

# Technology Enrichment - Grade 2

**Unit Title:** Grade 2 -- Unit 1 -- Chromebook Navigation and Digital Citizenship

## Stage 1: Desired Results

### Standards & Indicators:

#### **NJSLS for Mathematics**

- MP 1 Make sense of problems and persevere in solving them.
- MP 2 Reason abstractly and quantitatively.
- MP 6 Attend to precision.
- 2.OA.1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 2.OA.2 With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- 2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

#### **Computer Science and Design Thinking**

| <b>Standard</b>   | <b>Performance Expectations</b>                                                                                                            | <b>Core Ideas</b>                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8.1.2.CS.1</b> | Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.           | Individuals use computing devices to perform a variety of tasks accurately and quickly.<br>Computing devices interpret and follow the instructions they are given literally.                                                                                                                                                                                                                                |
| <b>8.1.2.CS.2</b> | Explain the functions of common software and hardware components of computing systems.                                                     | A computing system is composed of software and hardware.                                                                                                                                                                                                                                                                                                                                                    |
| <b>8.1.2.CS.3</b> | Describe basic hardware and software problems using accurate terminology.                                                                  | Describing a problem is the first step toward finding a solution when computing systems do not work as expected.                                                                                                                                                                                                                                                                                            |
| <b>8.1.2.NI.1</b> | Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.        | Computer networks can be used to connect individuals to other individuals, places, information, and ideas. The Internet enables individuals to connect with others worldwide.<br><br>Connecting devices to a network or the Internet provides great benefits, but care must be taken to use authentication measures, such as strong passwords, to protect devices and information from unauthorized access. |
| <b>8.1.2.NI.2</b> | Describe how the Internet enables individuals to connect with others worldwide.                                                            |                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>8.1.2.NI.3</b> | Create a password that secures access to a device. Explain why it is important to create unique passwords that are not shared with others. |                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>8.1.2.NI.4</b> | Explain why access to devices needs to be secured.                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>8.1.2.IC.1</b> | Compare how individuals live and work before and after the implementation of new computing technology.                                     | Computing technology has positively and negatively changed the way individuals live and work (e.g., entertainment, communication, productivity tools).                                                                                                                                                                                                                                                      |

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|                    |                                                                                                                                 |                                                                                            |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>8.2.2.ITH.1</b> | Identify products that are designed to meet human wants or needs.                                                               | Human needs and desires determine which new tools are developed.                           |
| <b>8.2.2.ITH.2</b> | Explain the purpose of a product and its value.                                                                                 |                                                                                            |
| <b>8.2.2.ITH.3</b> | Identify how technology impacts or improves life.                                                                               | Technology has changed the way people live and work.                                       |
| <b>8.2.2.ITH.4</b> | Identify how various tools reduce work and improve daily tasks.                                                                 |                                                                                            |
| <b>8.2.2.ITH.5</b> | Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution. | Various tools can improve daily tasks and quality of life.                                 |
| <b>8.2.2.EC.1</b>  | Identify and compare technology used in different schools, communities, regions, and parts of the world.                        | The availability of technology for essential tasks varies in different parts of the world. |

### Career Readiness, Life Literacies and Key Skills

| <b>Standard</b>    | <b>Performance Expectations</b>                                                           | <b>Core Ideas</b>                                                                                   |
|--------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>9.2.2.CAP.1</b> | Make a list of different types of jobs and describe the skills associated with each job.  | Different types of jobs require different knowledge and skills.                                     |
| <b>9.4.2.DC.2</b>  | Explain the importance of respecting digital content of others.                           | Digital artifacts can be owned by individuals or organizations.                                     |
| <b>9.4.2.DC.3</b>  | Explain how to be safe online and follow safe practices when using the internet           |                                                                                                     |
| <b>9.4.2.DC.4</b>  | Compare information that should be kept private to information that might be made public. | Individuals should practice safe behaviors when using the Internet.                                 |
| <b>9.4.2.DC.5</b>  | Explain what a digital footprint is and how it is created.                                |                                                                                                     |
| <b>9.4.2.DC.6</b>  | Identify respectful and responsible ways to communicate in digital environments.          | Digital communities allow for social interactions that can result in positive or negative outcomes. |

#### Central Idea / Enduring Understanding:

Students will...

- Use computer terminology in daily practice.
- Navigate and use a touch-screen device properly and effectively.
- Use basic troubleshooting techniques, such as refresh, closing out and restarting, using backspace, etc.
- Distinguish safe and unsafe behaviors when using a device.
- Compare and contrast how they can connect to different people and places, in person and on the Internet.
- Learn how to show respect online.
- Understand the importance of tone in both face-to-face and online communications
- Learn how to write clear and respectful emails.
- Learn the functions of passwords, identify strategies for creating and protecting secure passwords, and create their own secure passwords using the lesson guidelines.

#### Essential/Guiding Question:

- How do you navigate and use a Chromebook device properly and effectively, what are some basic troubleshooting techniques, and how do you practice safe behaviors when using a device?
- How can you connect to different people and places, in person and on the Internet?
- How do you show respect online?
- How is tone important in both face-to-face and online communications and how do you write clear and respectful emails?
- What are passwords and what are strategies for creating and protecting secure passwords?
- How do you use keywords to complete Internet searches?
- How can you use hyperlinks to find important information and get good search results?

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| <ul style="list-style-type: none"> <li>• Understand how to complete Internet searches using keywords.</li> <li>• Use hyperlinks to find important information and develop web browsing skills.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b><u>Content:</u></b></p> <ul style="list-style-type: none"> <li>• Computer terminology</li> <li>• Internet</li> <li>• Communication</li> <li>• Internet safety</li> <li>• Digital citizenship</li> <li>• Email</li> <li>• Usernames</li> <li>• Passwords</li> <li>• Keyword</li> <li>• Search bar</li> <li>• Hyperlink</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b><u>Skills (Objectives):</u></b></p> <ul style="list-style-type: none"> <li>• Navigate and use a device properly and effectively, use basic troubleshooting techniques, and practice safe and unsafe behaviors when using a device.</li> <li>• Explain how they can connect to different people and places, in person and on the Internet.</li> <li>• Explain how to show respect online.</li> <li>• Recognize the importance of tone in both face-to-face and online communications and explain how to write clear and respectful emails.</li> <li>• Understand the functions of passwords, identify strategies for creating and protecting secure passwords, and create their own secure passwords using the lesson guidelines.</li> <li>• Complete Internet searches using keywords.</li> <li>• Use hyperlinks to find important information and develop web browsing skills.</li> </ul> |
| <p><b><u>Interdisciplinary Connection(s):</u></b></p> <p><b><u>NJSLS for Language Arts Literacy</u></b></p> <ul style="list-style-type: none"> <li>• RI.CR.2.1. - Ask and answer such questions as who, what, where, when, why, and how in an informational text to demonstrate understanding of key details in a text.</li> <li>• L.VL.2.2- Determining or clarify the meaning of unknown and multiple- meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies</li> <li>• L.RF.2.4.A. - Read grade-level text with purpose and understanding.</li> <li>• L.RF.2.4.B. - Read grade-level text orally with accuracy, appropriate rate, and expression.</li> <li>• W.WP.2.4. - With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising and editing.</li> <li>• W.WP.2.4.C- With feedback and digital or print tools such as a primary dictionary, find and correct errors.</li> <li>• W.SE.2.7- Engage in both collaborative and independent writing tasks regularly, including extended and shorter time frames.</li> <li>• SL.PE.2.1. - Participate in collaborative conversations with diverse partners about Grade 2 topics and texts with peers and adults in small and larger groups.</li> <li>• SL.II.2.2. - Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.</li> <li>• SL.ES.2.3. - Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.</li> <li>• S.PI.2.4. - Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.</li> <li>• SL.AS.2.6. - Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.</li> <li>• L.WF.2.1 - Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.</li> </ul> <p><b><u>NJSLS for Science</u></b></p> <ul style="list-style-type: none"> <li>• K-2-ETS1-1 - Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

