



**Third 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
<p><b>Unit 1: Digital Communication</b> This unit aims to develop effective communicators that can use a variety of technology tools and transfer their skills into new contexts.</p>	MP 1 and year-long integration
<p><b>Unit 2: Computer Science/Coding</b> 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.</p>	MP 2 and year-long integration
<p><b>Unit 3: Digital and Global Citizenship</b> 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.</p>	MP 3 and year-long integration
<p><b>Unit 4: Research, Data, and Innovation</b> 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.</p>	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.3.6. With guidance and support from adults, use technology to produce and publish writing as well as to interact and collaborate with others.

SL.3.1.C. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.

SL.3.4. Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

SL.3.5. Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

SL.3.6. Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

L.3.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

A. Capitalize appropriate words in titles.

B. Use commas in addresses.

C. Use commas and quotation marks in dialogue.

D. Form and use possessives.

E. Use conventional spelling for high-frequency and other studied words and for adding suffixes to base words (e.g., sitting, smiled, cries, happiness).

F. Use spelling patterns and generalizations (e.g., word families, position-based spellings, syllable patterns, ending rules, meaningful word parts) in writing words.

G. Consult reference materials, including beginning dictionaries, as needed to check and correct spellings.

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:**

How do I choose which tech tools to use and when to use them?

**Unit Enduring Understandings:**

The form of communication (i.e., text, verbal, visual) is influenced by the limits and capabilities of the channel used to communicate.

<p>How can technology be used to communicate?  How can I communicate so others can understand me?  How can I transfer what I know to new technological situations/experiences?  How can digital tools be used for creating original and innovative works, ideas, and solutions?</p>	<p>Communication is a two-way interactive process between the message sender and the message receiver.  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.</p>
<p><b>Content-Students will know:</b>  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.  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.  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.  Digital tools can be used to modify and display data in various ways that can be organized to communicate ideas.  Different digital tools have different purposes.  Collaborating digitally as a team can often develop a better artifact than an individual working alone.</p>	<p><b>Skills-Students will be able to:</b>  Type using the home row on a keyboard.  Compose text digitally.  Type using grade level conventions.  Use spelling and grammar check features.  Use formatting tools to change the page setup, enhance the text, and include and properly resize graphics, symbols, and images.  Use tools for editing or collaborating (e.g., highlighting and commenting features).  Use multimedia tools to communicate an idea (e.g., audio, video, and slideshows)  Compare and contrast communication tools and select the appropriate tool for the task.  Add CCO 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.</p>

## Stage 2: Evidence of Student Learning

### Summative Assessments:

[Google Docs Test](#)

[Google Docs Test 2](#)

### Formative Assessments:

[Monthly typing tests](#) with self-reporting, self-evaluation, and goal setting.

[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](#)

[Google Docs Basic Skills I Can Self-Evaluation](#)

[Google Docs Intermediate Skills I Can Self-Evaluation](#)

**Alternative Assessments:**

Make a card for someone.

### Stage 3: Core Instructional Plan & Resources

Standard:	Skill:	Learning Activities:	Timeline:
W.3.6 9.4.2.TL.3	Type using the home row on a keyboard.	<ul style="list-style-type: none"><li>• Typing Club</li></ul>	All year
SL.3.1.C SL.3.4 SL.3.6 W.3.6 L.3.2 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. <ul style="list-style-type: none"><li>• Question, respond to, or comment on another's work or ideas adding new ideas to the conversation.</li><li>• Communicate respectfully and responsibly.</li></ul>	<ul style="list-style-type: none"><li>• Mini-lesson on making positive comments directly linked to the subject of the work vs. comments that just say "good job:" <a href="#">Commenting Practice</a></li><li>• View and comment on others' work in your class or other classes through Seesaw blogs. See Materials below for Collaborative Project Ideas.</li><li>• Comment on your own work telling what you are proud of or what you could change next time.</li><li>• Respond to a Flipgrid post by adding a video comment.</li><li>• Write a comment on Padlet posts.</li></ul>	All year
W.3.6 L.3.2 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.	<ul style="list-style-type: none"><li>• Respond to essential questions and other exit tickets.</li><li>• Brainstorm for writing pieces using lists.</li><li>• Use digital graphic organizers.</li><li>• Write opinion, informational, and narrative texts.</li><li>• Write to demonstrate understanding in content areas.</li><li>• <a href="#">Make a card</a></li></ul>	All year
W.3.6 L.3.2 9.4.5.TL.3 9.4.5.TL.4 9.4.5.TL.5 9.4.5.IML.2	Use formatting tools, spelling and grammar check features, and tools for editing and collaborating.	<ul style="list-style-type: none"><li>• <a href="#">My Wish Google Docs Practice</a></li><li>• Students self-assess <a href="#">Basic Skills</a>   <a href="#">Intermediate Skills</a></li><li>• Utilize and continue to refer to <a href="#">Google Docs Learning Center</a> to master formatting and editing skills.</li></ul>	5-6 weeks

