

Long Beach Island Consolidated School District Curriculum Guide

Grade: 4

Content Area: Computer Science and Design Thinking

Introduction:

All students in Grade 4 Computer Science and Design Thinking will have opportunities to apply computer science skills to solve local and global issues and design solutions to problems. They will also collaborate to share and communicate their thinking with diverse audiences. In addition to understanding internet safety, students will understand the nature of technology, the interaction of technology and humans, and the effect of technology on the natural world. Skills include performing tasks, computational thinking and problem solving. Students will learn the parts of a computer, use individual Chromebook devices, and create collaborative, digital artifacts. All technology units follow the NJ Student Learning Objectives. Student progress will be measured in a variety of methods.

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| Grade: 4 | Content Area: Computer Science and Design Thinking |
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| Original Adoption: August 20, 2019 |
| Created By: Chloe Sheplin |
| Revised on: August 16, 2022 |
| Revised By: Cathy McBride |

| Recommended Pacing Guide | |
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| Unit 1: Our Digital World | 5 Days |
| Unit 2: Digital Citizenship | 5 Days |
| Unit 3: Interacting with Technology | 15 Days |
| Unit 4: How Technology Affects Our World | 10 Days |

*There are about 35 Technology classes throughout the school year.

| Unit 1: Our Digital World | Duration: 5 Days |
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| Standards/Learning Targets | |
| <p>New Jersey Technology Strands:</p> <ul style="list-style-type: none"> ● 8.1 Computer Science: 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. ● 8.2 Design Thinking: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment. | |
| <p>New Jersey Technology Standards:</p> <p>Standard 8.1 Computer Science: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.</p> <p>CS: Computer Science 8.1.5.CS.1, 8.1.5.CS.2 NI: Network and Internet 8.1.5.NI.1, 8.1.5.NI.2 IC: Impacts of Computing 8.1.5.IC.1 DA: Data & Analysis 8.1.5.DA.1, 8.1.5.DA.2 AP: Algorithms & Programming 8.1.5.AP.1</p> | |

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

ED: Engineering Design 8.2.5.ED.1, 8.2.5.ED.2

ITH: Interaction of Technology and Humans 8.2.5.ITH.1, 8.2.5.ITH.2

NT: Nature of Technology 8.2.5.NT.1, 8.2.5.NT.2

ETW: Effects of Technology on the Natural World 8.2.5.ETW.1, 8.2.5.ETW.2, 8.2.3.ETW.3

EC: Ethics & Culture 8.2.5.EC.1

Primary Interdisciplinary Connections:

English Language Arts

SL.4.2, W.4.1.a

Math

4.MD.4 M

Science

4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

21st Century Life and Career Standards:

Career Readiness, Life Literacies, and Key Skills

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.

9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.1: Explain the need for and use of copyrights.

9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.

9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.

9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.

9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance

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Evidence of Student Learning

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| <p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Teacher Observation ● Teacher Checklist ● Verbal question & answer ● Self-evaluation of performance and progress ● Class discussions ● Peer editing ● Self-evaluation | <p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● End of Unit Project ● Portfolios ● Performance Tasks |
| <p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Student participation ● Student presentation of completed project | <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Baseline SGO ● Mid-year SGO ● End of year SGO |

Knowledge & Skills

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| <p>Unit Objectives: <i>Students will know...</i> Digital media are 21st-century tools used for storing data, accessing data, and local and global communication. The use of digital tools requires students to have general understandings of the tools and how to use them appropriately. Technology products and systems impact our life and change over time.</p> | <p>Unit Objectives: <i>Students will be able to...</i> Obtain, organize, and communicate information appropriately. Conduct research on natural resources to create collaborative, digital presentations or animations. Use Google Drive to access, store and share information for collaborating with peers. Explain how digital media are used in our daily lives, in a variety of formats, and for a variety of purposes. Explain how technology has changed to help accommodate our lives Explain how technology has strengthened our ability to save and access information anywhere we are, as part of a global society. Explain how the cloud works. Explain how Google Drive works. Identify the different parts of the computer, and more specifically the keyboard (“power keys” e.g., Enter, Spacebar). Place their hands correctly on the keyboard. Use the mouse to access menus.</p> |
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| | <p>Use keyboard shortcuts. Understand basic technology terms</p> |
| <p>Enduring Understandings: Students will understand...</p> <ul style="list-style-type: none"> ● Digital tools can be used for a variety of tasks. ● Function of Google Drive for accessing, storing and sharing work. ● Technology terms for computer hardware and software. ● Keyboard setup and usage | <p>Essential Questions: What are the ways that we use digital technology in our daily lives? How does digital technology help us in our daily lives? What are the ways we can save our files and data? What is a Google Drive? What is the cloud? What are the benefits of the cloud over previous technology for saving and accessing our data? What is a website URL? What are the following technology terms: computer parts: monitor, keyboard, mouse, printer, speakers /software terms - menu, file, folder, application, save, and quit. How is the keyboard setup? How should hands be placed on the keyboard to gain benefits in typing accuracy and speed?</p> |