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- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

### **NJSLS for Social Studies**

- 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.
- 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.
- 6.1.5.CivicsHR.4: Identify actions that are unfair or discriminatory, such as bullying, and propose solutions to address such actions.

### **Stage 2: Assessment Evidence**

#### **Performance Task(s):**

- Student classwork/projects
- Student demonstration
- Class/partner/group discussion
- Self-assessments
- Peer-assessments
- Turn and Talk
- Various class activities and games
- Self-reflection
- Exit tickets/questions
- My Online Community Assessment [\[PDF\]](#)
- Show Respect Online Assessment [\[PDF\]](#)
- Writing Good Emails assessment [\[PDF\]](#)
- Powerful Passwords Assessment [\[PDF\]](#)

#### **Other Evidence:**

- Teacher observation
- Student/Teacher conference
- Unit Assessments [\[Web\]](#)[\[PDF\]](#)

### **Stage 3: Learning Plan**

#### **Learning Opportunities/Strategies:**

##### **Lesson 1: Computer navigation and using them properly**

Students will review the parts of a computer, the home screen, how to open and close programs on a Chromebook, and how to use the touch-screen and mousepad properly and effectively. They will review how to use hyperlinks, the characteristics of a hyperlink, the “back button” to navigate, use the scroll bar, and locate important information on a website. They will review keys on a keyboard, including “power keys” that help them with special functions. Students will learn basic troubleshooting techniques, such as using the refresh button, closing out and clicking back onto the application, backspace key, etc. They will review what it means to have safe and unsafe behaviors when using a device.

#### **Resources:**

##### **Lesson 1: Computer navigation and using them properly**

- Chrome app (Chromebook)

##### **Lesson 2 - My online community**

Students explore the concept that people can connect with one another through the Internet. They understand how the ability for people to communicate online can unite a community. Students discuss the nature of the Internet, and understand that while it is not a “real” physical place, it is made up of real people. They use a graphic

##### **Lesson 2 - My online community**

-  TweetSheetsforClassroomTwitter-1.pdf

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| <p>representation to explain the different in-person connections they have with their family, friends, and community.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b><u>Lesson 3 - Show respect online</u></b><br/>Students explore the similarities and differences between in-person and online communications, and then learn how to write clear and respectful communication. Students begin by discussing how to be clear and respectful when they talk with people, either face to face or on the telephone. They explore the concept of tone, then compare and contrast what it is like to communicate face to face versus online. Students learn some rules that can help them express themselves clearly and respectfully when they write messages. They then apply what they have learned by editing an email message.</p> | <p><b><u>Lesson 3 - Show respect online</u></b></p> <ul style="list-style-type: none"> <li>•  email-etiquette-powerpoint</li> <li>•  Show Some Respect</li> </ul>                                                                                                                                                                                        |
| <p><b><u>Lesson 4 - Writing good emails</u></b><br/>Students explore the components of a well-written email. Students learn that such emails have a 5-part structure that is similar to that of traditional letters. Students then analyze the parts of an email, making note of the subtle differences. Lastly, students try to identify and correct seven errors in an email, keeping in mind five proofreading guidelines.</p>                                                                                                                                                                                                                                     | <p><b><u>Lesson 4 - Writing good emails</u></b></p> <ul style="list-style-type: none"> <li>•  Sending Email: a K-2 Digital Citizenship Le...</li> <li>• </li> </ul>                                                                                                                                                                                                                                                                       |
| <p><b><u>Lesson 5 - Powerful passwords</u></b><br/>Students explore why people use passwords, learn the benefits of using passwords, and discover strategies for creating and keeping strong, secure passwords. Students learn password tips, test their existing passwords with an interactive game, and create new passwords using guidelines for powerful passwords.</p>                                                                                                                                                                                                                                                                                           | <p><b><u>Lesson 5 - Powerful passwords</u></b></p> <ul style="list-style-type: none"> <li>• Password Creator Guidelines <ul style="list-style-type: none"> <li> How to make a strong password</li> <li> How to Create a Strong Password</li> </ul> </li> </ul> <p><a href="#">How Secure Is My Password?   Password Strength Checker</a></p>         |
| <p><b><u>Lesson 6: Using the search bar</u></b><br/>Students will learn what “keywords” are and how to use them in a search bar to find websites. They will also determine which websites that appear in the search results are relevant and useful.</p>                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b><u>Lesson 6: Using the search bar</u></b></p> <ul style="list-style-type: none"> <li>• Effectively use keywords in search <ul style="list-style-type: none"> <li> Search Keywords Tutorial</li> <li> Using Keywords</li> </ul> </li> </ul>                                                                                                     |
| <p><b><u>Lesson 7: Using hyperlinks and developing searching skills</u></b><br/>Students will learn how to use hyperlinks to find important information and develop web browsing skills. Learning to use QR codes to access information.</p>                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b><u>Lesson 7: Using hyperlinks and developing searching skills</u></b></p> <ul style="list-style-type: none"> <li>• Clever link or address bar to pbskids.org</li> <li>• <a href="https://pbskids.org/">https://pbskids.org/</a> (students access through clever or by typing it into address bar)</li> <li>• What is a hyperlink? <ul style="list-style-type: none"> <li>◦  What is a hyperlink example?</li> </ul> </li> </ul> |
| <p><b><u>Differentiation</u></b> *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to struggling and/or Special Needs Section for differentiation.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| High-Achieving Students                                                                                                                                                                                                                                                        | On Grade Level Students                                                                                                                              | Struggling Students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Special Needs/ELL                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <p>Adaptation of materials and requirements</p> <p>Elevated text or question complexity</p> <p>Independent student options</p> <p>Projects completed individually or with partners</p> <p>Self-selection of research</p> <p>Open-ended activities</p> <p>Expert mentorship</p> | <p>Varying instructional strategies</p> <p>In-class interventions</p> <p>Compacting activity</p> <p>Extend or abbreviate duration of assignments</p> | <p><b>Materials</b><br/>Provide pictures</p> <p>Provide text in alternative formats, such as large print, audio formats, or digital text</p> <p>Use peer readers</p> <p>Permit highlighting of text</p> <p>List discussion questions prior to reading text</p> <p>Vocabulary lists and/or study guides</p> <p>Provide lecture notes/outline</p> <p>Provide model or example</p> <p><b>Environment</b><br/>Reduce visual or auditory distractions</p> <p>Preferential seating</p> <p>Post a visual schedule</p> <p>Emphasize multi-sensory learning</p> <p><b>Directions</b><br/>Use oral, recorded, and/or printed directions with pictures</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> | <p><b>Materials</b><br/>Decreased text or question complexity</p> <p>Provide page numbers or highlighted texts</p> <p>Shorten assignments to focus on key concepts</p> <p><b>Grading</b><br/>Provide partial grade based on individual progress or effort</p> <p>Use recognition tests (true-false, multiple choice, or matching) instead of short answer</p> <p>Provide a vocabulary list with definitions</p> <p>Modified rubrics</p> |

