Unit 3
Technology Curriculum 4th -6th
2018

Content Area:	Technology	Grade(s)	4th -6th
Unit Overview:	2nd/3rd trimester/ 3rd Marking Period		
	2018 New Jersey Student Learning Standards Technology		

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:

All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

D. Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.

E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

Standard(s) 8.1 Educational Technology

- **8.1.5.D.1** Understand the need for and use of copyrights.
- **8.1.5.D.2** Analyze the resource citations in online materials for proper use.
- **8.1.5.D.3** Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media.
- **8.1.5.D.4** Understand digital citizenship and demonstrate an understanding of the personal consequences of inappropriate use of technology and social media.
- **8.1.5.E.1** Use digital tools to research and evaluate the accuracy of, relevance to, and appropriateness of using print and non-print electronic information sources to complete a variety of tasks.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:

- **8.2.5.D.1** Identify and collect information about a problem that can be solved by technology, generate ideas to solve the problem, and identify constraints and trade-offs to be considered.
- **8.2.5.D.2** Evaluate and test alternative solutions to a problem using the constraints and trade-offs identified in the design process to evaluate potential solutions.
- **8.2.5.D.3** Follow step by step directions to assemble a product or solve a problem.
- **8.2.5.D.4** Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.
- **8.2.5.D.5** Describe how resources such as material, energy, information, time, tools, people and capital are used in products or systems.
- **8.2.5.D.6** Explain the positive and negative effect of products and systems on humans, other species and the environment, and when the product or system should be used.
- **8.2.5.D.7** Explain the impact that resources such as energy and materials used in a process to produce products or system have on the environment.
- **8.2.5.E.1** Identify how computer programming impacts our everyday lives.
- **8.2.5.E.2** Demonstrate an understanding of how a computer takes input of data, processes and stores the data through a series of commands, and outputs information.
- **8.2.5.E.3** Using a simple, visual programming language, create a program using loops, events and procedures to generate specific output.
- **8.2.2.E.4** Use appropriate terms in conversation (e.g., algorithm, program, debug, loop, events, procedures, memory, storage, processing, software, coding, procedure, and data).

Essential Question(s)	**Enduring Understandings**
• In order to keep information private, one must secure their profile with a username and password and log off when finished. • How can I keep my computer and password safe? • What are graphs used for? • How is a central idea developed and maintained throughout a presentation? • Why should worksheets be formatted? • What are data management options in spreadsheet software? • What is a probability?	• Advocate and practice safe, legal, and responsible use of information and technology. • Demonstrate personal responsibility for lifelong learning. • Exhibit leadership for digital citizenship. • Plan strategies to guide inquiry. • Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media. • Evaluate and select information sources and digital tools based on the appropriateness for specific tasks. • Apply the design process. • Use and maintain technological products and systems. • Assess the impact of products and systems. • Computational thinking and computer programming as tools used in design and engineering.

Interdisciplinary Connections		
Student Learning Standards Literacy	**Student Learning Standards Math**	**Career Ready Practices**

SLS.ELA-Literacy.CCRA.R.7	SLS.MATH.PRACTICE.MP1	CRP1
SLS.ELA-Literacy.CCRA.W.6	SLS.MATH.PRACTICE.MP2	CRP4
SLS.ELA-Literacy.RI.1.5	SLS.MATH.PRACTICE.MP3	CRP6
SLS.ELA-Literacy.RI.1.10	SLS.MATH.PRACTICE.MP5	CRP8
SLS.ELA-Literacy.RF.1.4a	SLS.MATH.PRACTICE.MP6	CRP11
SLS.ELA-Literacy.W.1.6	SLS.MATH.PRACTICE.MP7	
SLS.ELA-Literacy.SL.1.1		
SLS.ELA-Literacy.SL.1.1c		
SLS.ELA-Literacy.SL.1.2		