Core Instructional & Supplemental Materials

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| <p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Demonstrate proper use and practices ● KidPix ● BrainPopJr. ● Google Earth ● G-Suite ● GMail ● Classroom Library ● Computers ● iPad ● Chromebooks ● Internet ● Google ● www.brainpopjr.co ● www.abcya.com ● Code.org ● Tynker.com ● Kodable.com | <p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● Bang, M. & Chisholm, P. (2014). <u>Buried sunlight: How fossil fuels have changed the earth</u> ● Rockwell, A. (2009). <u>What's so bad about gasoline? Fossil fuels and what they do</u> ● Bang, M. (2014) <u>Common ground: The water, earth and air we share.</u> ● <u>A is for Array</u> by Brandon Hansen ● <u>How to Code a Sandcastle</u> by Josh Funk ● <u>If I Built a School</u> by Chris van Dusen ● <u>Cece Loves Science</u> by Vashti Harrison ● <u>When Charlie McButton Lost Power</u> by Suzanne Collin |
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| <ul style="list-style-type: none">● Scratch● Qwertytown for practicing keyboard skills for accuracy and speed● Tools and videos code.org video library● www.lbischools.org● www.scholastic.com● www.readingeggs.com● Natural resources digital presentation or Scratch animated story about natural resources | <ul style="list-style-type: none">● Webster's Manners by Hannah Whaley● Chicken Clicking by Jeanne Willis● Hello Ruby: Journey Inside the Computer by Linda Liuka● Grace Hopper: Queen of Computer Code by Laurie Wallmark |
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Accommodations/Modifications

English Language Learners:

- Collaborate with ELL department to make necessary modifications for students
- Provide translated material
- Provide differentiation for students as needed
- Use student helpers and cooperative learning
- Use visual aids
- Rephrase vocabulary
- Allow for alternate forms of responses

Special Education/504 Plans/Students with Disabilities:

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Shorten assignments to focus on mastery of key concepts
- Restate, reword and clarify directions
- Lessen the amount of information presented
- Allow for alternate forms of responses
- Increase eye contact
- Maintain close proximity
- Attention techniques
- Screen, mouse, and or sound modification
- Adapted access/programs

Students at Risk of Failure:

- Make sure children feel welcome and comfortable while being discrete
- Help to provide basic needs while the child is in school (food, clothing, etc)
- Provide resources for basic needs outside of school (medical, shelter, food, etc)
- Pair with adult mentor or buddy
- Rephrase vocabulary
- Provide structure and adhere to a consistent daily routine with clear and concise rules

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- Facilitate successful experiences

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Recognize native languages and cultures
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments

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- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

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| Unit 2: Digital Citizenship | Duration: 5 Days |
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Standards/Learning Targets

New Jersey Technology Strands:

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IC: Impacts of Computing 8.1.5.IC.1, 8.1.5.IC.2

DA: Data & Analysis 8.1.5.DA.1, 8.1.5.DA.4 8.1.5.DA.3, 8.1.5.DA.5

AP: Algorithms & Programming 8.1.5.AP.1, 8.1.5.AP.4

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

ED: Engineering Design

8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.3, 8.2.5.ED.4

ITH: Interaction of Technology and Humans 8.2.5.ITH.1, 8.2.5.ITH.2

NT: Nature of Technology 8.2.5.NT.1, 8.2.5.NT.2

ETW: Effects of Technology on the Natural World 8.2.5.ETW.1, 8.2.5.ETW.2

EC: Ethics and Culture 8.2.5.EC.1

Primary Interdisciplinary Connections:

English Language Arts

RI.4.5 Determine the main idea of a text and explain how it is supported by key details; summarize the text.

