STRATFORD PUBLIC SCHOOLS
Curriculum Map: Grades 3-5
Pacing Guide: September- November (First Quarter)
Unit 1: Computer Science and Design Thinking

Written by Jill Marakovits
Approved August 2022

Mission Statement:

-By the end of fifth grade, students will have a grasp of computing systems and how they work and how they can help people in today's knowledge based technological world by providing a curriculum of high quality computer science and technological design education. -By the end of fifth grade, students will also gain a better understanding of 21st Century skills as they apply to the technology standards and the positive and negative aspects of computing devices in our world today and how they can help make changes.

-By the end of fifth grade, students will have a better understanding of technology literacy, digital citizenship, and information and media literacy so they can access, manage, evaluate, and synthesize information in their personal, academic, and professional lives.

- **By the end of fifth grade, students will be able to utilize different technology to ethically produce and critically consume technology in our ever changing technological world.**

Essential Questions:

-What is technology and how does it work and impact the lives of ourselves and others in our world today compared to the past?
-How has technology changed and made our life easier and more challenging?
-What is a computer made up of and how has the software and hardware changed through the years? -How can I make sure my computer is safely connected to the internet?
-What troubleshooting strategies can I use to help solve problems when the computer isn't working?
-What is a browser and how do you navigate through a browser? (google)
-What is a keyboard and how do students utilize it to type different types of writing in the digital world?
-What fingers should students use to type the home row, top row, bottom row and number keys?
- How can I make letters capital and highlight words that I type to have them do other functions? (ex. cut/copy and paste, change font, style and size) - How can I save my documents to a safe drive so I can share them and collaborate with the appropriate people? -How can I show good digital citizenship?
-How can I safely connect with other people on the computer?
-What is private and public information students can share safely in the digital world?
-How can I collaborate with others in the digital world responsibly?
- How can I use Google Docs to type assignments?
-How can I utilize Google Slides to create a presentation? (creative thinking)

-How can students navigate Google Classroom and Google Meet in a school safe environment?
- How can I use Google Sheets to graph and analyze data?
-How can I create a safe password? (numerals, capitals, and characters) -How can students sequence steps as it applies to coding?
-How can students design programs by following sequential steps in programming as it applies to websites or programs?
-How different algorithms can achieve the same result?
-How can I utilize coding websites to help me become a 21st century global-minded individual?

Enduring Understanding

-Technology impacts our lives and will be part of our future educational experiences.
-Collaboration about positives and negatives with technology and how technology should be monitored, maintained and improved over time.
-Individuals are affected differently by technology and will use it to extend their thinking in a positive educational and career way.
-Being a good digital citizen is an essential quality of being a productive and successful citizen in the 21st century and beyond. -Communication with others through social media should be done in a safe environment. (private versus public information) -Online communication and collaboration will be a key component of future and career choices of students.
-Utilizing digital tools such as Google Apps to communicate thoughts, research and ideas effectively with other students in the classroom. -Utilizing different computer programs is a key concept in being a successful student.
-Typing will help students to successfully communicate more efficiently.
-Navigate different types of technology in the digital world to become healthy, productive, 21st century global-minded individuals.
- Participate in a diverse online community that incorporates perspectives where students can learn from different cultures, ethnicities, abilities and genders.
- Coding will help students be successful in the STEAM based careers and or jobs they may attain.
-Engagement and preparation in technology will help students to be entrepreneurs in this ever changing world of digital computing devices and tools.
-In this ever changing world, students need to understand how technology spurs new business and career opportunities for their future endeavors.