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|  |  | Repeat, clarify, or reword directions<br><br><b>Time</b><br>Alert students before transitions<br><br>Provide additional time for tasks<br><br>Extra response time |  |
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**Unit Title:** Grade 2 -- Unit 2 -- Applications

### Stage 1: Desired Results

**Standards & Indicators:**

**NJSLS for Mathematics**

- MP 1 Make sense of problems and persevere in solving them.
- MP 2 Reason abstractly and quantitatively.
- MP 6 Attend to precision.
- 2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 2.OA.2 With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- 2.NBT.1. - Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.

### Computer Science and Design Thinking

| Standard   | Performance Expectations                                                                                                         | Core Ideas                                                                                                                                                                       |
|------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.1.2.CS.1 | Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences. | Individuals use computing devices to perform a variety of tasks accurately and quickly.<br>Computing devices interpret and follow the instructions they are given literally.     |
| 8.1.2.CS.2 | Explain the functions of common software and hardware components of computing systems.                                           | A computing system is composed of software and hardware.                                                                                                                         |
| 8.1.2.CS.3 | Describe basic hardware and software problems using accurate terminology.                                                        | Describing a problem is the first step toward finding a solution when computing systems do not work as expected.                                                                 |
| 8.1.2.NI.4 | Explain why access to devices need to be secured.                                                                                | Connecting devices to a network or the Internet provides great benefits, but care must be taken to use authentication measures, such as strong passwords, to protect devices and |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                        | information from unauthorized access.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>8.1.2.IC.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Compare how individuals live and work before and after the implementation of new computing technology. | Computing technology has positively and negatively changed the way individuals live and work (e.g., entertainment, communication, productivity tools).                                                                                                                                                                                                                                                                                                                                                                     |
| <b>8.1.2.DA.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Collect and present data, including climate change data, in various visual formats.                    | Individuals collect, use, and display data about individuals and the world around them.                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>8.1.2.DA.2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Store, copy, search, retrieve, modify, and delete data using a computing device.                       | Computers store data that can be retrieved later. Data can be copied, stored in multiple locations, and retrieved.                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Career Readiness, Life Literacies and Key Skills</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Performance Expectations</b>                                                                        | <b>Core Ideas</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>9.4.2.CI.2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Demonstrate originality and inventiveness in work.                                                     | Brainstorming can create new, innovative ideas.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>9.4.2.IML.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Identify a simple search term to find information in a search engine or digital resource.              | Digital tools and media resources provide access to vast stores of information that can be searched.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>9.4.2.TL.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Identify the basic features of a digital tool and explain the purpose of the tool.                     | Digital tools have a purpose.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>9.4.2.TL.2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Create a document using a word processing application.                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>9.4.2.TL.6</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Illustrate and communicate ideas and stories using multiple digital tools.                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b><u>Central Idea / Enduring Understanding:</u></b><br>Students will... <ul style="list-style-type: none"> <li>Learn how to take a test on a device.</li> <li>Learn how to navigate Google Classroom.</li> <li>Learn how to create and submit a Google Doc through Google Classroom.</li> <li>Learn basic tools in a toolbar.</li> <li>Understand what a slide presentation program is and know when it would be appropriate to use it.</li> <li>Learn how to create a new slide presentation.</li> <li>Learn how to add additional slides and change the slide layout.</li> <li>Learn how to change the theme of a Slides presentation.</li> <li>Learn how to present their slide presentations.</li> </ul> |                                                                                                        | <b><u>Essential/Guiding Question:</u></b> <ul style="list-style-type: none"> <li>How do you take a test on a device?</li> <li>How do you use Google Classroom?</li> <li>How do you create and submit a Google Doc using Google Classroom?</li> <li>What are and how do you use the basic tools in the toolbar?</li> <li>How do you create a new Slides presentation?</li> <li>What are the tools used to create a slide presentation and how do you use them?</li> <li>How do you present a slide presentation?</li> </ul> |
| <b><u>Content:</u></b> <ul style="list-style-type: none"> <li>Internet</li> <li>Google Classroom</li> <li>Google Docs</li> <li>Toolbar</li> <li>Google Slides</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        | <b><u>Skills (Objectives):</u></b> <ul style="list-style-type: none"> <li>Use test taking strategies to complete practice tests on an Chromebook.</li> <li>Use Google Classroom effectively and appropriately.</li> <li>Create and submit a Google Doc through Google Classroom.</li> <li>Explain and use basic tools in a toolbar.</li> <li>Create a new Slides presentation.</li> </ul>                                                                                                                                  |

## Technology Enrichment - Grade 2

- Add a new slide and change the slide layout to their Slides presentation.
- Change the theme of a Slides presentation.
- Present their slide presentation.

### Interdisciplinary Connection(s):

#### **NJSLS for Language Arts Literacy**

- RI.CR.2.1. - Ask and answer such questions as who, what, where, when, why, and how in an informational text to demonstrate understanding of key details in a text.
- L.VL.2.2- Determining or clarify the meaning of unknown and multiple- meaning words and phrases based on grade 2 reading and content, choosing flexibly from an array of strategies
- L.RF.2.4.A. - Read grade-level text with purpose and understanding.
- L.RF.2.4.B. - Read grade-level text orally with accuracy, appropriate rate, and expression.
- W.WP.2.4. - With guidance and support from adults and peers, develop and strengthen writing as needed by planning, revising and editing.
- W.WP.2.4.C- With feedback and digital or print tools such as a primary dictionary, find and correct errors.
- W.SE.2.7- Engage in both collaborative and independent writing tasks regularly, including extended and shorter time frames.
- SL.PE.2.1. - Participate in collaborative conversations with diverse partners about Grade 2 topics and texts with peers and adults in small and larger groups.

