

# Branchburg Township Public Schools

Office of Curriculum and Instruction

## Grade 2 Technology Curriculum



Adopted by the Board of Education October 2022

This curriculum is aligned with the 2020 New Jersey Student Learning Standards – Computer Science and Design Thinking

<b>Technology Curriculum Scope and Sequence</b>			
<b>Content Area</b>	<b>Technology</b>	<b>Course Title/Grade Level:</b>	<b>2nd Grade</b>

<b>Topic/Unit Name</b>		<b>Suggested Pacing (Days/Weeks)</b>
<a href="#"><u>Topic/Unit #1</u></a>	Digital Citizenship	6 weeks
<a href="#"><u>Topic/Unit #2</u></a>	Research Skills and Data Project	8 Weeks
<a href="#"><u>Topic/Unit #3</u></a>	Engineering & Design	4 Weeks
<a href="#"><u>Topic/Unit #4</u></a>	Coding (Review, Sequence, Loops, Functions)	12 Weeks

Topic/Unit 1 Title	Digital Citizenship	Approximate Pacing	6 weeks
<b>STANDARDS</b>			
<b>NJSLS Technology</b>			
<p>8.1.2.IC.1: Compare how individuals live and work before and after the implementation of new computing technology.</p> <p>8.1.2.NI.1: Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.</p> <p>8.1.2.NI.2: Describe how the Internet enables individuals to connect with others worldwide.</p> <p>8.1.2.NI.4: Explain why access to devices need to be secured.</p> <p>8.2.2.EC.1: Identify and compare technology used in different schools, communities, regions, and parts of the world.</p> <p>8.2.2.ITH.1: Identify products that are designed to meet human wants or needs.</p> <p>8.2.2.ITH.2: Explain the purpose of a product and its value.</p> <p>8.2.2.ITH.3: Identify how technology impacts or improves life.</p> <p>8.2.2.ITH.4: Identify how various tools reduce work and improve daily tasks.</p> <p>8.1.2.NI.3: Create a password that secures access to a device. Explain why it is important to create unique passwords that are not shared with others.</p>			
<b>Interdisciplinary Connections:</b>		<b>21st Century Skills:</b>	
<p>6.1.2.EconET.1: Explain the difference between needs and wants Example : When discussing appropriate technology use, being able to determine what is necessary technology usage and what is unnecessary.</p>		<p>9.4.2.DC.1: Explain differences between ownership and sharing of information. Example : Keeping Passwords Private</p> <p>9.4.2.DC.2: Explain the importance of respecting the digital content of others. Example : Would you say something mean to somebody in person? How would they feel? How do you think they will feel if you post something online?</p>	
<b>Technology Standards:</b>		<b>Career Ready Practices:</b>	
See Above (This is a Technology Course)		<p>9.4.2.TL.6: Illustrate and communicate ideas and stories using multiple digital tools (e.g.,SL.2.5.). Example: Students will create an advertisement promoting</p>	

	safe internet usage and practices.
<b>UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS</b>	
<ol style="list-style-type: none"> <li>1. The decisions I make online can greatly impact how other people feel and look at me.</li> <li>2. The importance of keeping personal information private.</li> <li>3. What does being a good digital citizen look like?</li> </ol>	
<b>STUDENT LEARNING OBJECTIVES</b>	
<b>Key Knowledge</b>	<b>Process/Skills/Procedures/Application of Key Knowledge</b>
<p><i>Students will know:</i></p> <p>Online Safety, Passwords, Privacy,</p>	<p><i>Students will be able to:</i></p> <p><i>Tell the difference between appropriate online behavior and inappropriate behavior.</i></p> <p><i>Develop a strong password and understand the importance of one.</i></p> <p><i>Be able to balance online and offline activities.</i></p>
<b>ASSESSMENT OF LEARNING</b>	
<p><b>Summative Assessment</b> (Assessment at the end of the learning period)</p>	<p><b>Students will answer questions on Digital Citizenship Topics</b></p>
<p><b>Formative Assessments</b> (Ongoing assessments during the learning period to inform instruction)</p>	<p><b>Teacher Observations and Notes</b></p>
<p><b>Alternative Assessments</b> (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)</p>	<p><b>Student Research</b></p>