New Jersey Student Learning Standard	**Core Content Objective**		**Instructional Actions**	
	Concepts	**Skills**	**Activities/Strategies**	**Assessment**

<u>Targeted NJ Core Curriculum Content Standards</u> 8.1.5.CS.1, 8.1.5.CS.2, 8.1.5.CS.3, 8.1.5.NI.1, 8.1.5.NI.2, 8.1.5.IC.1, 8.1.5.IC.2, 8.1.5.DA.1, 8.1.5.DA.2, 8.1.5.DA.3, 8.1.5.DA.4, 8.1.5.D.A.5, 8.1.5.AP.1, 8.1.5.AP.2, 8.5.AP.3, 8.1.5.AP.4, 8.1.5.AP.5, 8.1.5.AP.6, 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.3, 8.2.5.ED.4, 8.2.5.ED.5, 8.2.5.ITH.1, 8.2.5.ITH.2, 8.2.5.ITH.3, 8.2.5.ITH.4, 8.2.5.NT.1, 8.2.5.NT.2, 8.2.5.NT.3, 8.2.5.NT.4, 8.2.5.ETW.1, 8.2.5.ETW.2, 8.2.5.ETW.3, 8.2.5.ETW.4, 8.2.5.ETW.5, 8.2.5.EC.1 <u>L.A.L. standards</u> NJSLSA.R7, RF.K.1, RF.K.3 <u>21st Century Standards</u> 9.2.4.A.1, 9.2.12.C.2 21st Century Skills: - communication through digital methods	Following Directions Sequencing Computer Care Keyboarding Wireless Methods Different Types of Technology (Pros and Cons) Proper Disposal of Batteries and Computer Parts Google Google Docs Google Slides Google Sheets (climate change data and data collection and analysis) Google Drive Hard Drive Google Classroom Google Meet Zoom Digital Citizenship Computer Troubleshooting Solving Connectivity Issues Internet Safety Privacy Settings	Computer Basics -Computer Lab procedures - Acceptable Behavior at the computer -Then and Now of Computers -Software and Hardware of a Computer -Program Design -Identifying digital citizenship while utilizing computer programs -Identifying computer parts and their uses (hardware and software) -Proper physical use and care of the computer -Navigate the basic function of a browser -organizing and saving files both internally and externally - Utilize the correct typing strategies to type the letters on the keyboard. -Find numerals on a QWERTY keyboard. -Utilize the spacebar, backspace, delete, and shift key. -Utilizing the font, size and style for typing in computer programs -Review drop,drag and copy and paste techniques. - Continue to type words, sentences, and paragraphs - Using Google Apps appropriately and choosing appropriate ones in different situations-keeping information private -digitally analyze climate	- Websites/Apps - Computer Games: - Typing Club - abcya.com bbc.co.uk - arcademics.com - kahoot - - prodigy YouTube - - Zoom - - Google Apps - Google Classroom Google Docs, Sheets and - - Slides - - nitrotype.com - - blockly hour - - of code scratch - engineering.com Google Drive Google - Forms design squad global (PBS kids) flipgrid (video communication) Padlet	**Summative:** -Teacher observations -Student responses - placement of fingers during typing activities -Student completion of... typing club lessons, nitro type, and bbc lessons - Typing Club scores **Formative:** -Use of Google Apps -Google Docs assignments - Google Slides projects -Google Sheets projects (climate change data and data analysis, graphing, equations, trends, patterns and statistics) -looking at their Google Drive -Completion of coding games -Teacher observations of students' being good digital citizens -Website design -Showing internet safety - Creating a Google Form and presenting the findings - Design a global farm for fidgits -success on engineering.com -Video communication samples from Flipgrid -Safe Online Discussions on Google Classroom -Appropriate responses on Google Classroom from teacher and student messages -

				Appropriate communication samples from Padlet discussion boards -Connecting wireless devices

-computing technology has changed the way people live and work - engineering design is a creative process - following simple sequence of events to complete tasks -computer safety and its importance -preparing students for jobs that require computing devices and experience with digital tools -become critical and systematic thinkers to solve local and global issues in our world - foster an inclusive computing and design culture for students Technology: -chromebooks - promethean board digital tools -apps -websites -wireless tools	Password Safety Media Balance Social Media safety Coding/ Program Design Algorithms and Data Structures Coding Language (Binary/ Python Engineering Design Online Discussion in Responsible Ways Computer Ethics Technology and diversity inclusion	change data -youtube privacy settings -social media safety -practice online safety -practice password safety - practice the importance of media balance -coding basics and advanced coding -coding language basics and advanced -different algorithms used for the same result -how to troubleshoot problems that arise with computers (internet and programming issues) - how to change settings when there is a problem -how to manage privacy settings -safe video communication skills -becoming familiar with connecting bluetooth or wireless devices to computing devices -how to safely get rid of or recycle batteries, old computers		-Success with air printing - Creation of a private youtube channel (following appropriate settings) -creation and modifying of a computational artifact (can address societal issues or personal expression)