9.4.5.IML.3 9.4.5.CI.1 9.4.5.CI.2		<ul style="list-style-type: none"> <li>• Mini-lesson on responding to and resolving comments.</li> <li>• Take action on teacher comments for editing work.</li> </ul>	
9.4.5.DC.1 9.4.5.DC.2 9.4.5.DC.3	Add CCO or other Creative Commons media and cite sources.	<ul style="list-style-type: none"> <li>• Refer to <a href="#">Google Docs Learning Center Advanced Skills</a> to create citations.</li> </ul>	All year
W.3.6 SL.3.4 SL.3.5 SL.3.6 9.4.5.DC.3 9.4.5.IML.2 9.4.5.IML.3	Use multimedia tools to communicate an idea.	<ul style="list-style-type: none"> <li>• Google Slides presentation linked to an informational writing unit or a science or social studies topic.</li> <li>• 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.</li> <li>• Use ABCYa animate to add to a writing piece or explain a content area concept.</li> </ul>	All year
9.4.5.TL.1	Compare and contrast communication tools and select the appropriate tool for the task.	<ul style="list-style-type: none"> <li>• Mini lesson to review the tools students know how to use and allow them to select the tool for their activity. Example: Students are working on magnets in science and are <a href="#">brainstorming a solution for a problem that can be solved with a magnet</a>. They will select the digital tool to use in order to <a href="#">present their ideas to the class</a>.</li> </ul>	All year

## 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.
<a href="#">Word Processing Expectations by Developmental Level</a>	From Ten Things on Tuesday blog by Erin Kramer for teacher reference

<a href="#">Article on Supporting a Digital Writing Process</a>	From Ten Things on Tuesday blog by Erin Kramer for teacher reference
<a href="#">Technology Explorers Poster</a> <a href="#">Technology Explorer Lesson Plan</a>	More info available on <a href="#">Ten Things on Tuesday</a>
<ul style="list-style-type: none"> <li>• <a href="#">Ten Collaborative Project Ideas</a></li> </ul>	From Ten Things on Tuesday blog by Erin Kramer for teacher reference
<a href="#">Google Docs Learning Center</a>	

## 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:**

What is technology and how does it work?

How can we use technology to create original and innovative works, ideas, and solutions?

**Unit Enduring Understandings:**

An algorithm is a sequence of steps designed to accomplish a specific task. 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:**

Computing devices may be connected to other devices to form a system as a way to extend their capabilities.

Software and hardware work together as a system to accomplish tasks (e.g., sending, receiving, processing, and storing units of information).

Different algorithms can achieve the same result.

Some algorithms are more appropriate for a specific use than others.

Programming languages provide variables, which are used to store and modify data.

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.

**Skills-Students will be able to:**

Identify the difference between hardware and software.

Compare algorithms and select the most appropriate one.

Create programs with sequences, loops, events, and variables.

Debug errors in an algorithm.

Modify, remix, or incorporate pieces of existing programs into one's own work.