<p><b>Benchmark Assessments</b> (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)</p>	<p><b>Students can demonstrate their understanding of safe practices by appropriate implementation and answering questions related to the topic at the beginning of the unit and the culmination of the unit. An assessment will be administered later in the year as well.</b></p>
<b>RESOURCES</b>	
<p><b>Core instructional materials:</b> <a href="https://www.common sense.org/education/scope-and-sequence">https://www.common sense.org/education/scope-and-sequence</a></p>	
<p><b>Supplemental materials:</b> <a href="https://www.edutopia.org/topic/digital-citizenship">https://www.edutopia.org/topic/digital-citizenship</a> Instructional tutorials, visuals, simulations and handouts</p>	
<b>Modifications for Learners</b>	
<p>See <a href="#">appendix</a></p>	

Topic/Unit 2 Title	Research Skills and Data Project	Approximate Pacing	8 Weeks
<b>STANDARDS</b>			
<b>NJSLS Technology</b>			
<p><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> <p><b>8.1.2.CS.2:</b> Explain the functions of common software and hardware components of computing systems.</p> <p><b>8.1.2.CS.3:</b> Describe basic hardware and software problems using accurate terminology.</p> <p><b>8.1.2.DA.1:</b> Collect and present data, including climate change data, in various visual formats.</p> <p><b>8.1.2.DA.2:</b> Store, copy, search, retrieve, modify, and delete data using a computing device.</p> <ul style="list-style-type: none"> <li>• <b>8.1.2.DA.3:</b> Identify and describe patterns in data visualizations.</li> <li>• <b>8.1.2.DA.4:</b> Make predictions based on data using charts or graphs.</li> </ul>			
<b>Interdisciplinary Connections:</b>		<b>21st Century Skills:</b>	
<p><b>6.1.2.Geo.SV.1:</b> Use maps to identify physical features (e.g., continents, oceans, rivers, lakes, mountains).  <b>Example:</b> Students can research a location and climate impact data and create a Google Slide presentation about the location.</p>		<p><b>9.4.2.CI.1:</b> Demonstrate openness to new ideas and perspectives  <b>Example:</b> Students will create a presentation on a topic and present data in charts and graphs so other students can visualize information.</p>	
<b>Technology Standards:</b>		<b>Career Ready Practices:</b>	
See Above (This is a Technology Course)		<p><b>9.4.2.IML.1:</b> Identify a simple search term to find information in a search engine or digital resource.  <b>Example:</b> Students will start research practice with a term in an age appropriate search engine approved by the teacher. The students will then utilize these techniques in completing their research projects and presentations.</p>	
<b>UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS</b>			
<ol style="list-style-type: none"> <li><b>1. Uses research skills to solve problems or further understanding</b></li> <li><b>2. Uses the internet to explore and investigate</b></li> <li><b>3. Can access and use a variety of digital applications</b></li> <li><b>4. Participates in collaborative learning activities</b></li> </ol>			

**5. Collect and present data and make predictions**

**STUDENT LEARNING OBJECTIVES**

Key Knowledge	Process/Skills/Procedures/Application of Key Knowledge
<p><b>Students will know:</b>            Continue improving keyboarding and typing skills            How to properly research information online and take appropriate notes            Identify data visualizations and make predictions using charts or graphs.</p>	<p><b>Students will be able to:</b>            Use online databases and/or Google safely to gather information for research projects.            Continue improving keyboarding with understanding of top row and bottom row            Create a presentation with various features to highlight research conducted.</p>

**ASSESSMENT OF LEARNING**

<p><b>Summative Assessment</b>            (Assessment at the end of the learning period)</p>	<p><b>Portfolio</b>  <b>Rubrics</b>  <b>Notes</b>  <b>Presentation</b></p>
<p><b>Formative Assessments</b>            (Ongoing assessments during the learning period to inform instruction)</p>	<p><b>Anecdotal Records</b>  <b>Teacher Observation</b></p>
<p><b>Alternative Assessments</b> (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)</p>	<p><b>Group wide activities or alternative programs</b>  <b>Research with Library books and poster creation</b></p>
<p><b>Benchmark Assessments</b>            (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)</p>	<p><b>Students will be assessed on how to use Google Slides (or appropriate program) at the beginning of the school year while reviewing Google Suite. The students will be asked to use those skills once again at the end of the school year for another presentation.</b></p>

