skills are available on our Seesaw for Schools district accounts. Each skill is linked to a standard and teachers can evaluate student work by giving each skill a star rating, as you would with a rubric.

Online Communication (Commenting) Self-Evaluation and Rubric

Alternative Assessments:

Students will be in charge of what form their final projects take and alternative assessments will be developed organically based on their choices.

Stage 3: Core Instructional Plan & Resources			
Standard:	**Skill:**	**Learning Activities:**	**Timeline:**
W.5.6 9.4.2.TL.3	Type using the home row on a keyboard.	● Typing Club	All year
SL.5.1.C SL.5.4 SL.5.6 W.5.6 L.5.2 9.4.5.CI.1 9.4.5.CI.2 9.4.5.CI.3 9.4.5.DC.5 9.4.5.DC.7	Write or record a comment linking it to the topic being presented. ● Question, respond to, or comment on another's work or ideas adding new ideas to the conversation. ● Communicate respectfully and responsibly.	● Mini-lesson on making positive comments directly linked to the subject of the work vs. comments that just say "good job." ● Mini-lesson on formal language. ● View and comment on others' work in your class or other classes through Seesaw blogs. See Materials below for Collaborative Project Ideas. ● Comment on your own work telling what you are proud of or what you could change next time. ● Respond to a Flipgrid post by adding a video comment. ● Write a comment on Padlet posts.	All year
W.5.6 L.5.2 9.4.5.T L.3 9.4.5.C I.1 9.4.5.C I.3 9.4.5.T L.1	Compose text digitally using grade level conventions.	● Respond to essential questions and other exit tickets. ● Brainstorm for writing pieces using lists. ● Use digital graphic organizers. ● Write opinion, informational, and narrative texts. ● Write to demonstrate understanding in content areas.	

W.5.6 L.5.2 9.4.5.TL.3 9.4.5.TL.4 9.4.5.TL.5 9.4.5.IML.2 9.4.5.IML.3 9.4.5.CI.1 9.4.5.CI.2	Use formatting tools, spelling and grammar check features, and tools for editing and collaborating.	• Reference Google Docs Learning Center when needed. • Transfer knowledge of formatting, editing, and collaboration tools when using other applications, especially other Google Workspace apps like Google Drawings and Google Slides. • Write comments when collaborating on a project together or peer editing as well as respond to comments for editing work.	5-6 weeks
9.4.5. DC.1 DC.2 9.4.5. DC.3	Add CC0 or other Creative Commons media and cite sources.	• Reference Google Docs Learning Center Advanced Skills when needed.	All year
W.5.6 SL.5.4 SL.5.5 SL.5.6 9.4.5.DC.3 9.4.5.IML.2 9.4.5.IML.3	Use multimedia tools to communicate an idea.	• Google Slides presentation linked to an informational writing unit or content area topic. • Use Seesaw's multimedia tools to demonstrate learning on a curriculum topic (see next learning activity). Students can draw and label, insert images, create and upload videos, create slideshows, create recorded "whiteboard" videos where they record their voice and write on or move pieces on the creative canvas, and create animations. • Try other multimedia tools matching the tool to the task: Voki, Storyjumper, Little Bird Tales, Book Creator, Pixton, ABCYa Animate and so many more! • Science: Two Interdisciplinary lesson ideas using Pixton comics and climate change. Idea 1 | Idea 2	All year
SL.5.5 9.4.5.IML.2 9.4.5.IML.3 9.4.5.TL.3	Create a cohesive design scheme by carefully selecting colors, fonts, and design layouts to enhance the overall message.	• Mini-lesson on using fonts to convey meaning and limiting the number of fonts you use. • Create font sheets when planning big projects. • Mini-lesson for centering and aligning design elements on Google Drawings using the red line and the Arrange menu.	3 days
9.4.5.TL.1	Compare and contrast communication tools and select the appropriate tool for the task.	• Select the Seesaw tool you wish to use for communication. Sample: Reader's Response • Mini lesson to review the tools students know how to use and allow them to select the tool for their	All year

	activity. Example: Google Drawings for posters, timelines, or other non-linear layouts. Google Docs for writing pieces that do not require a well-planned design.	