RI.4.6 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.

RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

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Career Readiness Practices:

- Demonstrate creativity and innovation.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Use technology to enhance productivity, increase collaboration and communicate effectively.
- Consider the environmental, social and economic impacts of decisions
- Act as a responsible and contributing community member and student

Career Readiness, Life Literacies, and Key Skills

9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions.

9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.

9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.

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9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.

9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.4: Determine the impact of implicit and explicit media messages on individuals,

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groups, and society as a whole.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.IML.7: Evaluate the degree to which information meets a need including social emotional learning, academic, and social.

9.4.5.TL.1: Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

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| Evidence of Student Learning | |
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Formative Tasks:

- Teacher Observation
- Teacher Checklist
- Verbal question & answer
- Self-evaluation of performance and progress
- Exit Slip
- Keyboarding tasks
- Question and answer sheets

Alternative Assessments:

- End of unit project
- Student self-reflection about creation or discussion while planning a project
- rubric to score student work and presentation of final creation
- Teacher checklist to record student understanding of skills based on participation and performance of skills

Summative Assessments:

- Student participation
- Student presentation of completed project

Benchmark Assessments:

- Baseline SGO
- Mid-year SGO
- End of year SGO

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| Knowledge & Skills | |
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Unit Objectives:

Students will know...

- The use of technology and digital tools requires knowledge and appropriate

Unit Objectives:

Students will be able to...

- Use technology and digital tools collaboratively and strategically.
- Understand cybersafety.

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use of operations and related applications.

- Digital tools and environments support the learning process and foster collaboration in solving issues and problems.
- Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.
- Effective use of digital tools assists in gathering and managing information.
- Information accessed through the use of digital tools assists in generating solutions and making decisions.
- The ability to recognize a problem and apply critical thinking and problem-solving skills to solve that problem is a lifelong skill that develops over time.
- Collaboration and teamwork enable individuals or groups to achieve common goals with greater efficiency.
- Effective communication skills convey intended meaning to others and assist in preventing misunderstandings.
- Digital media are 21st-century tools used for communication.
- There are ethical and unethical uses of communication and media.
- The nature of the 21st-century learning environment has shifted, demanding greater individual accountability, productivity, and collaboration.
- Ethical behaviors support dignity in all aspects of life.
- The identification of key ideas and details is essential in the interpretation of text.
- The reading of informational text provides rich opportunities for the integration of knowledge and ideas.
- Research builds knowledge.
- Collaboration with peers fosters the development of one's own

- Use technology to generate solutions to problems.

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| comprehension and development of ideas | |
| <p>Enduring Understandings: Students will understand...</p> <ul style="list-style-type: none"> ● Cyberbullying is different from real-life bullying ● Effects of cyberbullying ● What tools are used most for cyberbullying. ● How to deal with and prevent cyberbullying. ● Being anonymous affects online behaviors. | <p>Essential Questions:</p> <ul style="list-style-type: none"> ● What behaviors constitute cyberbullying? ● How does cyberbullying differ from real-life bullying? ● Are the psychological and emotional outcomes of cyberbullying any worse than those of real-life bullying? ● What role does anonymity play in one's inclination to bully another using the Internet or other technologies? ● Why would one engage in cyberbullying? ● What medium (e.g., emailing, texting, instant messaging, social networking) lends itself most to cyberbullying? ● What are the best ways to deal with cyberbullying? ● What are the best ways to prevent cyberbullying? ● How can we be upstanders to cyberbullying? |

Core Instructional & Supplemental Materials

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| <p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Cyber Safety presentation ● Google for research purposes ● Various iPad apps for digital learning environments ● Computer hardware ● Computer programs and software ● SmartBoard ● Google ● KidPix ● BrainPopJr. ● G-Suite ● Gmail ● Quick Digital Citizenship Activities for | <p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● Bully by Patricia Pollaco ● Cell Phoney ● Webster's Friend ● Goodnight iPad: a Parody for the Next Generation by Ann Droyd ● Peter And Pablo The Printer: Adventures In Making The Future by Jeffrey Ito ● But I Read It on the Internet! by Toni Buzzeo ● But I Read it on the Internet! ● The Internet Sleuths ● Peter and Pablo the Printer |
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- [K–5 Distance Learning | Common Sense Education](#)
- [My Media Choices | Common Sense Education](#)
- [Private and Personal Information | Common Sense Education](#)
- [Our Online Tracks | Common Sense Education](#)
- [Be a Super Digital Citizen | Common Sense Education](#)
- [Tools and videos](#) code.org video library
- www.lbischools.org
- www.scholastic.com
- www.readingeggs.com