**RESOURCES**

Core instructional materials: [www.google.com](http://www.google.com)

Google Slides

<https://www.familyeducation.com/life/internet-safety/6-safe-search-engines-kids>

[www.youtube.com](http://www.youtube.com)

<https://flowingdata.com/2021/09/17/data-visualization-activities-for-kids/>

Supplemental materials: [www.prezi.com](http://www.prezi.com)

[www.flipgrid.com](http://www.flipgrid.com)

#### Modifications for Learners

See [appendix](#)



Topic/Unit 3 Title	Engineering & Design	Approximate Pacing	4 Weeks
<b>STANDARDS</b>			
<b>NJSLS Technology</b>			
<p>8.2.2.ED.1: Communicate the function of a product or device.</p> <p>8.2.2.ED.2: Collaborate to solve a simple problem, or to illustrate how to build a product using the design process.</p> <p>8.2.2.ED.3: Select and use appropriate tools and materials to build a product using the design process.</p> <p>8.2.2.ED.4: Identify constraints and their role in the engineering design process.</p> <p>8.2.2.ITH.5: Design a solution to a problem affecting the community in a collaborative team and explain the intended impact of the solution.</p> <p>8.2.2.ETW.1: Classify products as resulting from nature or produced as a result of technology.</p> <p>8.2.2.ETW.2: Identify the natural resources needed to create a product.</p> <p>8.2.2.ETW.3: Describe or model the system used for recycling technology.</p> <p>8.2.2.ETW.4: Explain how the disposal of or reusing a product affects the local and global environment.</p>			
<b>Interdisciplinary Connections:</b>		<b>21st Century Skills:</b>	
<p><b>W.2.8. Recall information from experiences or gather information from provided sources to answer a question.</b>  <b>Example: Which natural resources can help improve their designs?</b></p>		<p><b>9.4.2.DC.7: Describe actions peers can take to positively impact climate change.</b>  <b>Example : Students can describe actions that they and their families can follow to reduce their carbon footprint.</b></p>	
<b>Technology Standards:</b>		<b>Career Ready Practices:</b>	
See Above (This is a Technology Course)		<p><b>9.4.2.CT.2: Identify possible approaches and resources to execute a plan.</b>  <b>Example : Students will create a blueprint for their design before construction.</b></p>	
<b>UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS</b>			
<ol style="list-style-type: none"> <li>1. Understanding the best application and/or program to use for a particular task.</li> <li>2. How to create a blueprint</li> <li>3. How can natural resources be used to create a product?</li> <li>4. How is recycling beneficial to our communities?</li> <li>5. What is the design process?</li> </ol>			

STUDENT LEARNING OBJECTIVES	
Key Knowledge	Process/Skills/Procedures/Application of Key Knowledge
<i>Students will know: Google Docs, Google Sheets, Google Forms, Charts, Tables, Inserting Images, Comments, Blueprint, Design Process</i>	<i>Students will be able to: Create a blueprint of a more environmentally friendly structure Recall the steps of the Design Process</i>
ASSESSMENT OF LEARNING	
<b>Summative Assessment</b> (Assessment at the end of the learning period)	<b>Creation of blueprints and models</b>
<b>Formative Assessments</b> (Ongoing assessments during the learning period to inform instruction)	<b>Teacher Observation and Notes</b>
<b>Alternative Assessments</b> (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)	<b>Group wide activities or alternative programs</b>
<b>Benchmark Assessments</b> (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	<b>Students can be assessed on their familiarity with programs at the beginning of the unit, and reassessed at the conclusion. An assessment will be administered later in the year as well.</b>
RESOURCES	
<b>Core instructional materials:</b> <a href="https://gsuite.google.com/">https://gsuite.google.com/</a> <a href="https://www.teachingexpertise.com/classroom-ideas/2nd-grade-engineering-projects/">https://www.teachingexpertise.com/classroom-ideas/2nd-grade-engineering-projects/</a> Building materials (legos, paper, tape, water bottles, donated items)	
<b>Supplemental materials:</b> Instructional tutorials, visuals, simulations and handouts Fairy Tale Fixer Books (Goldilocks, Princess & the Pea, Jack & the Beanstalk) and materials	