Core Instructional & Supplemental Materials

Materials	Notes
Chromebooks	
Google Workspace for Education	
Seesaw for Schools	Some activities in this unit are made possible by a paid Seesaw for Schools subscription including the robust assessment component.
Word Processing Expectations by Developmental Level	From Ten Things on Tuesday blog by Erin Kramer for teacher reference
Article on Supporting a Digital Writing Process	From Ten Things on Tuesday blog by Erin Kramer for teacher reference
Technology Explorers Poster Technology Explorer Lesson Plan	More info available on Ten Things on Tuesday
● Ten Collaborative Project Ideas	From Ten Things on Tuesday blog by Erin Kramer for teacher reference
Google Docs Learning Center	
Article on Tips for Creating Effective Slideshows	From Ten Things on Tuesday blog by Erin Kramer for teacher reference

Suggested Activities for Differentiation

Suggested Strategies and Practices that Support Students with Disabilities:
- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Suggested Strategies and Practices that Support English Language Learners:
- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension

- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced   English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Students At Risk of Failure:
- Include choice whenever possible
- Allow students to incorporate their interests into their activities
- Small group instruction
- Scaffolding
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Students with 504 Plans:
- Chunked content
- Frequent breaks
- Written and/or visual instructions to supplement whole group lessons
- Small group instruction
- Scaffolding
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Specific Strategies and Practices that Support Gifted & Talented Students:
- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Unit 2: COMPUTER SCIENCE/CODING

Stage 1: Desired Results

Unit Title: Computer Science/Coding

Unit Summary: This unit aims to develop computational thinking, or the thought process involved in expressing solutions as computational steps that can be carried out by a computer. Students must demonstrate an ability to understand the capabilities of computers, formulate problems addressed by a computer, and design algorithms that a computer can execute.

Unit 1 Learning Targets

NJSLS Grade Level Standards:

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.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.

8.1.5.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.

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 shortcomings it might have.

8.2.5.ITH.3: Analyze the effectiveness of a new product or system and identify the positive and 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.

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.

Curricular Connections

Career Readiness, Life Literacies, & Key Skills *(CLKS)*:

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.

9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

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.4: Compare and contrast artifacts produced individually to those developed collaboratively.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Computer Science & Design Thinking *(CS & DT)*:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

Interdisciplinary Connections:

ELA Anchor Standards

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Math

MP1 Make sense of problems and persevere in solving them.

Social Studies

6.1.5.CivicsCM.3: Identify the types of behaviors that promote collaboration and problem solving with others who have different perspectives.

VPA

1.2.5 Media Arts Anchor Standard 1: Generating and conceptualizing ideas

1.2.5 Media Arts Anchor Standard 2: Organizing and developing ideas

1.2.5 Media Arts Anchor Standard 3: Refining and completing products

1.2.5 Media Arts Anchor Standard 4: Selecting, analyzing, and interpreting work

1.2.5 Media Arts Anchor Standard 5: Developing and refining techniques and models or steps needed to create products

Unit Essential Questions:	**Unit Enduring Understandings:**
What is technology and how does it work?	An algorithm is a sequence of steps designed to accomplish a specific task.
How can we use technology to create original and innovative works, ideas, and solutions?	Algorithms are translated into programs, or code, to provide instructions for computing devices. Algorithms and programming control all computing systems, empowering people to communicate with the world in new ways and solve compelling problems.

	Digital tools provide enhanced opportunities to design innovative solutions and express ideas creatively.
Content-Students will know:	**Skills-Students will be able to:**
Computing devices may be connected to other devices to form a system as a way to extend their capabilities.	Identify the difference between hardware and software and create a model of the system they use in school including the peripheral devices.
Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information).	Compare algorithms and select the most appropriate one.
Different algorithms can achieve the same result.	Create programs with sequences, loops, events, conditionals, and variables.
Some algorithms are more appropriate for a specific use than others.	Debug errors in an algorithm.
Programming languages provide variables, which are used to store and modify data.	Modify, remix, or incorporate pieces of existing programs into one's own work.
A variety of control structures are used to change the flow of program execution (e.g., sequences, events, loops, conditionals).	
Programs can be broken down into smaller parts to facilitate their design, implementation, and review. Programs can also be created by incorporating smaller portions of programs that already exist.	
Individuals develop programs using an iterative process involving design, implementation, testing, and review.	