## 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.	<ul style="list-style-type: none"> <li>• Respond to essential questions and other exit tickets.</li> <li>• Lesson based on the understanding between hardware and software as it is connected in computer programming.</li> <li>• Respond to a Flipgrid post by adding a video comment.</li> <li>• <a href="#">BrainPop Jr. Computer Programming Lesson</a></li> <li>• <a href="#">Find the Technology</a></li> <li>• <a href="#">Computer Science is Changing Everything</a></li> <li>• <a href="#">Robot Research</a></li> <li>• Link this lesson with eReader Environmental Impact case-study in Digital/Global Citizenship Unit</li> </ul>	1-2 weeks - continual discussion throughout the unit.
8.1.5.AP.1 9.4.5.CT.1	Compare algorithms and select the most appropriate one.	Code.org Challenge Puzzles: <a href="#">Dance Party</a> Brainstorm with peers other possible algorithm solutions. Use paired-programming to collaboratively solve algorithms.	1-2 weeks - continual 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	Create programs with sequences, loops, events, and variables.	<a href="#">Kodable: Loops</a> <a href="#">Kodable: Variables</a>  <a href="#">Events Poster</a> Use with Flappy Code	4+ weeks - continual discussion throughout the unit.

9.4.5.CT.4		<a href="#">Code.org Events Video</a> Can use with code.org Disney Infinity Play Lab Video: <a href="#">Events in Flappy Code</a> <a href="#">Variables Poster</a> Use with code.org Flappy Code tutorial	
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 <a href="#">Kodable Debugging</a> <a href="#">Code.org: Debugging</a> <a href="#">Computer Science Changing Everything</a> <a href="#">AI: Code.org</a>	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 <a href="#">Pixel Coding</a> Post student-made games on Seesaw and have students play and give comments. Afterwards, students make a 2.0 version of their game using what they learned from the comments and what they learned by playing others' games.	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.
<a href="#">Code.org</a>	
<a href="#">Kodable</a>	
<a href="#">Codalicious/Ellipsis</a>	
<a href="#">Scratch</a>	
<a href="#">Variables for Kids article by Juni Learning</a>	Great article on variables in math, science, and coding and how they connect
<a href="#">How to Teach Variables to Kids from Tynker</a>	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:**

What are my responsibilities when using technology?

What impacts do using digital devices have on my health and well-being?

**Unit Enduring Understandings:**

Technology use can have positive or negative impact on both users and those affected by their use.

<p>How can I be safe and kind online?</p> <p>How do we use digital media and environments to communicate and work collaboratively?</p> <p>What is a digital footprint, and what does yours convey?</p> <p>How does global citizenship affects our SEL learning?</p>	<p>Information is spread world-wide due to technological advancement and has an immediate impact.</p> <p>Effective communication and collaboration skills are necessary to interact within a global society.</p>
<p><b>Content-Students will know:</b></p> <p>Information needs a physical or wireless path to travel to be sent and received.</p> <p>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).</p> <p>The development and modification of computing technology is driven by an individual's needs and wants and can affect individuals differently.</p> <p>Technological choices and opportunities vary due to factors such as differences in economic resources, location, and cultural values.</p> <p>Culture and geography can shape an individual's experiences and perspectives.</p> <p>A new tool may have favorable or unfavorable results as well as both positive and negative effects on society.</p> <p>Technology spurs new businesses and careers.</p> <p>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.</p> <p>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.</p> <p>Digital identities must be managed in order to create a positive digital footprint.</p> <p>Digital tools have positively and negatively changed the way people interact socially.</p> <p>Accurate and comprehensive information comes in a variety of platforms and formats and is the basis for effective decision-making.</p> <p>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.</p>	<p><b>Skills-Students will be able to:</b></p> <p>Identify impacts/improvements of wide-spread digital access and networking and describe the factors that have influenced the changes.</p> <p>Cite sources.</p> <p>Distinguish between images that can be reused freely and those that have copyright issues.</p> <p>Identify and exhibit behaviors that keep themselves and their data safe and secure online and protect their personal data</p> <p>Communicate respectfully and responsibly.</p> <p>Identify and exhibit behaviors of an upstander.</p> <p>Explain what to do if you are being cyberbullied.</p> <p>Compare and contrast online identities and discriminate between positive and negative online identities.</p> <p>Communicate respectfully and responsibly.</p> <p>Determine the author's purpose in a variety of media messages and the impact consuming that media has on the individual or group.</p> <p>Engage in a case study of a technology tool to determine its impact on the environment.</p> <p>Balance and control their internet/screen time use.</p>