Learning Plan	**Suggested Activities**				
Suggested Time Frame	**Topic**	**Skills**	**Computational Thinking**	**Core Instructional Materials**	**Suggested Formative/ Summative Classroom Assessment**
Week 21	Creating Floor Plans in Excel or Google Sheets I or floorplanner App	Digital learners will measure each room in their home using the measuring tape To create a perfectly square grid in Excel, do the following: Click on the box to the left of Column A to	Digital learners will identify geometric patterns, practice measuring and drawing to scale, find perimeters and areas, improve business application technology skills, incorporate algebra and geometry skills and	Google Sheets Tutorial https://www.youtube.com/watch?v=QTgvX5MLPC8 Google Apps Learning Center https://apps.google.com/learning-center/products/sheets/get-started/ Measuring tape Microsoft Excel Google Sheets Floorplanner.com Classroom architect http://classroom.4teachers.org/	**Student Learning Standards State Standards Rubrics** http://www.schrockguide.net/assessment-and-rubrics.html Multimedia and Apps Rubrics http://www.schrockguide.net/assessment-and-rubrics.html New Jersey Project and Assessment Examples http://www.nj.gov/education/aps/cccs/tech/assessment/ **Links on Exit/Admit Slips**

Week 22 **Week 23**	Creating Floor Plans in Excel or Google Sheets II	select all cells. Click on any of the vertical lines	learn to appreciate a variety of home types.	Measuring tape Microsoft Excel Google Sheets	Readingrockets: Exit Slips http://www.readingrockets.org/strategies/exit_slips AdLit.org: Exit Slips http://www.adlit.org/strategies/19805 Writing Across the Curriculum: Entry/Exit Slips http://writing2.richmond.edu/wac/entrexit.html Exit Slips: Effective Bell-Ringer Activities http://www.teachhub.com/news/article/cat/14/item/377 Admit Slips and Exit Slips http://literacy.kent.edu/eureka/strategies/admit_slips09.pdf Exit Tickets for Formative Assessments
Week 24	Digital learners will make a chart to show the probability of a particular outcome.	Digital Tools Skills Intro to Analytics Outcome	Digital learners will first play a probability game. Followed by creating a graph to illustrate the results. The purpose of this activity is for digital learners to compare data using bar graphs to display information.	Create a Bar Graph Video https://www.youtube.com/watch?v=YXYLFl0_ODo Creating Bars http://www.readingrockets.org/pdfs/edextras/43814-en.pdf Graph Generator http://nces.ed.gov/nceskids/createAgraph/default.aspx Google Sheets https://www.topmarks.co.uk/ Probability Game: Two Players 1. Print Frequency Chart. 2. Click here to use virtual dice or roll two real dice. 3. Go to Chartgo.com to create a graph displaying the Frequency.	
Week 25 **Week 26**	Stop Bullying: Speak Up Comic Challenge.	Digital Tools	Digital learners will understand human, cultural, and societal issues related to technology and practice	Stay Safe Online Sites http://www.watchknowlearn.org/Category.aspx?CategoryID=6311 http://www.nsteens.org/ Makebelief Comics	

			legal and ethical behavior. Digital learners will also identify behaviors that are considered cyberbullying and evaluate their own personal responsibility to be a responsible digital citizen in a comic strip that will be later presented to the class.	http://www.makebeliefscomix.com/ Bitstrips https://www.bitstrips.com	
Week 27 **Week 28**	Weather	Review chart Wizard Features and Formulas in EXCEL Column Pie Line Scatter	Digital learners will look up weather information in the chart provided on the Excel/sheets spreadsheet. Digital learners will also look up the actual average monthly high temperature and actual monthly rainfall for the past year for their geographical area. Go to http://www.we	Weather WizKids http://www.usclimatedata.com/ https://weather.com/ Weather Spreadsheet U.S Climate Data http://www.usclimatedata.com/ Weather Chart Samples http://www.kudotest.com/worksheet/temperature-chart-worksheets-for-kids World Temperature around the world https://www.timeanddate.com/weather/	

			ather.com/, type in the zip code at the top of the page and click search, click on the blue 'Month' tab, and get the 'average high' temperature and 'month to date' rainfall from the graphic that is located below the month calendar. Demonstrate to digital learners how to read the graphic and where to put the numerical data in their spreadsheet. Finally, digital learners can visit AirNow to discuss the local air quality of the town and city they are living in.	Air Quality Conditions Generator https://www.airnow.gov/index.cfm?action=airnow.main	
Supportive Strategies					
Google VR can be used to enhance any of the above lessons.					
1. Special Education					