Stage 2: Evidence of Student Learning

Summative Assessments:
- Digital Assessment folder
- **Teacher Dashboard** of online coding programs (i.e. Kodable, Code.org).
- **Projects:** Creativity and problem solving are important 21st century skills that can't easily be measured with a quiz. Use projects, like Design a Kodable Fuzz, to see how students apply their newfound knowledge in creative ways
- **Art Exercises:** While some students might thrive with written assessments, others might need a visual outlet. Similar to projects, art activities like Design Your Hero or Create a Comic Strip, encourage personal expression.
- Create an animation using computer programming software (i.e. Scratch Animate Your Name, and Code.org Creativity Lab)

Formative Assessments:
- Digital Assessment folder
- **Teacher Dashboard** of online coding programs (i.e. Kodable, Code.org).

- **Quick-check levels** include multiple choice or short answer questions. These are usually given after students have had a chance to explore a concept. They check for common misunderstandings before students move on to the next lesson or task. Students are able to get feedback from the system immediately, and revise their answers before moving on to the next task. Each quick-check level includes teacher notes detailing the learning objective being assessed.
- **Programming levels** challenge students to complete a small programming task.
- Graph Paper Programming By "programming" one another to draw pictures, students will begin to understand what programming is really about.

Alternative Assessments:
- Class discussions provide an opportunity for group sensemaking and for teachers to informally assess student understanding.
- Teacher observations

Stage 3: Core Instructional Plan & Resources			
Standard:	**Skill:**	**Learning Activities:**	**Timeline:**
8.1.5.CS.1 8.1.5.CS.2 8.1.5.CS.3 8.1.5.IC.1 8.1.5.IC.1 8.2.5.ITH.1 8.2.5.ITH.2 8.2.5.ITH.3 8.2.5.ITH.4 8.2.5.NT.2 9.4.5.CT.2 9.4.5.CT.3 9.4.5.TL.1	Identify the difference between hardware and software and create a model of the system they use in school including the peripheral devices.	- Respond to essential questions and other exit tickets. - Lesson based on the understanding between hardware and software as it is connected in computer programming. - Respond to a Flipgrid post by adding a video comment. - BrainPop Jr. Computer Programming Lesson - Find the Technology - Computer Science is Changing Everything - Robot Research - Robo Pen and the Secret Writing Device Seesaw Activity - Intro video for vocab: Device, hardware, software - Practice: Input/Output - Connect: Design New Hardware - Show What You Know: Pick a device and explain how the hardware and software work together to receive, process, and output information. - Extend: Build a prototype of your hardware, test, and improve.	1-2 weeks - continual discussion throughout the unit.
8.1.5.AP.1	Compare algorithms and select the most appropriate one.	Code.org Challenge Puzzles: Dance Party Brainstorm with peers other possible algorithm solutions.	1-2 weeks - continual

9.4.5.CT.1		Use paired-programming to collaboratively solve algorithms.	discussion throughout the unit.
8.1.5.AP.1 8.1.5.AP.2 8.1.5.AP.3 8.1.5.AP.6 9.4.5.CT.1 9.4.5.CT.4	Create programs with sequences, loops, events, conditionals, and variables.	Kodable: Conditionals Kodable: Loops Kodable: Functions Kodable: Variables Events Poster Use with code.org Code Your Own Sports Game Code.org Events Video Can use with code.org Disney Infinity Play Lab Events Coding Formative Review (questions designed to be used with Classcraft Boss Battles, but can be used as a presentation instead) Variables and Conditionals Poster Use with Hour of Code: Space Variables Poster Invader game maker tutorial Variables and Conditionals Formative Review (designed to be used with Classcraft Elda Training Grounds, but can be used without it)	4+ weeks - continual discussion throughout the unit.
8.1.5.AP.1 8.1.5.AP.4 8.2.5.ITH.2 8.2.5.NT.1 9.4.5.CT.1 9.4.5.CT.4	Debug errors in an algorithm.	Kodable: Debugging Levels Kodable Debugging Code.org: Debugging Computer Science Changing Everything AI: Code.org AI:Code.org: Getting Started Videos	4+ weeks - continual discussion throughout the unit.
8.1.5.AP.1 8.1.5.AP.5 8.2.5.NT.3 8.2.5.NT.4 9.4.5.CT.1 9.4.5.CT.4 9.4.5.TL.4 9.4.5.TL.5	Modify, remix, or incorporate pieces of existing programs into one's own work.	Student Design Studio in Code.org accounts Completion of LegoMindstorm Robotics Pixel Coding	1-2 weeks - continual discussion throughout the unit.