Online Resources / Technology:	Chromebooks, Smaller mice, Headphones, Promethean board, Websites/Apps Computer Games: - Typing Club - abcya.com - bbc.co.uk
	- arcademics.com - YouTube - prodigy - kahoot - Google Classroom - Google Drive - Google Docs, Sheets and Slides - nitrotype.com - blockly - hour of code - scratch - engineering.com - Google Forms - design squad global (PBS kids) - flipgrid (video communication) - Padlet
Primary Teacher Resources:	Chromebooks, Apps, mice, Headphones, Promethean Board
Modifications:	*Special Education: Extra time, visuals, shortened assignments, different size mice, slower pacing, captions when needed* *504 Students: visuals, extra time, shortened assignments* *ELL Students: Visuals, google translator* *Gifted and Talented Students: Extra Websites for extra practice (extra bbc lessons and abcya typing games), faster pacing*

STRATFORD PUBLIC SCHOOLS
Curriculum Map: Grades 3-5
Pacing Guide: November - January (Second Quarter)
Unit 2: Computer Science and Design Thinking

Essential Questions:

-What is technology and how does it work and impact the lives of ourselves and others in our world today compared to the past?
-How has technology changed and made our life easier and more challenging?
-What is a computer made up of and how has the software and hardware changed through the years? -How can I make sure my computer is safely connected to the internet?
-What troubleshooting strategies can I use to help solve problems when the computer isn't working?
-What is a browser and how do you navigate through a browser? (google)
-What is a keyboard and how do students utilize it to type different types of writing in the digital world?
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- How can I make letters capital and highlight words that I type to have them do other functions? (ex. cut/copy and paste, change font, style and size) - How can I save my documents to a safe drive so I can share them and collaborate with the appropriate people? -How can I show good digital citizenship?
-How can I safely connect with other people on the computer?
-What is private and public information students can share safely in the digital world?
-How can I collaborate with others in the digital world responsibly?
- How can I use Google Docs to type assignments?
-How can I utilize Google Slides to create a presentation? (creative thinking)
-How can students navigate Google Classroom and Google Meet in a school safe environment?
-How can students safely poll others digitally and use the information in a helpful way as it applies to the topic being polled? (climate change) - How can I use Google Sheets to graph and analyze data?
-How can I create a safe password? (numerals, capitals, and characters) -How can students sequence steps as it applies to coding?
-How can students design programs by following sequential steps in programming as it applies to websites or programs?
-How different algorithms can achieve the same result?
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Enduring Understanding

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- Participate in a diverse online community that incorporates perspectives where students can learn from different cultures, ethnicities, abilities and genders.
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-Engagement and preparation in technology will help students to be entrepreneurs in this ever-changing world of digital computing devices and tools.
-Choosing the most appropriate digital tool to help in implementation of project accuracy and completion. (design solutions)
-In this ever-changing world, students need to understand how technology spurs new business and career opportunities for their future endeavors.