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:
8.1.5.NI.1	Develop models that successfully transmit and receive information using both wired and wireless methods.	<a href="#">BrainPop Internet Video with Review built in</a>	1 week
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	<ul style="list-style-type: none"> <li>• Identify impacts/improvements of wide-spread digital access and networking and describe the factors that have influenced the changes.</li> </ul>	Presentation and discussion on the causes and effects of computers/technology and global human interaction <ul style="list-style-type: none"> <li>• Concept ideas: Then vs. Now: Impacts/improvements of tech on how we live and work</li> <li>• ID factors that influenced changes               <ul style="list-style-type: none"> <li>○ 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</li> </ul> </li> </ul>	2-3 weeks - continual discussion throughout the unit.

		<a href="#">Computer Science Changes Everything</a> <a href="#">Seesaw Activity with Epic Book collection</a>	
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- <ul style="list-style-type: none"> <li>Communicate respectfully and responsibly.</li> <li>Identify and exhibit behaviors of an upstander.</li> <li>Explain what to do if you are being cyberbullied.</li> <li>Identify and exhibit behaviors that keep themselves and their data safe and secure online</li> <li>Compare and contrast online identities and discriminate between positive and negative online identities.</li> <li>Communicate respectfully and responsibly.</li> </ul>	<a href="#">What Is Digital Citizenship?</a> Video will briefly introduce the idea of digital citizenship  <a href="#">What is Digital Citizenship Presentation</a>  <a href="#">Online Safety - BrainPOP</a> and <a href="#">Online Quiz</a>	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.	<a href="#">Digital Passport: Common Sense</a> - Security/Multitasking/Upstander/Privacy/Search/Creative Credit	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: <ul style="list-style-type: none"> <li>Predict positive and negatives of a digital footprint</li> </ul>	<a href="#">Common Sense Education What is your Digital Footprint?</a>  <a href="#">Digital Footprint: "Our Online Tracks"</a>  <a href="#">Digital Footprint Board Game</a> : Apply knowledge of internet use  Discussion and use of graphic organizers on how different social media platforms can affect relationships with the global communication environment.	1-2 weeks - continual discussion throughout the unit.
8.1.5.IC.1 8.2.5.EC.1 8.2.5.ITH.4 9.4.5.DC.8 8.2.5.ETW.1 8.2.5.ETW.2 <b>8.2.5.ETW.4</b> <b>8.2.5.ETW.5</b>	<ul style="list-style-type: none"> <li>Engage in a case study of a technology tool to determine its impact on the environment.</li> </ul>	<a href="#">eReader Case Study</a>	1-2 weeks

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

## 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 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.
- 3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each

square in the bar graph might represent 5 pets.

### 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.

3-PS2-4 Define a simple design problem that can be solved by applying scientific ideas about magnets. [Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.]

3-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. [Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.] [Assessment Boundary: Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples.]

3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. [Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]

3-ESS3-1 Make a claim about the merit of a design solution that reduces the impacts of climate change and/or a weather-related hazard. [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]

### Unit Essential Questions:

What are the similarities and differences between real and cyber communities?

How can technology be used to learn new information?

What are an individual's responsibilities for using technology?

Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?

### Unit Enduring Understandings:

The digital world offers a variety of information.

Information is spread world-wide due to technological advancement and has an immediate impact.

The ability to discern accurate and valid information is a necessary skill for both everyday life and in many careers.

### Content-Students will know:

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.

### Skills-Students will be able to:

Research, collect, organize, and display data in order to highlight relationships or support a claim

Compare the amount of storage space required for different types of data

Organize and present collected data visually to communicate insights gained from different views of the data

Propose cause and effect relationships, predict outcomes, or communicate ideas using data

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 tools and media resources provide access to vast stores of information, but the information can be biased or inaccurate.

Digital tools can be used to modify and display data in various ways that can be organized to communicate ideas.