**Modifications for Learners**

See [appendix](#)

<b>Topic/Unit 4 Title</b>	<b>Coding (Review, Sequence, Loops, Functions)</b>	<b>Approximate Pacing</b>	<b>14 Weeks</b>
<b>STANDARDS</b>			
<b>NJSLS Technology</b>			
<p><b>8.1.2.AP.1: Model daily processes by creating and following algorithms to complete tasks.</b></p> <p><b>8.1.2.AP.2: Model the way programs store and manipulate data by using numbers or other symbols to represent information.</b></p> <p><b>8.1.2.AP.3: Create programs with sequences and simple loops to accomplish tasks.</b></p> <p><b>8.1.2.AP.4: Break down a task into a sequence of steps.</b></p> <p><b>8.1.2.AP.5: Describe a program’s sequence of events, goals, and expected outcomes.</b></p> <p><b>8.1.2.AP.6: Debug errors in an algorithm or program that includes sequences and simple loops.</b></p> <p><b>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.</b></p> <p><b>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.</b></p>			
<b>Interdisciplinary Connections:</b>		<b>21st Century Skills:</b>	
<p><b>K-ESS3-1. Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.</b></p> <p><b>Example : Students can create a science related chart in Bits Box using javascript Coding.</b></p>		<p><b>9.1.2.CAP.1: Make a list of different types of jobs and describe the skills associated with each job.</b></p> <p><b>Example : What sort of jobs require programming/ troubleshooting / coding skills?</b></p>	
<b>Technology Standards:</b>		<b>Career Ready Practices:</b>	
See Above (This is a Technology Course)		<p><b>9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).</b></p> <p><b>Example: How to navigate a character through a maze in a Programming application.</b></p>	
<b>UNIT/TOPIC ESSENTIAL QUESTIONS AND ENDURING OBJECTIVES/UNDERSTANDINGS</b>			
<ol style="list-style-type: none"> <li><b>1. Uses vocabulary appropriately</b></li> <li><b>2. Can access and use a variety of digital applications</b></li> <li><b>3. Participates in collaborative learning activities</b></li> </ol>			

4. Can this program/application help me accomplish my learning goal?
5. How can I use and/or recognize coding and logic skills in my everyday activities?
6. Can I use digital applications to demonstrate my learning?
7. How did my plans change during programming/ coding?

### STUDENT LEARNING OBJECTIVES

Key Knowledge	Process/Skills/Procedures/Application of Key Knowledge
<p><b>Students will know:</b>            Further develop understanding of coding and sequencing and understand logic involved in programming in various programs and applications            Continue improving keyboarding and typing skills</p>	<p><b>Students will be able to:</b>            Continue Kodable lessons and progress through Sequence, Loops, and Functions.            Begin to understand Scratch and BitsBox coding.</p>

### ASSESSMENT OF LEARNING

<b>Summative Assessment</b> (Assessment at the end of the learning period)	<b>Portfolio</b> <b>Rubrics</b> <b>Notes</b>
<b>Formative Assessments</b> (Ongoing assessments during the learning period to inform instruction)	<b>Anecdotal Records</b> <b>Teacher Observation</b>
<b>Alternative Assessments</b> (Any learning activity or assessment that asks students to <i>perform</i> to demonstrate their knowledge, understanding and proficiency)	<b>Group wide activities or alternative programs</b> <b>Paper Coding</b>
<b>Benchmark Assessments</b> (used to establish baseline achievement data and measure progress towards grade level standards; given 2-3 X per year)	<b>Students will be assessed at the beginning of the section on familiarity with programs, and will be able to progress further based on progress.</b>

### RESOURCES

**Core instructional materials:**

[www.kodable.com](http://www.kodable.com)

[www.scratch.mit.edu](http://www.scratch.mit.edu)

[www.bitsbox.com](http://www.bitsbox.com)

[www.ozoblockly.com](http://www.ozoblockly.com)

**Supplemental materials:**

Code.org, Instructional tutorials, visuals, simulations and handouts

**Modifications for Learners**

See [appendix](#)