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Technology: -chromebooks -promethean board digital tools -apps -websites -wireless tools	Computer Ethics Technology and diversity inclusion 3D Printing	-design solutions -becoming familiar with connecting bluetooth or wireless devices to computing devices -give directions and print with a 3D Printer -how to safely get rid of or recycle batteries, old computers		

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STRATFORD PUBLIC SCHOOLS
Curriculum Map: Grades 3-5
Pacing Guide: February- April (Third Quarter)
Unit 3: Computer Science and Design Thinking
Essential Questions: -What is technology and how does it work and impact the lives of ourselves and others in our world today compared to the past? -How has technology changed and made our life easier and more challenging? -What is a computer made up of and how has the software and hardware changed through the years? -How can I make sure my computer is safely connected to the internet? -What troubleshooting strategies can I use to help solve problems when the computer isn't working? -What is a browser and how do you navigate through a browser? (google) -What is a keyboard and how do students utilize it to type different types of writing in the digital world? -What fingers should students use to type the home row, top row, bottom row and number keys? - How can I make letters capital and highlight words that I type to have them do other functions? (ex. cut/copy and paste, change font, style and size) - How can I save my documents to a safe drive so I can share them and collaborate with the appropriate people? -How can I show good digital citizenship?

-How can I safely connect with other people on the computer?
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-How can I utilize Google Slides to create a presentation? (creative thinking)
-How can students navigate Google Classroom and Google Meet in a school safe environment?
-How can students safely poll others digitally and use the information in a helpful way as it applies to the topic being polled? (climate change) -
How can I use Google Sheets to graph and analyze data?
-How can I create a safe password? (numerals, capitals, and characters) -How
can students sequence steps as it applies to coding?
-How can students design programs by following sequential steps in programming as it applies to websites or programs?
-How different algorithms can achieve the same result?
-How can I utilize coding websites to help me become a 21st century global-minded individual?
-How can students reflect on other content areas through keeping a safe data entry blog?
-How can students research a topic and make sure it is accurate and from a reliable source? **Enduring**
Understanding
-Technology impacts our lives and will be part of our future educational experiences.
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-communication through digital methods -computing technology has changed the way people live and work - engineering design is a creative process - following simple sequence of events to complete tasks -computer safety and its importance -preparing students for jobs that require computing devices and experience with digital tools -become critical and systematic thinkers to solve local and global issues in our world - foster an inclusive computing and design culture for students Technology: -chromebooks - promethean board digital tools -apps -websites -wireless tools	Media Balance Social Media safety Coding/ Program Design Algorithms and Data Structures Coding Language (Binary/ Python Online Discussion in Responsible Ways Engineering Design Polling Design Solutions Selecting BEST computing programs Blogging Researching Accurate Information Computer ethics Technology and diversity inclusion 3D Printing	-digitally analyze climate change data -keeping information private -youtube privacy settings -social media safety -practice online safety -practice password safety - practice the importance of media balance -coding basics and advanced coding -coding language basics and advanced -different algorithms used for the same result -how to troubleshoot problems that arise with computers (internet and programming issues) - how to change settings when there is a problem -how to manage privacy settings -safe video communication skills -design solutions -becoming familiar with connecting bluetooth or wireless devices to computing devices -how to set up and keep a record of safe blogging -give directions and print with a 3D Printer -how to safely get rid of or recycle batteries, old computers		-polling projects -connecting wireless devices -success with air printing - creation of a private youtube channel (following appropriate settings) -blogging entries -round robin writing activity (group work) (Google Docs/ Google Drive) -research writing samples (sentences and paragraphs) - creation and modifying of a computational artifact (can address societal issues or personal expression) - completion of 3D Printing

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STRATFORD PUBLIC SCHOOLS
Curriculum Map: Grades 3-5
Pacing Guide: April-June (Fourth Quarter)
Unit 4: Computer Science and Design Thinking

Essential Questions:

What is technology and how does it work and impact the lives of ourselves and others in our world today compared to the past?
-How has technology changed and made our life easier and more challenging?
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-How can I safely connect with other people on the computer?
-What is private and public information students can share safely in the digital world?
-How can I collaborate with others in the digital world responsibly?
- How can I use Google Docs to type assignments?