Accurate and comprehensive information comes in a variety of platforms and formats and is the basis for effective decision-making.

Specific situations require the use of relevant sources of information.

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.

Evaluate different research/internet sources for factual information

Experiment with different keyword searches and compare their results. ‡

Refine their searches by using multiple words, synonyms, and alternative words and phrases.

Draw inferences to explain their search results.

Explain the need for and use of copyrights in research

Adapt a research project topic/idea into a grade appropriate multimedia presentation (i.e. Google Slides, Google Sites)

Locate and synthesize information from an online resource and transfer notes to another digital tool.

## Stage 2: Evidence of Student Learning

### Summative Assessments:

- Digital Assessment folder

<ul style="list-style-type: none"> <li>Completed Research Project</li> </ul>
<b>Formative Assessments:</b> <ul style="list-style-type: none"> <li>Digital Assessment folder</li> <li>Completed Google Research Forms</li> <li>Completed Graphic Organizers</li> <li>Completed Key Word Search Activity</li> </ul>
<b>Alternative Assessments:</b> <ul style="list-style-type: none"> <li><b>Class discussions:</b> provide an opportunity for group sensemaking and for teachers to informally assess student understanding.</li> <li><b>Teacher observations</b></li> <li><b>Self Assessments</b></li> </ul>

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.	<a href="#">Favorite Seasons Graph</a> <a href="#">Keyboarding Spreadsheet</a> <a href="#">Typing Goals Data</a>	1-2 weeks
8.1.5.DA.2	Compare the amount of storage space required for different types of data.	Video: <a href="#">What is Computer Storage and How is it Used?</a>	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: <a href="#">Rubric</a> <a href="#">Seesaw Visual Data Talks</a>	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.	<a href="#">Favorite Seasons Graph</a> <a href="#">Keyboarding Spreadsheet</a> <a href="#">State Research Unit Project</a> <a href="#">Climate Change Overview-Pear Deck</a>	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	<a href="#">Evaluating Online Sources</a> Digital Breakout: <a href="#">Evaluating Sources</a>	1week - throughout unit

NJSLSA.W8	Experiment with different keyword searches and compare their results. ‡	<a href="#">President Fact Keyword/Internet Search Activity Using Keywords (3)</a> <a href="#">Searching with Key Words</a> <a href="#">Searching with Key Words 2</a>	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.	<a href="#">Using Keywords (2-3)</a> <a href="#">President Fact Keyword/Internet Search Activity</a>	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.	<a href="#">Google Search and Scavenger Hunt</a> <a href="#">Advanced Internet Searching Tools</a>	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: <a href="#">Copyright</a> Digital Breakout: <a href="#">Work Cited &amp; Plagiarism</a>	1-2 weeks - throughout unit
8.2.5.ED.3 8.2.5.ED.4 8.2.5.ED.5 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	Adapt a research project topic/idea into a grade appropriate multimedia presentation (i.e. Google Slides, Google Sites)	<a href="#">Inventor Research</a> <a href="#">Getting Started with Google Slides</a> <a href="#">Google Sites Student Video Tutorial</a> Research <a href="#">Graphic Organizer</a> Genius Hour <ul style="list-style-type: none"> <li>• <a href="#">Generating Ideas</a></li> <li>• <a href="#">Student Preparation Guide</a></li> <li>• <a href="#">Website Tutorial Links</a></li> </ul>	1-2 weeks - throughout unit
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.	<a href="#">On This Day Time Capsule</a> <a href="#">Research: Digital Brochure</a> <a href="#">Getting Started with Google Slides</a> <a href="#">Google Sites Student Video Tutorial</a> Genius Hour <ul style="list-style-type: none"> <li>• <a href="#">Generating Ideas</a></li> <li>• <a href="#">Student Preparation Guide</a></li> <li>• <a href="#">Website Tutorial Links</a></li> </ul>	1-2 weeks - throughout unit

## Core Instructional & Supplemental Materials

Materials	Notes
<a href="#">But I Read it on the Internet!</a> by Toni Buzzeo	
Chromebooks	

## 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