Core Instructional & Supplemental Materials	
Materials	**Notes**

Chromebooks	
Google Workspace for Education	
Seesaw for Schools	Some activities in this unit are made possible by a paid Seesaw for Schools subscription including the robust assessment component.
Code.org	
Kodable	
Codalicious/Ellipsis	
Scratch	
Variables for Kids article by Juni Learning	Great article on variables in math, science, and coding and how they connect
How to Teach Variables to Kids from Tynker	Article with excellent examples

Suggested Activities for Differentiation

Suggested Strategies and Practices that Support Students with Disabilities:
- Use of visual and multisensory formats
- Use of assisted technology
- Use of prompts
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Suggested Strategies and Practices that Support English Language Learners:
- Pre-teaching of vocabulary and concepts
- Visual learning, including graphic organizers
- Use of cognates to increase comprehension
- Teacher modeling
- Pairing students with beginning English language skills with students who have more advanced   English language skills
- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Students At Risk of Failure:
- Include choice whenever possible
- Allow students to incorporate their interests into their activities
- Small group instruction
- Scaffolding

- Modification of content and student products
- Testing accommodations
- Authentic assessments

Students with 504 Plans:
- Chunked content
- Frequent breaks
- Written and/or visual instructions to supplement whole group lessons
- Small group instruction
- Scaffolding
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Specific Strategies and Practices that Support Gifted & Talented Students:
- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Unit 3: DIGITAL AND GLOBAL CITIZENSHIP

Stage 1: Desired Results

Unit Title: Digital and Global Citizenship

Unit Summary: This unit aims to develop good digital citizens who are a part of a global society of interconnected users. As such, students must demonstrate an ability to behave safely, responsibly, and respectfully when communicating and collaborating in their virtual environments. As global citizens, students explore concerns about the impact of technology on the natural world.

Unit 1 Learning Targets

NJSLS Grade Level Standards:

8.1.5.NI.1: Develop models that successfully transmit and receive information using both wired and wireless methods.

8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.

8.1.5.IC.1: Identify computing technologies that have impacted how individuals live and work and describe the factors that influenced the changes.

8.2.5.EC.1: Analyze how technology has contributed to or reduced inequities in local and global communities and determine its short- and long-term effects.

9.4.5.GCA.1: Analyze how culture shapes individual and community perspectives and points of view.

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.DC.1: Explain the need for and use of copyrights.

9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.

9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.

9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.

9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

9.4.5.IML.4: Determine the impact of implicit and explicit media messages on individuals, groups, and society as a whole.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.DC.8: Propose ways local and global communities can engage digitally to participate in and promote climate action.

8.2.5.ETW.1: Describe how resources such as material, energy, information, time, tools, people, and capital are used in products or systems.

8.2.5.ETW.2: Describe ways that various technologies are used to reduce improper use of resources.

8.2.5.ETW.3: Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.

8.2.5.ETW.4: Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.

8.2.5.ETW.5: Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Curricular Connections

Career Readiness, Life Literacies, & Key Skills *(CLKS)*:

Main focus of this unit: Included above.

Computer Science & Design Thinking *(CS & DT)*:

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

Interdisciplinary Connections:

ELA Anchor Standards

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.

NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

NJSLSA.W10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

NJSLSA.SL4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

NJSLSA.SL6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Social Studies

6.1.5.CivicsPI.1: Describe ways in which people benefit from and are challenged by working together, including through government, workplaces, voluntary organizations, and families.

6.1.5.CivicsPD.3: Explain how and why it is important that people from diverse cultures collaborate to find solutions to community, state, national, and global challenges.

6.1.5.CivicsPR.3: Evaluate school and community rules, laws and/or policies and determine if they meet their intended purpose.

6.1.5.CivicsHR.4: Identify actions that are unfair or discriminatory, such as bullying, and propose solutions to address such actions.