- [What Does it Mean to Be Safe?](#)
- [Doug Unplugged](#) by Dan Yaccarino
- [Patrick's Dinosaurs on the Internet](#) by Carol Carrick

Accommodations/Modifications

English Language Learners:

- Collaborate with ELL department to make necessary modifications for students
- Provide translated material
- Provided differentiation for students as needed
- Use student helpers and cooperative learning
- Use visual aids
- Rephrase vocabulary
- Allow for alternate forms of responses

Special Education/504 Plans/Students with Disabilities:

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Shorten assignments to focus on mastery of key concepts
- Restate, reword and clarify directions
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Students at Risk of Failure:

- Make sure children feel welcome and comfortable while being discrete
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- Pair with adult mentor or buddy
- Rephrase vocabulary
- Provide structure and adhere to a consistent daily routine with clear and concise rules
- Facilitate successful experiences
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Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.
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Gifted and Talented

- Peer mediated strategies
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Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
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Response accommodations allow a student to:

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- Have choice in seating/grouping

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Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

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Organization skills accommodations allow a student to:

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Assignment modifications allow a student to:

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| Unit 3: Interacting with Technology | Duration: 15 Days |
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Standards/Learning Targets

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

ED: Engineering Design 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.4
ITH: Interaction of Technology and Humans 8.2.5.ITH.1, 8.2.5.ITH.2, 8.2.5.ITH.3
NT: Nature of Technology 8.2.5.NT.1, 8.2.5.NT.2
ETW: Effects of Technology on the Natural World 8.2.5.ETW.1
EC: Ethics & Culture 8.2.5.EC.1

Primary Interdisciplinary Connections:

English Language Arts

RI.4.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

Science

4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.

Career Readiness, Life Literacies, and Key Skills

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9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions.

9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue.

9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity

9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.

9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.

9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.

9.4.5.DC.1: Explain the need for and use of copyrights.

9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.

9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.

9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.

9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.

9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.

9.4.5.DC.7: Explain how posting and commenting in social spaces can have positive or negative consequences.

9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance.

9.4.5.IML.2: Create a visual representation to organize information about a problem or issue.

9.4.5.IML.3: Represent the same data in multiple visual formats in order to tell a story about the data.

9.4.5.IML.4: Determine the impact of implicit and explicit media messages on individuals, groups, and society as a whole.

9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.

9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.

9.4.5.IML.7: Evaluate the degree to which information meets a need including social emotional learning, academic, and social.

9.4.5.TL.1: Compare the common uses of at least two different digital tools and identify the

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advantages and disadvantages of using each.

9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.

9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.

9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively.

9.4.5.TL.5: Collaborate digitally to produce an artifact.

Evidence of Student Learning

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| <p>Formative Tasks:</p> <ul style="list-style-type: none"> ● Teacher Observation ● Teacher Checklist ● Verbal question & answer ● Self-evaluation of performance and progress ● Class discussions ● Peer editing ● Self-evaluation | <p>Alternative Assessments:</p> <ul style="list-style-type: none"> ● End of Unit Project ● Portfolios ● Performance Tasks |
| <p>Summative Assessments:</p> <ul style="list-style-type: none"> ● Student participation ● Student presentation of completed project | <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> ● Baseline SGO ● Mid-year SGO ● End of year SGO |