#### **NJSLS for Science**

- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

#### **NJSLS for Social Studies**

- 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.
- 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.
- 6.1.5.CivicsHR.4: Identify actions that are unfair or discriminatory, such as bullying, and propose solutions to address such actions.

### Stage 2: Assessment Evidence

#### **Performance Task(s):**

- Student classwork/projects
- Student demonstration
- Class/partner/group discussion
- Self-assessments
- Peer-assessments
- Turn and Talk
- Various class activities and games
- Self-reflection
- Exit tickets/questions
- Student presentations

#### **Other Evidence:**

- Teacher observation
- Student/Teacher conference

### Stage 3: Learning Plan

#### **Learning Opportunities/Strategies:**

**Lesson 1: Test taking strategies**

#### **Resources:**

**Lesson 1: Test taking strategies**

## Technology Enrichment - Grade 2

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Students will learn the strategies needed to take a test using a Chromebook. They will learn how to login to a practice test and how to navigate through questions and testing windows. Students will also learn test taking strategies. They will learn to look for radio buttons (“circle answer choices”), multiple answer boxes (“square answer choices”), short answer text box, etc. to determine how to answer the question.                                                                                                                                                           | <ul style="list-style-type: none"> <li>• MAP testing video</li> <li>• MAP testing app</li> <li>• MAP practice test</li> </ul>                                                                                                                                             |
| <b><u>Lesson 2: Using Google Classroom</u></b><br>Students will learn how to navigate Google Classroom. They will learn how to use it to communicate with the teacher and classmates.                                                                                                                                                                                                                                                                                                                                                                                                         | <b><u>Lesson 2: Using Google Classroom</u></b> <ul style="list-style-type: none"> <li>• Google Classroom link</li> <li>• Google Docs link</li> </ul>                                                                                                                      |
| <b><u>Lesson 3: Creating and submitting a Doc through Google Classroom</u></b><br>Students will review how to create a new document and type their name, words, and sentences into a word processor. They will look for the cursor, or the “blinking line,” that shows where the words appear. They will type sentences using proper spacing, make capital letters, and period at the end of a sentence. Students will review how to use the “power keys” in a doc, which include the return key, shift key, caps lock, and backspace. They will submit assignments through Google Classroom. | <b><u>Lesson 3: Creating and submitting a Doc through Google Classroom</u></b> <ul style="list-style-type: none"> <li>• Google Classroom link</li> <li>• Google Docs link</li> </ul>                                                                                      |
| <b><u>Lesson 4: Using the toolbar</u></b><br>Students will learn how to use the commonly used tools in a toolbar in Google Docs, such as changing the size, style, and color.                                                                                                                                                                                                                                                                                                                                                                                                                 | <b><u>Lesson 4: Using the toolbar</u></b> <ul style="list-style-type: none"> <li>• Google Docs link</li> </ul>                                                                                                                                                            |
| <b><u>Lesson 5: Create a Slides presentation</u></b><br>Students will learn what a slide presentation is and when it would be practical and useful. They will learn how to create a new slide presentation and add text into text boxes.                                                                                                                                                                                                                                                                                                                                                      | <b><u>Lesson 5: Create a Slides presentation</u></b> <ul style="list-style-type: none"> <li>• Google Slides link</li> </ul>                                                                                                                                               |
| <b><u>Lesson 6: Adding a new slide and changing the layout</u></b><br>Students will learn how to add a new slide and change the slide layout.                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b><u>Lesson 6: Adding a new slide and changing the layout</u></b> <ul style="list-style-type: none"> <li>• Google Slides link</li> </ul>                                                                                                                                 |
| <b><u>Lesson 7: Changing the Slides presentation theme</u></b><br>Students will learn how to change the theme of a slide presentation.                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b><u>Lesson 7: Changing the Slides presentation theme</u></b> <ul style="list-style-type: none"> <li>• Google Slides link</li> </ul>                                                                                                                                     |
| <b><u>Lesson 8: Presenting a Slides presentation</u></b><br>Students will learn how to show their slide presentation in full screen. They will share their completed projects with the class. Students will have an opportunity to make commendations and recommendations. Critiques will help students improve future slide presentations.                                                                                                                                                                                                                                                   | <b><u>Lesson 8: Presenting a Slides presentation</u></b> <ul style="list-style-type: none"> <li>• Google Slides link</li> <li>•  About Me Slideshow — Peer Checklist (Gr...</li> </ul> |

## Technology Enrichment - Grade 2

**Differentiation** \*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to struggling and/or Special Needs Section for differentiation.

| High-Achieving Students                                                                                                                                                                                                                                                 | On Grade Level Students                                                                                                                       | Struggling Students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Special Needs/ELL                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adaptation of materials and requirements<br><br>Elevated text or question complexity<br><br>Independent student options<br><br>Projects completed individually or with partners<br><br>Self-selection of research<br><br>Open-ended activities<br><br>Expert mentorship | Varying instructional strategies<br><br>In-class interventions<br><br>Compacting activity<br><br>Extend or abbreviate duration of assignments | <b>Materials</b><br>Provide pictures<br><br>Provide text in alternative formats, such as large print, audio formats, or digital text<br><br>Use peer readers<br><br>Permit highlighting of text<br><br>List discussion questions prior to reading text<br><br>Vocabulary lists and/or study guides<br><br>Provide lecture notes/outline<br><br>Provide model or example<br><br><b>Environment</b><br>Reduce visual or auditory distractions<br><br>Preferential seating<br><br>Post a visual schedule<br><br>Emphasize multi-sensory learning<br><br><b>Directions</b><br>Use oral, recorded, and/or printed directions with pictures<br><br>Highlight key words in directions<br><br>Give brief and concrete directions | <b>Materials</b><br>Decreased text or question complexity<br><br>Provide page numbers or highlighted texts<br><br>Shorten assignments to focus on key concepts<br><br><b>Grading</b><br>Provide partial grade based on individual progress or effort<br><br>Use recognition tests (true-false, multiple choice, or matching) instead of short answer<br><br>Provide a vocabulary list with definitions<br><br>Modified rubrics |

## Technology Enrichment - Grade 2

|  |  |                                                                                                                                                                                                                      |  |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p><b><u>Time</u></b><br/>Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p> |  |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

**Unit Title:** Grade 2 -- Unit 3 -- Coding

### Stage 1: Desired Results

**Standards & Indicators:**

**NJSLS for Mathematics**

- MP 1 Make sense of problems and persevere in solving them.
- MP 2 Reason abstractly and quantitatively.
- MP 6 Attend to precision.
- 2.OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 2.OA.2 With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- 2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
- 2.G.1. - Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- 2.G.2. - Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- 2.G.3. - Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. For example, students partition a rectangle (i.e. the whole) into three equal shares, identify each of the shares as a 'third' and describe the rectangle as three 'thirds'.