6.1.5.CivicsCM.1: Use a variety of sources to describe the characteristics exhibited by real and fictional people that contribute(d) to the well-being of their community and country.

6.1.5.CivicsCM.2: Use evidence from multiple sources to construct a claim about how self discipline and civility contribute to the common good.

6.1.5.CivicsCM.3: Identify the types of behaviors that promote collaboration and problem solving with others who have different perspectives.

6.1.5.EconGE.1: Explain how the development of communication systems has led to increased collaboration and the spread of ideas throughout the United States and the world.

Unit Essential Questions:	Unit Enduring Understandings:
What are my responsibilities when using technology? What impacts do using digital devices have on my health and well-being?	Technology use can have positive or negative impact on both users and those affected by their use.

How can I be safe and kind online? How do we use digital media and environments to communicate and work collaboratively? What is a digital footprint, and what does yours convey? How does global citizenship affect our SEL learning?	Information is spread world-wide due to technological advancement and has an immediate impact. Effective communication and collaboration skills are necessary to interact within a global society.
Content-Students will know: Information needs a physical or wireless path to travel to be sent and received. Distinguishing between public and private information is important for safe and secure online interactions. Information can be protected using various security measures (i.e., physical and digital). The development and modification of computing technology is driven by an individual's needs and wants and can affect individuals differently. Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values. Culture and geography can shape an individual's experiences and perspectives. A new tool may have favorable or unfavorable results as well as both positive and negative effects on society. Technology spurs new businesses and careers. Intellectual property rights exist to protect the original works of individuals. It is allowable to use other people's ideas in one's own work provided that proper credit is given to the original source. Sending and receiving copies of media on the internet creates the opportunity for unauthorized use of data, such as personally owned video, photos, and music. Digital identities must be managed in order to create a positive digital footprint. Digital tools have positively and negatively changed the way people interact socially. Accurate and comprehensive information comes in a variety of platforms and formats and is the basis for effective decision-making. The technology developed for the human designed world can have unintended consequences for the environment. Technology must be continually developed and made more efficient to reduce the need for non-renewable resources.	**Skills-Students will be able to:** Identify impacts/improvements of wide-spread digital access and networking and describe the factors that have influenced the changes. Cite sources. Distinguish between images that can be reused freely and those that have copyright issues. Identify and exhibit behaviors that keep themselves and their data safe and secure online and protect their personal data Communicate respectfully and responsibly. Identify and exhibit behaviors of an upstander. Explain what to do if you are being cyberbullied. Compare and contrast online identities and discriminate between positive and negative online identities. Communicate respectfully and responsibly. Determine the author's purpose in a variety of media messages and the impact consuming that media has on the individual or group. Engage in a case study of a technology tool to determine its impact on the environment. Balance and control their internet/screen time use.

Digital engagement can improve the planning and delivery of climate change actions.	

Stage 2: Evidence of Student Learning

Summative Assessments:
- Digital Assessment folder
- Cyberbullying "Poster": Have students create a flier/poster with the call-to-action being to stand up (upstander) against cyberbullying. Use applications (i.e. Google Drawings) or unplug and create paper-based posters.
- Creative Writing; Digital Citizenship: Write a short story writing - become authors and publishers! Have students write digital citizenship themed short story books (Google Slides)

Formative Assessments:
- Digital Assessment folder
- Cyberbullying Quiz
- BrainPop Quizzes
- Digital Citizenship Jeopardy

Alternative Assessments:
- Class discussions provide an opportunity for group sensemaking and for teachers to informally assess student understanding.
- Teacher observations

Stage 3: Core Instructional Plan & Resources

Standard:	Skill:	Learning Activities:	Timeline:
8.2.5.I TH.4 8.2.5.ETW.1 8.2.5.ETW.2 8.2.5.ETW.3 8.2.5.ETW.4 8.2.5.ETW.5 9.4.5.DC.8	• Identify impacts/improvements of wide-spread digital access and networking and describe the factors that have influenced the changes.	Presentation and discussion on the causes and effects of computers/technology and global human interaction • Concept ideas: Then vs. Now: Impacts/improvements of tech on how we live and work • ID factors that influenced changes ○ reduce work, improve productivity, efficiency, led to new businesses or careers, impact on social interactions, contributed to or reduced inequities in local and global communities, impact on environment ie: pandemic Computer Science Changes Everything	2-3 weeks - continual discussion throughout the unit.