-How can I utilize Google Slides to create a presentation? (creative thinking)
-How can students navigate Google Classroom and Google Meet in a school safe environment?
-How can students safely poll others digitally and use the information in a helpful way as it applies to the topic being polled? -
How can I use Google Sheets to graph and analyze data?
-How can I create a safe password? (numerals, capitals, and characters) -How
can students sequence steps as it applies to coding?
-How can students design programs by following sequential steps in programming as it applies to websites or programs?
-How different algorithms can achieve the same result?
-How can I utilize coding websites to help me become a 21st century global-minded individual?
-How can students reflect on other content areas through keeping a safe data entry blog?
-How can students research a topic and make sure it is accurate and from a reliable source?

Enduring Understanding

-Technology impacts our lives and will be part of our future educational experiences.
-Collaboration with others about positives and negatives with technology and how technology should be monitored, maintained and improved.
-Being a good digital citizen is an essential quality of being a productive and successful citizen in the 21st century and beyond.
-Online communication and collaboration will be a key component of future and career choices of students.
-Utilizing digital tools such as Google Apps to communicate thoughts, research and ideas effectively with other students in the classroom. -Utilizing different computer programs is a key concept in being a successful student.
-Typing will help students to successfully communicate more efficiently.
-Communicate effectively and responsibly by utilizing digital tools.
- Coding will help students be successful in the STEAM based careers and or jobs they may attain.
-Navigate the digital world to become healthy, productive, 21st century global-minded individuals.
- Participate in a diverse online community that incorporates perspectives where students can learn from different cultures, ethnicities, abilities and genders
-Engagement and preparation in technology will help students to be entrepreneurs in this ever-changing world of digital computing devices and tools.
-Choosing the most appropriate digital tool to help in implementation of project accuracy and completion. (design solutions)
-In this ever-changing world, students need to understand how technology spurs new business and career opportunities for their future endeavors.

New Jersey Student Learning Standard	**Core Content Objective**		**Instructional Actions**	
	Concepts	**Skills**	**Activities/Strategies**	**Assessment**

<u>Targeted NJ Core Curriculum Content Standards</u> 8.1.5.CS.1, 8.1.5.CS.2, 8.1.5.CS.3, 8.1.5.NI.1, 8.1.5.NI.2, 8.1.5.IC.1, 8.1.5.IC.2, 8.1.5.DA.1, 8.1.5.DA.2, 8.1.5.DA.3, 8.1.5.DA.4, 8.1.5.D.A.5, 8.1.5.AP.1, 8.1.5.AP.2, 8.5.AP.3, 8.1.5.AP.4, 8.1.5.AP.5, 8.1.5.AP.6, 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.3, 8.2.5.ED.4, 8.2.5.ED.5, 8.2.5.ED.6, 8.2.5.ITH.1, 8.2.5.ITH.2, 8.2.5.ITH.3, 8.2.5.ITH.4, 8.2.5.NT.1, 8.2.5.NT.2, 8.2.5.NT.3, 8.2.5.NT.4, 8.2.5.ETW.1, 8.2.5.ETW.2, 8.2.5.ETW.3, 8.2.5.ETW.4, 8.2.5.ETW.5, 8.2.5.EC.1 <u>L.A.L. standards</u> NJSLSA.R7, RF.K.1, RF.K.3 <u>21st Century Standards</u> 9.2.4.A.1, 9.2.12.C.2 21st Century Skills: - communication through digital methods	Following Directions Sequencing Computer Care Keyboarding Wireless Methods Different Types of Technology (Pros and Cons) Proper Disposal of Batteries and Computer Parts Google Google Docs Google Slides Google Sheets (climate change data and data collection and analysis) Google Drive Hard Drive Google Classroom Google Meet Zoom Digital Citizenship Computer Troubleshooting Solving Connectivity Issues Internet Safety Privacy Settings	Computer Basics -Computer Lab procedures - Acceptable Behavior at the computer -Then and Now of Computers -Software and Hardware of a Computer -Program Design -Identifying digital citizenship while utilizing computer programs -Identifying computer parts and their uses (hardware and software) -Proper physical use and care of the computer -Navigate the basic function of a browser -organizing and saving files both internally and externally - Utilize the correct typing strategies to type the letters on the keyboard. -Find numerals on a QWERTY keyboard. -Utilize the spacebar, backspace, delete, and shift key. -Utilizing the font, size and style for typing in computer programs -Review drop, drag and copy and paste techniques. - Continue to type words, sentences, and paragraphs - Using Google Apps appropriately and choosing appropriate ones in different situations -digitally analyze climate change data	- Websites/Apps - Computer Games: - Typing Club - abcya.com - bbc.co.uk - arcademics.com - - kahoot - - prodigy YouTube - - Zoom - Google Apps Google Classroom - - Google Docs, Sheets and - - Slides - - nitrotype.com - - blockly hour of code - scratch engineering.com - - Google Drive Google - Forms - - design squad global (PBS - kids) flipgrid (video communication) slido nearpod polleverywhere.com Padlet wordpress 3D Printing	- **Summative:** -Teacher observations -Student responses - placement of fingers during typing activities -Student completion of... typing club lessons, nitro type, and bbc lessons - Typing Club scores **Formative:** -Use of Google Apps -Google Docs assignments - Google Slides projects -Google Sheets projects (climate change data and data analysis, graphing, equations, trends, patterns and statistics - looking at their Google Drive -Completion of coding games -Teacher observations of students' being good digital citizens -Website design -Showing internet safety - Creating a Google Form and presenting the findings - Design a global farm for fidgits -success on engineering.com - Video communication samples -Safe Online Discussions on Google Classroom -Appropriate responses on Google Classroom from teacher and student messages -Appropriate communication samples