Knowledge & Skills

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| <p>Unit Objectives: Students will know...</p> <p>Online cloud services are a place where we can store our files in cloud storage and share them with others.</p> <p>Online services allow us many capabilities, such as adding pictures, videos, and URLs. By selecting and manipulating different features of text, we can format documents to fit particular design needs.</p> <p>By interacting with digital tools, we can explore and utilize various resources.</p> | <p>Unit Objectives: Students will be able to...</p> <ul style="list-style-type: none"> ● Input data and text into a document. ● Use a digital resource to format text and add graphics. ● Explain how digital tools help us. ● Engage in online communication with peers and students. ● Evaluate digital resources that can assist us. ● Collaboratively complete a task with peers using a digital platform. ● Save and access digital files online using GSuite tools. ● Communicate via digital tools. |
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| | <ul style="list-style-type: none"> ● Interpret visual online information and demonstrate understanding. ● Create a digital presentation of Earth’s landforms using Google Earth Project. |
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| <p>Enduring Understandings: Students will understand that...</p> <ul style="list-style-type: none"> ● Digital tools can help us communicate ideas and solutions ● Digital tools can help us work efficiently and collaboratively. | <p>Essential Questions:</p> <ul style="list-style-type: none"> ● What is a document? ● How do I format documents? ● How do I change the font? ● How do I change the font size? ● How do I change the text color and the text background color? ● How do I bold, italicize or underline text? ● How do I insert a link into a document? ● How do I create a list? ● How do I align text? ● How do I share my document with others? ● How do I navigate in a digital environment? ● How do I edit text on documents to remove and/or insert other text? ● How do I drag an item? ● How do I use drop down boxes? |
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Core Instructional & Supplemental Materials

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| <p>Suggested Activities/Resources:</p> <ul style="list-style-type: none"> ● Use World Book Online - Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums). ● Create Google Earth project about landforms ● KidPix ● BrainPopJr. ● Google Earth- navigate digital maps ● G-Suite ● Gmail ● Tools and videos code.org video library ● www.lbischools.org ● www.scholastic.com | <p>Varied Levels of Text:</p> <ul style="list-style-type: none"> ● Hartman, G. (1993). <u>As the crow flies: A first book of maps</u> ● Rabe, T. (2002). <u>There’s a map on my lap! All about maps.</u> ● Ritchie, S. (2009). <u>Follow that map! A first book of mapping skills.</u> ● <u>Webster’s Email</u> by Hannah Whaley ● <u>Webster’s Friend</u> by Hannah Whaley ● <u>Webster’s Manners</u> by Hannah Whaley ● <u>Webster’s Bedtime</u> by Hannah Whaley ● <u>But It’s Just a Game</u> by Julia Cook ● <u>The Technology Tail</u> by Julia Cook |
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| <ul style="list-style-type: none">• www.readingeggs.com• Safety in My Online Neighborhood Common Sense Education• Media Balance Is Important Common Sense Education• Pause for People Common Sense Education | <ul style="list-style-type: none">• Chicken Clicking by Jeanne Willis• Troll Stinks by Jeanne Willis• #Goldilocks by Jeanne Willis• Nerdy Birdy Tweets by Aaron Reynolds• Once Upon a Time Online by David Belford |
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Accommodations/Modifications

English Language Learners

- Collaborate with ELL department to make necessary modifications for students
- Provide translated material
- Provided differentiation for students as needed
- Use student helpers and cooperative learning
- Use visual aids
- Rephrase vocabulary
- Allow for alternate forms of responses

Special Education/504 Plans/Students with Disabilities:

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Shorten assignments to focus on mastery of key concepts
- Restate, reword and clarify directions
- Lessen the amount of information presented
- Allow for alternate forms of responses
- Increase eye contact
- Maintain close proximity
- Attention techniques
- Sound, mouse or screen modifications

Students at Risk of Failure:

- Make sure children feel welcome and comfortable while being discrete
- Help to provide basic needs while the child is in school (food, clothing, etc)
- Provide resources for basic needs outside of school (medical, shelter, food, etc)
- Pair with adult mentor or buddy
- Rephrase vocabulary
- Provide structure and adhere to a consistent daily routine with clear and concise rules
- Facilitate successful experiences

Economically Disadvantaged:

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- Provide clear, achievable expectations, do not lower academic requirements for them.
- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Recognize native languages and cultures
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

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- Establish a timeline for completing a project
- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others

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| Unit 4: Using Technology to Improve Our World | Duration: 10 Days |
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Standards/Learning Targets

New Jersey Technology Strands:

- 8.1 Computer Science: 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.
- 8.2 Design Thinking: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.