8.1.5.NI.1 9.4.5.DC.4 9.4.5.DC.7 9.4.5.IML.4 9.4.5.IML.5	Being a good online citizen- ● Communicate respectfully and responsibly. ● Identify and exhibit behaviors of an upstander. ● Explain what to do if you are being cyberbullied. ● Identify and exhibit behaviors that keep themselves and their data safe and secure online ● Compare and contrast online identities and discriminate between positive and negative online identities. ● Communicate respectfully and responsibly.	What Is Digital Citizenship? Video will briefly introduce the idea of digital citizenship What is Digital Citizenship Presentation Digital Etiquette - BrainPOP Online Safety - BrainPOP and Online Quiz Transfer knowledge of "being a good online citizen" through use of exploring Interland: Be Internet Awesome: ● Tower of Treasure: Secure Your Secrets ● Mindful Mountain:Share with Care ● Kind Kingdom: It's Cool to be Kind ● Reality River: Don't Fall For Fake Cyberbullying Video: Your Life Online:Making Good Decisions	4-5 weeks - continual discussion throughout the unit.
8.1.5.NI.2 9.4.5.DC.5	Determine the author's purpose in a variety of media messages and the impact consuming that media has on the individual or group.	Digital Passport: Common Sense - Security/Multitasking/Upstander/Privacy/Search/Creative Credit Seesaw: Isha and Dog Avoid Clickbait	2-3 weeks - continual discussion throughout the unit.
8.1.5.I C.1 8.2.5.E C.1 9.4.5.GCA.1 9.4.5.DC.6 9.4.5.DC.7	● Digital Footprint: ● Predict positive and negatives of a digital footprint	Live my Digital: Digital Footprint Common Sense Education What is your Digital Footprint? Digital Footprint: "Our Online Tracks" Digital Footprint Board Game: Apply knowledge of internet use Discussion and use of graphic organizer on how different social media platforms can affect relationships with the global communication environment. Seesaw: Nico and Dog's Digital Identity	1-2 weeks - continual discussion throughout the unit.

9.4.5.DC.1 9.4.5.DC.2 9.4.5.DC.3	Identify the need for and use of copyrights. ● Distinguish between images that can be reused freely and those that have copyright issues. ● Cite sources.	Play the Mix-n-Mash game in Digital Passport™ by Common Sense Education to introduce key concepts of this lesson. Digital Citizenship: Rights and Responsibilities Lesson ● Perform a reverse image search to identify the original create of the image and discuss ● what copyright license does the creative ork have ● Define "copyright" and explain how it applies to creative work. ● Describe their rights and responsibilities as creators. ● Apply copyright principles to real-life scenarios	1-2 weeks - continual discussion throughout the unit.

Core Instructional & Supplemental Materials

Materials	Notes
Common Sense Media	
Google Be Internet Awesome/Interland	
The Technology Tail by Julia Cook	
K-12 Computer Science Framework Statements by Grade Band	
Prodigy Education: 7 Digital Citizenship Skills Your Students Need to Know	
Infographic: Digital Citizenship for Students	

Suggested Activities for Differentiation

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● Use of visual and multisensory formats
● Use of assisted technology
● Use of prompts
● Modification of content and student products
● Testing accommodations
● Authentic assessments

Suggested Strategies and Practices that Support English Language Learners:
● Pre-teaching of vocabulary and concepts
● Visual learning, including graphic organizers
● Use of cognates to increase comprehension
● Teacher modeling
● Pairing students with beginning English language skills with students who have more advanced   English language skills

- Scaffolding
- Word walls
- Sentence frames
- Think-pair-share
- Cooperative learning groups

Students At Risk of Failure:
- Include choice whenever possible
- Allow students to incorporate their interests into their activities
- Small group instruction
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Students with 504 Plans:
- Chunked content
- Frequent breaks
- Written and/or visual instructions to supplement whole group lessons
- Small group instruction
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- Authentic assessments

Specific Strategies and Practices that Support Gifted & Talented Students:
- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios

Unit 4: RESEARCH, DATA, AND INNOVATION

Stage 1: Desired Results

Unit Title: Research, Data, and Innovation

Unit Summary: This unit aims to empower learners to access, retrieve and produce well managed resources. Learners will pursue and create relevant information using the opportunities of high-quality materials. A basic understanding of ethical use of information will develop. In addition to digital research, students will recognize both data collection and the engineering design process as relevant ways to gather information.