### Computer Science and Design Thinking

| <b>Standard</b>   | <b>Performance Expectations</b>                                                                                                  | <b>Core Ideas</b>                                                                                                                                                                       |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>8.1.2.CS.1</b> | Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences. | <p>Individuals use computing devices to perform a variety of tasks accurately and quickly.</p> <p>Computing devices interpret and follow the instructions they are given literally.</p> |

## Technology Enrichment - Grade 2

|                                                  |                                                                                                              |                                                                                                                                                                                                                                                               |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.1.2.CS.2                                       | Explain the functions of common software and hardware components of computing systems.                       | A computing system is composed of software and hardware.                                                                                                                                                                                                      |
| 8.1.2.CS.3                                       | Describe basic hardware and software problems using accurate terminology.                                    | Describing a problem is the first step toward finding a solution when computing systems do not work as expected.                                                                                                                                              |
| 8.1.2.NI.4                                       | Explain why access to devices need to be secured.                                                            | Connecting devices to a network or the Internet provides great benefits, but care must be taken to use authentication measures, such as strong passwords, to protect devices and information from unauthorized access.                                        |
| 8.1.2.IC.1                                       | Compare how individuals live and work before and after the implementation of new computing technology.       | Computing technology has positively and negatively changed the way individuals live and work (e.g., entertainment, communication, productivity tools).                                                                                                        |
| 8.1.2.DA.3                                       | Identify and describe patterns in data visualizations.                                                       | Data can be used to make predictions about the world.                                                                                                                                                                                                         |
| 8.1.2.DA.4                                       | Make predictions based on data using charts or graphs.                                                       |                                                                                                                                                                                                                                                               |
| 8.1.2.AP.1                                       | Model daily processes by creating and following algorithms to complete tasks.                                | Individuals develop and follow directions as part of daily life.<br><br>A sequence of steps can be expressed as an algorithm that a computer can process.                                                                                                     |
| 8.1.2.AP.2                                       | Model the way programs store and manipulate data by using numbers or other symbols to represent information. | Real world information can be stored and manipulated in programs as data (e.g., numbers, words, colors, images).                                                                                                                                              |
| 8.1.2.AP.3                                       | Create programs with sequences and simple loops to accomplish tasks.                                         | Computers follow precise sequences of steps that automate tasks.                                                                                                                                                                                              |
| 8.1.2.AP.4                                       | Break down a task into a sequence of steps.                                                                  | Complex tasks can be broken down into simpler instructions, some of which can be broken down even further.                                                                                                                                                    |
| 8.1.2.AP.5                                       | Describe a program’s sequence of events, goals, and expected outcomes.                                       | People work together to develop programs for a purpose, such as expressing ideas or addressing problems.<br><br>The development of a program involves identifying a sequence of events, goals, and expected outcomes, and addressing errors (when necessary). |
| 8.1.2.AP.6                                       | Debug errors in an algorithm or program that includes sequences and simple loops.                            |                                                                                                                                                                                                                                                               |
| Career Readiness, Life Literacies and Key Skills |                                                                                                              |                                                                                                                                                                                                                                                               |
| Standard                                         | Performance Expectations                                                                                     | Core Ideas                                                                                                                                                                                                                                                    |
| 9.2.2.CAP.1                                      | Make a list of different types of jobs and                                                                   | Different types of jobs require                                                                                                                                                                                                                               |

## Technology Enrichment - Grade 2

|            |                                                                                                            |                                                                                                                     |
|------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|            | describe the skills associated with each job.                                                              | different knowledge and skills.                                                                                     |
| 9.4.2.CI.1 | Demonstrate openness to new ideas and perspectives.                                                        | Brainstorming can create new, innovative ideas.                                                                     |
| 9.4.2.CI.2 | Demonstrate originality and inventiveness in work.                                                         |                                                                                                                     |
| 9.4.2.CT.2 | Identify possible approaches and resources to execute a plan.                                              | Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. |
| 9.4.2.CT.3 | Use a variety of types of thinking to solve problems (e.g., inductive, deductive).                         |                                                                                                                     |
| 9.4.2.TL.1 | Identify the basic features of a digital tool and explain the purpose of the tool.                         | Digital tools have a purpose.                                                                                       |
| 9.4.2.TL.4 | Navigate a virtual space to build context and describe the visual content.                                 |                                                                                                                     |
| 9.4.2.TL.7 | Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts. | Collaboration can simplify the work an individual has to do and sometimes produce a better product.                 |

### Central Idea / Enduring Understanding:

Students will...

- Review the basics of computer programming, such as move forward, turn, and "light" (action) that are used to program lightbot robot in the Lightbot app.
- Understand how to use the basic computer programming commands to create procedures that will control the movement of their lightbot robot in the Lightbot app.
- Understand how to use loops to control the movement of their lightbot robot in the Lightbot app.
- Use strategies in critical thinking, problem solving, and troubleshooting to complete coding puzzles in the Lightbot app.
- Understand how to use loops and actions to control the movement of their character in the Scratch Jr app.
- Understand special action commands, such as "Looks Blocks," "Sound Blocks," and "Control Blocks," to control the movement and actions of their character in the Scratch Jr app.
- Understand how to program multiple characters to use advanced action commands in the Scratch Jr app.
- Understand how to use strategies in creativity, critical thinking, problem solving, and troubleshooting to determine their own way to make their character(s) do advanced movements on the screen.
- Build build code to make an object move.
- Program loops in code for more efficient coding.
- Debug code written by others.

### Essential/Guiding Question:

- What are procedures in computer programming and how do you use them?
- What are loops in computer programming and how do you use them?
- How do you use loops and actions to control the movement of a character in the Scratch Jr website?
- What are special action commands, such as "Looks Blocks," "Sound Blocks," and "Control Blocks," and how are they used to control the movement and actions of their character in the Scratch Jr website?
- How do you make an object move by coding it?
- How do I code more efficiently for longer tasks?
- Can I spot and repair mistakes in code?

### Content:

- Computer programmer
- Computer program

### Skills (Objectives):

- Use procedures to control the movement of their Lightbot robot in the Lightbot.