- Employ assistive technology as needed (For example, use of Dyslexic font, high contrast or screen. magnification on Chromebook, or spoken text features).
- Graphic Organizers.
- Modifications on IEP.
- Provide written and oral directions, utilizing visuals and exemplars. (For example, teacher models on StarBoard how to login to Code.org and provides Step-by-Step instruction handout to student).
- Reduction in workload.
- Repetition and Reinforcement of classroom material.
- Strategic Grouping for all group work.

2. ESL

• Employ assistive technology as needed (For example, online translation or Language text settings on technology device) .
• For collaborative assignments, appropriate roles will be assigned. (For example, time-keeper, activity starter) .
• Make content culturally relevant.
• Partner English Learners with Strong English Speakers.
• Provide written and oral directions for all lessons, utilizing visuals and exemplars.
• Repeat classroom procedure and routines as much as possible to reinforce language learning.
• Visual Aids
http://www.cal.org/resource-center/briefs-digests/digests

3. Student at risk of failure

•Employ assistive technology as needed (For example, use of Dyslexic font, high contrast or screen magnification on devices, or spoken text features).
• Flexible acceptance of missing/lost/incomplete assignment.
• Strategic Grouping for all group work

4. Gifted and Talented

•Higher level learners will be provided with more intellectually demanding learning activities. (For example, students who complete lessons on Code.org can continue to the next levels at their own pace).
• Higher Order Questioning.
• Utilize different reading levels appropriate for students.

DOE Resources and Sample Activities 8.1.D, 8.2.D (Assessment)
DOE Resources and Sample Activities 8.1.E, 8.2.E (Assessment)

Research cyber safety, cyber security, and cyber ethics practices when using social media. Investigate several sources to build your knowledge. Present your findings clearly and effectively, sequencing ideas logically using appropriate facts to support the main idea. Express your knowledge through a speech where you speak clearly at an understandable pace or present a puppet show for a younger grade sharing your information.

Is that a fact? Provide a playlist of sites for students to research using digital tools to confirm accuracy or inaccuracy of information provided. Read with sufficient accuracy and fluency to comprehend and support your position. Demonstrate knowledge by quoting accurately from the text and explaining what the text says explicitly to support your position.

Identify a commonly used human designed product or system, (i.e., car, baby carriage, bicycle; a pencil); and guide a discussion with peers that examines how the product was created and used. With guidance from adults research the product's history reviewing changes made to increase safety. Identify the reasons why this product/ system needs to be monitored, maintained and improved. Develop and publish a two-page news release with images and text identifying the changes, explaining factors which influenced the design and how the user can contribute to product safety.

Discuss how computer programming impacts our daily lives. The New York Times states that 8-18 year olds are online more than 7.5 hours a day. Identify the impacts of excessive time spent online and develop criteria to categorize their impacts such as costs, time, and/or the social, cultural or health impacts on people's lives. Create a graphic organizer to identify the issues and their possible constraints/ solutions in response to questions raised in discussions. Can you make better use of time spent online? Extension: Create an online resource about this to share with others.

Unit Vocabulary		
Slide show presentation Slide background Image Text design Element template Layout Space Design Color palette Graphics effect Data Audio Animation Video transition Slide sorter Toolbar transition effects	Proofreading Punctuation Review chart Formulas in EXCEL Column Pie Line Scatter Analytics Visualization Java Axes Horizontal Axis Vertical Axis Axes Labels Scale Pollution	Page orientation Format Margins Columns publish Data Tables Spreadsheet Outcome