Unit 1 Learning Targets

NJSLS Grade Level Standards:

NJSLSA.W7. Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.

NJSLSA.W8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions.

9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity.

9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process.

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.

9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.1: Explain the need for and use of copyrights.

9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.

9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.4: Determine the impact of implicit and explicit media messages on individuals, groups, and society as a whole.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.IML.7: Evaluate the degree to which information meets a need including social emotional learning, academic, and social.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.

8.1.5.DA.2: Compare the amount of storage space required for different types of data.

8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data.

8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim.

8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

8.2.5.ED.1: Explain the functions of a system and its subsystems.

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.

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.

Curricular Connections

Career Readiness, Life Literacies, & Key Skills *(CLKS)*:

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.

Computer Science & Design Thinking (*CS & DT***):**

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

Interdisciplinary Connections:

ELA Anchor Standards

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.

NJSLSA.L4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

NJSLSA.L6. Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

Math

MP1 Make sense of problems and persevere in solving them.

MP2 Reason abstractly and quantitatively.

MP3 Construct viable arguments and critique the reasoning of others.

MP4 Model with mathematics.

Science

3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3 Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources, environment, and address climate change issues.

Unit Essential Questions:	Unit Enduring Understandings:
What are the similarities and differences between real and cyber communities?	The digital world offers a variety of information.
How can technology be used to learn new information?	Information is spread world-wide due to technological advancement and has an immediate impact.
What are an individual's responsibilities for using technology?	The ability to discern accurate and valid information is a necessary skill for both everyday life and in many careers.
Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?	

Content-Students will know:	Skills-Students will be able to:
Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions.	Research, collect, organize, and display data in order to highlight relationships or support a claim
Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills.	Compare the amount of storage space required for different types of data
The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.	Organize and present collected data visually to communicate insights gained from different views of the data
Intellectual property rights exist to protect the original works of individuals.	Propose cause and effect relationships, predict outcomes, or communicate ideas using data
It is allowable to use other people's ideas in one's own work provided that proper credit is given to the original source.	Evaluate different research/internet sources for factual information
Sending and receiving copies of media on the internet creates the opportunity for unauthorized use of data, such as personally owned video, photos, and music.	Experiment with different keyword searches and compare their results. ‡
	Refine their searches by using multiple words, synonyms, and alternative words and phrases.
Digital tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate.	Draw inferences to explain their search results.
Digital tools can be used to modify and display data in various ways that can be organized to communicate ideas.	Explain the need for and use of copyrights in research
Accurate and comprehensive information comes in a variety of platforms and formats and is the basis for effective decision-making.	Adapt a research project topic/idea into a grade appropriate multimedia presentation (i.e. Google Slides, Google Sites)
Specific situations require the use of relevant sources of information.	Locate and synthesize information from an online resource and transfer notes to another digital tool.
Different digital tools have different purposes.	
The development and modification of computing technology is driven by an individual's needs and wants and can affect individuals differently.	
Data can be organized, displayed, and presented to highlight relationships.	
The type of data being stored affects the storage requirements.	
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.	

Many factors influence the accuracy of inferences and predictions. Engineering design is a systematic and creative process of communicating and collaborating to meet a design challenge. Often, several design solutions exist, each better in some way than the others. Engineering design requirements include desired features and limitations that need to be considered. Technology innovation and improvement may be influenced by a variety of factors. Engineers create and modify technologies to meet people's needs and wants; scientists ask questions about the natural world. Technology spurs new businesses and careers. Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values.	