## Technology Enrichment - Grade 2

|                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Code</li> <li>• Command</li> <li>• Algorithm</li> <li>• Sequence</li> <li>• Debug</li> </ul> | <ul style="list-style-type: none"> <li>• Use loops to control the movement of their Lightbot robot in the Lightbot.</li> <li>• Use loops and actions to control the movement of their character in the Scratch Jr website.</li> <li>• Use special action commands, such as “Looks Blocks,” “Sound Blocks,” and “Control Blocks,” to control the movement and actions of their character in the Scratch Jr website.</li> <li>• Utilize basic directional coding commands with code.org</li> <li>• Program loops with code.org</li> <li>• Debug code using code.org</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Interdisciplinary Connection(s):

#### **NJSLS for Language Arts Literacy**

- SL.PE.2.1. - Participate in collaborative conversations with diverse partners about Grade 2 topics and texts with peers and adults in small and larger groups.
- SL.II.2.2. - Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
- SL.ES.2.3. - Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
- S.PI.2.4. - Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
- SL.AS.2.6. - Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
- L.WF.2.1 - Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

#### **NJSLS for Science**

- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

#### **NJSLS for Social Studies**

- 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.
- 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.
- 6.1.5.CivicsHR.4: Identify actions that are unfair or discriminatory, such as bullying, and propose solutions to address such actions.

### Stage 2: Assessment Evidence

|                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b><u>Performance Task(s):</u></b> <ul style="list-style-type: none"> <li>• Student classwork/projects</li> <li>• Student demonstration</li> <li>• Class/partner/group discussion</li> <li>• Self-assessments</li> <li>• Peer-assessments</li> <li>• Turn and Talk</li> <li>• Various class activities and games</li> <li>• Self-reflection</li> <li>• Exit tickets/questions</li> </ul> | <b><u>Other Evidence:</u></b> <ul style="list-style-type: none"> <li>• Teacher observation</li> <li>• Student/Teacher conference</li> </ul> |
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## Technology Enrichment - Grade 2

### Stage 3: Learning Plan

| <u>Learning Opportunities/Strategies:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Resources:</u>                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><u>Lesson 1: Using procedures to code Lightbot</u></b><br/>           Students will review the basics of computer programming, such as move forward, turn, and “light” (action), to control the movement of their Lightbot robot. In this lesson, they will learn more advanced commands. They will learn how to use the basic commands to create procedures that will control the movement of their robot. Students will use strategies in critical thinking, problem solving, and troubleshooting to complete coding puzzles.</p>                                                                                                              | <p><b><u>Lesson 1: Using procedures to code Lightbot</u></b></p> <ul style="list-style-type: none"> <li>• Lightbot</li> </ul>                                       |
| <p><b><u>Lesson 2: Using loops to code Lightbot</u></b><br/>           Students will learn the more advanced commands in computer programming through the Lightbot. They will learn how to use loops to control the movement of their Lightbot robot. Students will use strategies in critical thinking, problem solving, and troubleshooting to complete coding puzzles.</p>                                                                                                                                                                                                                                                                          | <p><b><u>Lesson 2: Using loops to code Lightbot</u></b></p> <ul style="list-style-type: none"> <li>• Lightbot</li> </ul>                                            |
| <p><b><u>Lesson 3: Using loops and actions to code a Scratch Jr character</u></b><br/>           Students will review the basics of computer programming, such as move forward and turn, to control the movement of their character in the Scratch Jr website. They will learn how to use loops and actions to control the freestyle movement of their character. Students will use strategies in creativity, critical thinking, problem solving, and troubleshooting to determine their own way to make their character move on the screen.</p>                                                                                                       | <p><b><u>Lesson 3: Using loops and actions to code a Scratch Jr character</u></b></p> <ul style="list-style-type: none"> <li>• Scratch Jr website</li> </ul>        |
| <p><b><u>Lesson 4: Using advanced action commands to code a Scratch Jr character</u></b><br/>           Students will learn the more advanced commands of computer programming through the Scratch Jr website. They will learn special action commands, such as “Looks Blocks,” “Sound Blocks,” and “Control Blocks,” to control the movement and actions of their character. They can program multiple characters to use advanced action commands. Students will use strategies in creativity, critical thinking, problem solving, and troubleshooting to determine their own way to make their character(s) do advanced movements on the screen.</p> | <p><b><u>Lesson 4: Using advanced action commands to code a Scratch Jr character</u></b></p> <ul style="list-style-type: none"> <li>• Scratch Jr website</li> </ul> |
| <p><b><u>Lesson 5: Programming Angry Birds</u></b><br/>           Students will build a code to direct an angry bird to collect pigs on a map. Students will use single commands to direct movement.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><b><u>Lesson 5: Programming Angry Birds</u></b></p> <ul style="list-style-type: none"> <li>• <a href="https://code.org">code.org</a></li> </ul>                  |
| <p><b><u>Lesson 6: Coding Loops with BB-8</u></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b><u>Lesson 6: Coding Loops with BB-8</u></b></p> <ul style="list-style-type: none"> <li>• <a href="https://code.org">Code.org</a></li> </ul>                   |

## Technology Enrichment - Grade 2

| In this skill-building lesson, students will use their newfound programming skills in more complicated ways to navigate a tricky course with <i>BB-8</i> .                                                                                                                        |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lesson 7: Debugging with Harvester</b><br>Students will apply the programming concepts that they have learned to the Harvester environment in this skill-building lesson. Students will continue to develop sequential algorithm skills and start using the debugging process. |                                                                                                                                               | <b>Lesson 7: Debugging with Harvester</b> <ul style="list-style-type: none"><li><a href="https://code.org">code.org</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Differentiation</b> *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to struggling and/or Special Needs Section for differentiation.                                                                                |                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| High-Achieving Students                                                                                                                                                                                                                                                           | On Grade Level Students                                                                                                                       | Struggling Students                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Special Needs/ELL                                                                                                                                                                                                                                                                                                                                                                                                              |
| Adaptation of materials and requirements<br><br>Elevated text or question complexity<br><br>Independent student options<br><br>Projects completed individually or with partners<br><br>Self-selection of research<br><br>Open-ended activities<br><br>Expert mentorship           | Varying instructional strategies<br><br>In-class interventions<br><br>Compacting activity<br><br>Extend or abbreviate duration of assignments | <b>Materials</b><br>Provide pictures<br><br>Provide text in alternative formats, such as large print, audio formats, or digital text<br><br>Use peer readers<br><br>Permit highlighting of text<br><br>List discussion questions prior to reading text<br><br>Vocabulary lists and/or study guides<br><br>Provide lecture notes/outline<br><br>Provide model or example<br><br><b>Environment</b><br>Reduce visual or auditory distractions<br><br>Preferential seating<br><br>Post a visual schedule<br><br>Emphasize multi-sensory learning<br><br><b>Directions</b> | <b>Materials</b><br>Decreased text or question complexity<br><br>Provide page numbers or highlighted texts<br><br>Shorten assignments to focus on key concepts<br><br><b>Grading</b><br>Provide partial grade based on individual progress or effort<br><br>Use recognition tests (true-false, multiple choice, or matching) instead of short answer<br><br>Provide a vocabulary list with definitions<br><br>Modified rubrics |