				from Padlet discussion boards -polling projects

-computing technology has changed the way people live and work - engineering design is a creative process - following simple sequence of events to complete tasks -computer safety and its importance -preparing students for jobs that require computing devices and experience with digital tools -become critical and systematic thinkers to solve local and global issues in our world - foster an inclusive computing and design culture for students Technology: -chromebooks - promethean board digital tools -apps -websites -wireless tools	Password Safety Media Balance Social Media safety Coding/ Program Design Algorithms and Data Structures Coding Language (Binary/ Python Engineering Design Online Discussion in Responsible Ways Polling Design Solutions Selecting BEST computing programs Blogging Researching Accurate Information Computer ethics Technology and diversity inclusion 3D Printing	-Keeping information private -youtube privacy settings -social media safety -practice online safety -practice password safety - practice the importance of media balance -coding basics and advanced coding -coding language basics and advanced -different algorithms used for the same result -how to troubleshoot problems that arise with computers (internet and programming issues) - how to change settings when there is a problem -how to manage privacy settings -safe video communication skills -polling and using the data -design solutions -becoming familiar with connecting bluetooth or wireless devices to computing devices -how to set up and keep a record of safe blogging -give directions and print with a 3D Printer -how to safely get rid of or recycle batteries, old computers		-connecting wireless devices -success with air printing - creation of a private youtube channel (following appropriate settings) -blogging entries -round robin writing activity (group work) (Google Docs/ Google Drive) -research writing samples (sentences and paragraphs) - creation and modifying of a computational artifact (can address societal issues or personal expression) - completion of 3D Printing

Online Resources / Technology:	Chromebooks, Smaller mice, Headphones, Promethean Board, Websites/Apps Computer Games:
	- Websites/Apps - Typing Club - abcya.com - bbc.co.uk - arcademics.com - kahoot - prodigy - YouTube - Zoom - Google Apps - Google Classroom - Google Docs, Sheets and Slides - nitrotype.com - blockly - hour of code - scratch - engineering.com - Google Drive - Google Forms - design squad global (PBS kids) - flipgrid (video communication) - slido - nearpod - polleverywhere.com - padlet - word press - 3D Printing
Primary Teacher Resources:	Chromebooks, Apps, mice, Headphones, Promethean Board
Modifications:	*Special Education: Extra time, visuals, shortened assignments, different size mouse, slower pacing, captions when needed* *504 Students: visuals, extra time, shortened assignments* *ELL Students: Visuals, google translator* *Gifted and Talented Students: Extra Websites for extra practice (extra bbc lessons and abcya typing games), faster pacing*