Stage 2: Evidence of Student Learning

Summative Assessments:
- Digital Assessment folder
- Completed Research Project

Formative Assessments:
- Digital Assessment folder
- Completed Google Research Forms
- Completed Graphic Organizers
- Completed Key Word Search Activity

Alternative Assessments:
- **Class discussions:** provide an opportunity for group sensemaking and for teachers to informally assess student understanding.
- **Teacher observations**
- **Self Assessments**

Stage 3: Core Instructional Plan & Resources

Standard:	Skill:	Learning Activities:	Timeline:
8.1.5.DA.1	Research, collect, organize, and display data in order to highlight relationships or support a claim.	Keyboarding Spreadsheet	1-2 weeks
8.1.5.DA.2	Compare the amount of storage space required for different types of data.	Video: What is Computer Storage and How is it Used?	1-2 weeks

8.1.5.DA.3 8.2.5.ED.1 9.4.5.IML.3	Organize and present collected data visually to communicate insights gained from different views of the data	Cultural Heritage Project - Family Tree and Cultural Report: Rubric Seesaw Visual Data Talks	1-2 weeks - throughout unit
8.1.5.DA.4 8.1.5.DA.5 9.4.5.CI.1 9.4.5.CI.2 9.4.5.CI.3 9.4.5.CT.2 9.4.5.CT.4	Propose cause and effect relationships, predict outcomes, or communicate ideas using data on a global level.	Keyboarding Spreadsheet Climate Change Overview-Pear Deck	1-2 weeks - throughout unit
NJSLSA.W7 NJSLSA.W8 NJSLSA.W9 9.4.5.CI.4 9.4.5.CT.3 9.4.5.IML.6	Evaluate different research/internet sources for factual information	Evaluating Online Sources Digital Breakout: Evaluating Sources On This Day Project	1 week - throughout unit
NJSLSA.W8	Experiment with different keyword searches and compare their results. ‡	The Key to Keywords (4-5) Searching with Key Words Searching with Key Words 2	1-2 weeks - throughout unit
NJSLSA.W8 9.4.5.CT.1	Refine their searches by using multiple words, synonyms, and alternative words and phrases.	Using Keywords (2-3) The Key to Keywords (4-5)	1-2 weeks - throughout unit
NJSLSA.W7 NJSLSA.W8 NJSLSA.W9 8.1.5.ED.2 9.4.5.CI.3 9.4.5.IML.4 9.4.5.IML.5 9.4.5.IML.6 9.4.5.IML.7	Draw inferences and collaborate with peers to explain their search results.	Google Search and Scavenger Hunt Advanced Internet Searching Tools	1-2 weeks - throughout unit
9.4.5.DC.1 9.4.5.DC.2 9.4.5.DC.3 9.4.5.DC.4	Explain the need for and use of copyrights in research	Presentation: Copyright Digital Breakout: Work Cited & Plagiarism On This Day Project-Understanding a Bibliography	1-2 weeks - throughout unit
8.2.5.ED.3 8.2.5.ED.4 8.2.5.ED.5	Adapt a research project topic/idea into a grade appropriate multimedia presentation (i.e. Google Slides, Google Sites)	Inventor Research On This Day Project Robot Research	1-2 weeks - throughout unit

		Genius Hour	
8.2.5.ED.6 8.2.5.NT.1 8.2.5.NT.2 8.2.5.NT.3 8.2.5.NT.4		Genius Hour ● Generating Ideas ● Student Preparation Guide ● Website Tutorial Links	
NJSLSA.W8 9.4.5.IML.2 9.4.5.TL.2	Locate and synthesize information from an online resource and transfer notes to another digital tool.	On This Day Time Capsule On This Day Project Research: Digital Brochure Genius Hour ● Generating Ideas ● Student Preparation Guide ● Website Tutorial Links	1-2 weeks - throughout unit

Core Instructional & Supplemental Materials	
Materials	**Notes**
But I Read it on the Internet! by Toni Buzzeo	
Chromebooks	

Suggested Activities for Differentiation

Suggested Strategies and Practices that Support Students with Disabilities:
- Use of visual and multisensory formats
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- Testing accommodations
- Authentic assessments

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Students At Risk of Failure:
- Include choice whenever possible
- Allow students to incorporate their interests into their activities
- Small group instruction
- Scaffolding
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Students with 504 Plans:
- Chunked content
- Frequent breaks
- Written and/or visual instructions to supplement whole group lessons
- Small group instruction
- Scaffolding
- Modification of content and student products
- Testing accommodations
- Authentic assessments

Specific Strategies and Practices that Support Gifted & Talented Students:
- Adjusting the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher-order thinking skills
- Interest-based content
- Student-driven instruction
- Real-world problems and scenarios