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|  |  |                                                                                                                                                                                                                                                                                                                                                                     |  |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <p>Use oral, recorded, and/or printed directions with pictures</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p><b>Time</b><br/>Alert students before transitions</p> <p>Provide additional time for tasks</p> <p>Extra response time</p> |  |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

**Unit Title:** Grade 2 -- Unit 4 -- STEAM

### Stage 1: Desired Results

#### Standards & Indicators:

#### **NJSLS for Mathematics**

- MP 1 Make sense of problems and persevere in solving them.
- MP 2 Reason abstractly and quantitatively.
- MP 6 Attend to precision.
- 2.OA.A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 2.OA.B.2 With accuracy and efficiency, add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- 2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
- 2.NBT.1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
- 2.G.1. - Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- 2.G.2. - Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- 2.G.3. - Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. For example, students

## Technology Enrichment - Grade 2

partition a rectangle (i.e. the whole) into three equal shares, identify each of the shares as a 'third' and describe the rectangle as three 'thirds'.

### Computer Science and Design Thinking

| Standard   | Performance Expectations                                                                                                              | Core Ideas                                                                                                                                                                                                             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.1.2.CS.1 | Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.      | Individuals use computing devices to perform a variety of tasks accurately and quickly.<br>Computing devices interpret and follow the instructions they are given literally.                                           |
| 8.1.2.CS.2 | Explain the functions of common software and hardware components of computing systems.                                                | A computing system is composed of software and hardware.                                                                                                                                                               |
| 8.1.2.CS.3 | Describe basic hardware and software problems using accurate terminology.                                                             | Describing a problem is the first step toward finding a solution when computing systems do not work as expected.                                                                                                       |
| 8.1.2.NI.4 | Explain why access to devices need to be secured.                                                                                     | Connecting devices to a network or the Internet provides great benefits, but care must be taken to use authentication measures, such as strong passwords, to protect devices and information from unauthorized access. |
| 8.1.2.IC.1 | Compare how individuals live and work before and after the implementation of new computing technology.                                | Computing technology has positively and negatively changed the way individuals live and work (e.g., entertainment, communication, productivity tools).                                                                 |
| 8.2.2.ED.1 | Communicate the function of a product or device.                                                                                      | Engineering design is a creative process for meeting human needs or wants that can result in multiple solutions.                                                                                                       |
| 8.2.2.ED.2 | Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.                              |                                                                                                                                                                                                                        |
| 8.2.2.ED.3 | Select and use appropriate tools and materials to build a product using the design process.                                           |                                                                                                                                                                                                                        |
| 8.2.2.ED.4 | Identify constraints and their role in the engineering design process.                                                                | Limitations (constraints) must be considered when engineering designs.                                                                                                                                                 |
| 8.2.2.NT.1 | Model and explain how a product works after taking it apart, identifying the relationship of each part, and putting it back together. | Innovation and the improvement of existing technology involves creative thinking.                                                                                                                                      |
| 8.2.2.NT.2 | Brainstorm how to build a product, improve a designed product, fix a product that has stopped working, or solve a simple problem.     |                                                                                                                                                                                                                        |

### Career Readiness, Life Literacies and Key Skills

| Standard    | Performance Expectations                                                                 | Core Ideas                                                      |
|-------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 9.2.2.CAP.1 | Make a list of different types of jobs and describe the skills associated with each job. | Different types of jobs require different knowledge and skills. |

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|                   |                                                                                                            |                                                                                                                     |
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| <b>9.4.2.CI.1</b> | Demonstrate openness to new ideas and perspectives.                                                        | Brainstorming can create new, innovative ideas.                                                                     |
| <b>9.4.2.CI.2</b> | Demonstrate originality and inventiveness in work.                                                         |                                                                                                                     |
| <b>9.4.2.CT.2</b> | Identify possible approaches and resources to execute a plan.                                              | Critical thinkers must first identify a problem then develop a plan to address it to effectively solve the problem. |
| <b>9.4.2.CT.3</b> | Use a variety of types of thinking to solve problems (e.g., inductive, deductive).                         |                                                                                                                     |
| <b>9.4.2.TL.6</b> | Illustrate and communicate ideas and stories using multiple digital tools.                                 | Digital tools have a purpose.                                                                                       |
| <b>9.4.2.TL.7</b> | Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts. | Collaboration can simplify the work an individual has to do and sometimes produce a better product.                 |

### Central Idea / Enduring Understanding:

Students will...

- Understand what stop motion animation is.
- Understand how to make a stop motion animation
- Understand how to use stop motion animation to tell a story.
- Understand different types of stop motion animation.
- Understand how to use different materials to make different types of stop motion animation.
- Create different types of circuits with multiple functionality.
- Create their own circuits using the components provided in the snap circuit kit.
- Learn the concepts of engineering across careers.
- Design and create tools digitally across engineering careers.

### Essential/Guiding Question:

- What is stop motion animation and how do you create a stop motion animation?
- How can you use stop motion to tell a story?
- What are the different types of stop motion animations?
- How do you create a circuit with multiple functionality?
- How do you create your own circuit?
- What are the concepts and tools that have been engineered to complete tasks across various careers?

### Content:

- Stop motion animation
- Electricity
- Circuits
- Energy
- Design
- Engineering
- Vehicles

### Skills (Objectives):

- Create a stop motion animation.
- Tell a story using stop motion animation.
- Create different types of stop motion animation by using different materials.
- Create different types of circuits with multiple functionality.
- Create their own circuits using the components provided in the snap circuit kit.
- Explain the concepts of engineering and their applications across various careers

### Interdisciplinary Connection(s):

#### **NJSLS for Language Arts Literacy**

- SL.PE.2.1. - Participate in collaborative conversations with diverse partners about Grade 2 topics and texts with peers and adults in small and larger groups.
- SL.II.2.2. - Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
- SL.ES.2.3. - Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
- S.PI.2.4. - Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.

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- SL.AS.2.6. - Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
- L.WF.2.1 - Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

### **NJSLS for Science**

- K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

### **NJSLS for Social Studies**

- 6.1.5.EconNM.4: Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.
- 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.
- 6.1.5.CivicsHR.4: Identify actions that are unfair or discriminatory, such as bullying, and propose solutions to address such actions.

## Stage 2: Assessment Evidence

### **Performance Task(s):**

- Student classwork/projects
- Student demonstration
- Class/partner/group discussion
- Self-assessments
- Peer-assessments
- Turn and Talk
- Various class activities and games
- Self-reflection
- Exit tickets/questions

### **Other Evidence:**

- Teacher observation
- Student/Teacher conference

## Stage 3: Learning Plan

### **Learning Opportunities/Strategies:**

#### **Lesson 1: Create a stop motion animation**

Students will learn: what is a stop motion animation, why it is used, and how to make a stop motion animation. They will view and discuss example stop motions movies. Students will use creativity, communication, and collaboration to create their own stop motion animations using a few objects.

### **Resources:**

#### **Lesson 1: Create a stop motion animation**

- Stop Motion Website

#### **Lesson 2: Storytelling through stop motion**

Students will continue to expand on their understanding of stop motion. They will learn about different ways it can be used to tell different types of stories. Students will use creativity, communication, and collaboration to create their own stop motion animations using a variety of objects.

#### **Lesson 2: Storytelling through stop motion**

- Stop Motion Website

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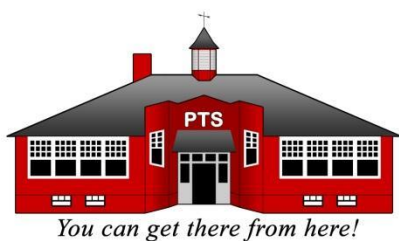
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| <b><u>Lesson 3: Making different types of stop motion</u></b><br>Students will continue to expand on their understanding of stop motion. They will learn about how they can use different materials, such as a whiteboard and small objects, to make different types of stop motion. Students will use creativity, communication, and collaboration to create their own stop motion animations using a variety of materials.                                                            |                                  | <b><u>Lesson 3: Making different types of stop motion</u></b> <ul style="list-style-type: none"><li>Stop Motion Website</li></ul>    |                                                                  |
| <b><u>Lesson 4: Create multi-functioning circuits</u></b><br>Students will review the fundamentals of electronic circuits and understand how they are used in technology devices. They will use the snap circuit kit to create different types of circuits with multiple functionality, such as shining a light bulb and spinning a motor. They will use strategies in critical thinking, problem solving, creativity, communication, and collaboration to complete circuit challenges. |                                  | <b><u>Lesson 4: Create multi-functioning circuits</u></b> <ul style="list-style-type: none"><li>Snap Circuit Kit</li></ul>           |                                                                  |
| <b><u>Lesson 5: Create your own circuits</u></b><br>Students will be able to apply what they learned about circuits to manipulate and create their own circuits using the components provided in the snap circuit kit.                                                                                                                                                                                                                                                                  |                                  | <b><u>Lesson 5: Create your own circuits</u></b> <ul style="list-style-type: none"><li>Snap Circuit Kit</li></ul>                    |                                                                  |
| <b><u>Lesson 6: Technology in Space Development</u></b><br>Students will be introduced to concepts of vehicle design. By designing their own space rover students will develop understanding of engineering for space exploration. Career Engineering.                                                                                                                                                                                                                                  |                                  | <b><u>Lesson 6: Technology in Space Development</u></b> <ul style="list-style-type: none"><li>Pbs Kids space Rover Builder</li></ul> |                                                                  |
| <b><u>Lesson 7: Technology in Agriculture</u></b><br>Students will be introduced to concepts of modern farming and hydroponics. The students will discover how one of the oldest careers relies on modern engineering. Career Agricultural Engineering.                                                                                                                                                                                                                                 |                                  | <b><u>Lesson 7: Technology in Agriculture</u></b> <ul style="list-style-type: none"><li>Pbs Kids Feed the Fidgets</li></ul>          |                                                                  |
| <b><u>Lesson 8: Technology in Construction</u></b><br>Students will be introduced to concepts of building resilient structures. The students will understand the importance of materials and technique. Career Structural Engineer                                                                                                                                                                                                                                                      |                                  | <b><u>Lesson 8: Technology in Construction</u></b> <ul style="list-style-type: none"><li>Pbs Kids Base Builder</li></ul>             |                                                                  |
| <b><u>Differentiation</u></b> *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to struggling and/or Special Needs Section for differentiation.                                                                                                                                                                                                                                                                               |                                  |                                                                                                                                      |                                                                  |
| <b>High-Achieving Students</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>On Grade Level Students</b>   | <b>Struggling Students</b>                                                                                                           | <b>Special Needs/ELL</b>                                         |
| Adaptation of materials and requirements<br><br>Elevated text or question complexity                                                                                                                                                                                                                                                                                                                                                                                                    | Varying instructional strategies | <b><u>Materials</u></b><br>Provide pictures<br><br>Provide text in alternative formats, such as large                                | <b><u>Materials</u></b><br>Decreased text or question complexity |

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|                                                                                                                                                                                    |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                              |
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| <p>Independent student options</p> <p>Projects completed individually or with partners</p> <p>Self-selection of research</p> <p>Open-ended activities</p> <p>Expert mentorship</p> | <p>In-class interventions</p> <p>Compacting activity</p> <p>Extend or abbreviate duration of assignments</p> | <p>print, audio formats, or digital text</p> <p>Use peer readers</p> <p>Permit highlighting of text</p> <p>List discussion questions prior to reading text</p> <p>Vocabulary lists and/or study guides</p> <p>Provide lecture notes/outline</p> <p>Provide model or example</p> <p><b><u>Environment</u></b><br/>Reduce visual or auditory distractions</p> <p>Preferential seating</p> <p>Post a visual schedule</p> <p>Emphasize multi-sensory learning</p> <p><b><u>Directions</u></b><br/>Use oral, recorded, and/or printed directions with pictures</p> <p>Highlight key words in directions</p> <p>Give brief and concrete directions</p> <p>Have student verbalize steps</p> <p>Repeat, clarify, or reword directions</p> <p><b><u>Time</u></b><br/>Alert students before transitions</p> <p>Provide additional time for tasks</p> | <p>Provide page numbers or highlighted texts</p> <p>Shorten assignments to focus on key concepts</p> <p><b><u>Grading</u></b><br/>Provide partial grade based on individual progress or effort</p> <p>Use recognition tests (true-false, multiple choice, or matching) instead of short answer</p> <p>Provide a vocabulary list with definitions</p> <p>Modified rubrics</p> |
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|  |  | Extra response time |  |
|--|--|---------------------|--|



# Technology Enrichment Pacing Guide Grade 2

| Units                                                  | Unit<br>TOTAL* | Cumulative<br>TOTAL** |
|--------------------------------------------------------|----------------|-----------------------|
| Unit 1 – Chromebook Navigation and Digital Citizenship | 7 days         | 7 days                |
| Unit 2 – Applications                                  | 8 days         | 15 days               |
| Unit 3 – Coding                                        | 7 days         | 22 days               |
| Unit 4 – STEAM                                         | 8 days         | 30 days               |
|                                                        |                | 30 days               |

\* Unit Total is inclusive of introduction, instruction, assessment for that particular topic.

\*\* Cumulative Total is a running total, inclusive of prior and current topics.