New Jersey Technology Standards:

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

CS: Computer Science 8.1.5.CS.1

NI: Network and Internet 8.1.5.NI.1

IC: Impacts of Computing 8.1.5.IC.1

DA: Data & Analysis 8.1.5.DA.1

AP: Algorithms & Programming 8.1.5.AP.1

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

ED: Engineering Design 8.2.5.ED.1, 8.2.5.ED.2, 8.2.5.ED.4, 8.2.5.ED.5

ITH: Interaction of Technology and Humans 8.2.5.ITH.1, 8.2.5.ITH.2, 8.2.5.ITH.3

NT: Nature of Technology 8.2.5.NT.1, 8.2.5.NT.2

ETW: Effects of Technology on the Natural World 8.2.5.ETW.1, 8.2.5.ETW.2, 8.2.5.ETW.3 EC: Ethics & Culture 8.2.5.EC.1

Primary Interdisciplinary Connections:

English Language Arts

RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*

Science

ETS1.B: Developing Possible Solutions: Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions, such as climate change, to other people.

4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from

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natural resources and their uses affect the environment. (Research effects of air pollution)
4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. (Research solutions to erosion.)

21st Century Themes/Career Readiness:

- Demonstrate creativity and innovation.
- Utilize critical thinking to make sense of problems and persevere in solving them.
- Use technology to enhance productivity, increase collaboration and communicate effectively.
- Consider the environmental, social and economic impacts of decisions
- Act as a responsible and contributing community member and student

21st Century Life and Career Standards:

- 9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions.
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue.
- 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one's thinking about a topic of curiosity
- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process.
- 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem.
- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems
- 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global.
- 9.4.5.DC.1: Explain the need for and use of copyrights.
- 9.4.5.DC.2: Provide attribution according to intellectual property rights guidelines using public domain or creative commons media.
- 9.4.5.DC.3: Distinguish between digital images that can be reused freely and those that have copyright restrictions.
- 9.4.5.DC.4: Model safe, legal, and ethical behavior when using online or offline technology.
- 9.4.2.CT.1: Gather information about an issue, such as climate change, and

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collaboratively brainstorm ways to solve the problem

- 9.4.2.DC.7: Describe actions peers can take to positively impact climate change
- 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue
- 9.4.2.IML.2: Represent data in a visual format to tell a story about the data.
- 9.4.5.DC.5: Identify the characteristics of a positive and negative online identity and the lasting implications of online activity.
- 9.4.5.DC.6: Compare and contrast how digital tools have changed social interactions.
- 9.4.5.IML.1: Evaluate digital sources for accuracy, perspective, credibility and relevance.
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- 9.4.5.IML.5: Distinguish how media are used by individuals, groups, and organizations for varying purposes.
- 9.4.5.IML.6: Use appropriate sources of information from diverse sources, contexts, disciplines, and cultures to answer questions.
- 9.4.5.IML.7: Evaluate the degree to which information meets a need including social emotional learning, academic, and social.
- 9.4.5.TL.1: Compare the common uses of at least two different digital tools and identify the advantages and disadvantages of using each.
- 9.4.5.TL.2: Sort and filter data in a spreadsheet to analyze findings.
- 9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images, graphics, or symbols.
- 9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively.
- 9.4.5.TL.5: Collaborate digitally to produce an artifact.

Evidence of Student Learning

Formative Tasks:

- Teacher Observation
- Teacher Checklist
- Verbal question & answer
- Self-evaluation of performance and

Alternative Assessments:

- End of Unit Project
- Portfolios
- Performance Tasks

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| <p>progress</p> <ul style="list-style-type: none"> • Class discussions • Peer editing • Self-evaluation | |
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| <p>Summative Assessments:</p> <ul style="list-style-type: none"> • Student participation • Student presentation of completed project | <p>Benchmark Assessments:</p> <ul style="list-style-type: none"> • Baseline SGO • Mid-year SGO • End of year SGO |
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| Knowledge & Skills |
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| <p>Unit Objectives: Students will know...</p> <ul style="list-style-type: none"> • How to use technology to help improve their world and for future generations. | <p>Unit Objectives: Students will be able to...</p> <ul style="list-style-type: none"> • Collaborate together to discuss the environment and the ways to help improve situations. • Learn about the differences between reuse, recycle or re-purpose. • Discuss different technologies available to help improve the environment and their community. • Use graphic organizers to organize data and present results and solutions on how they can help the environment. • Research solutions to mitigate effects of natural hazards |
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| <p>Enduring Understandings: Students will understand that...</p> <ul style="list-style-type: none"> • Technology can be used to collect data which can help improve the environment and local community. • Cause and effect relationships can be observed when making environmental decisions. | <p>Essential Questions:</p> <ul style="list-style-type: none"> • How can technology be used to help the environment? • What technology can we use to reuse, repurpose or recycle? • How can we use technology to help improve our community and environment? • How do I use data collected from technology to help improve the environment? |
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| Core Instructional & Supplemental Materials |
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Suggested Activities/Resources:

- Create computational artifact (image, picture, audio, video or multimedia presentation)
- Build a schoolyard habitat to see what improvements need to be made to guard plants, animals and humans from the effects of a warming planet
- Research solutions to climate change or weather related hazards and create collaborative digital presentation
- Responsible Reservoirs [Responsible Reservoirs | Tech at Home](#) with Scratch <https://scratch.mit.edu/projects/523415242/>
- Research solutions to erosion.
- Calculate daily water usage [Water Q&A: How much water do I use at home each day?](#)
- [Teach About Climate Change](#)
- [NASA Climate Kids](#)
- Recycling Project
- Protecting open spaces project
- Cleaning waterways project
- Collaboration with subject-matter teachers and specialists.
- Use World Book Online and other teacher approved web resources to demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
- [Tools and videos](#) Code.org video library
- KidPix
- BrainPopJr.
- Google Earth
- G-Suite
- Gmail
- www.scholastic.com
- www.readingeggs.com
- [Just for Kids: What's Climate Change? And What Can I Do?](#)
- [Learning and Teaching about the Environment | US EPA](#)

Varied Levels of Text:

- *You Can't Dance to These Rhythms: What Are Algorithms?* by Brian P. Cleary
- *I Can Code: If/Then* by Vicky Fang
- *Coding to Kindness* by Valerie Sousa
- *Adi Sorts With Variables* by Caroline Karanja
- *Nothing Loopy About This: What Are Loops and Conditionals?* By Brian P. Cleary
- *Gabi's If/Then Garden* by Caroline Karanja
- *I Can Code: And/Or* by Vicky Fang
- *Invent-a-Pet* by Vicky Fang
- *Adi's Perfect Patterns and Loops* by Caroline Karanja
- Koontz, R. (2006). "Erosion: Changing Earth's surface"
- Kalman, B. (2009). "What shapes the land?"
- Lyon, G. (1990). "Come a tide"
- Stallone, L. (1992). "The flood that came to Grandma's house."
- Nivola, C. (2008). "Planting the trees of Kenya: The story of Wangari Mathai."
- Rose, C. (2015). "Over in the wetlands: A hurricane-on-the-bayou story."
- Simon, S. (2001). "Tornadoes."
- Kamkwamba, W & Mealer, B. (2012). "The boy who harnessed the wind. "
- Beaty, A. (2013). "Rosie Revere, engineer"
- Drummond, A. (2015). "Energy island: How one community harnessed the wind and changed their world"
- Spires, A. (2014). "The most magnificent thing"
- Bang, M. & Chisholm, P. (2014).

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“Buried sunlight: How fossil fuels have changed the earth.”

- Rockwell, A. (2009). “What’s so bad about gasoline? Fossil fuels and what they do.”

Accommodations/Modifications

English Language Learners

- Collaborate with ELL department to make necessary modifications for students
- Provide translated material
- Provided differentiation for students as needed
- Use student helpers and cooperative learning
- Use visual aids
- Rephrase vocabulary
- Allow for alternate forms of responses

Special Education/504 Plans/Students with Disabilities:

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Shorten assignments to focus on mastery of key concepts
- Restate, reword and clarify directions
- Lessen the amount of information presented
- Allow for alternate forms of responses
- Increase eye contact
- Maintain close proximity
- Attention techniques
- Screen, mouse and/or sound Modification
- Adaptive resources

Students at Risk of Failure:

- Make sure children feel welcome and comfortable while being discrete
- Help to provide basic needs while the child is in school (food, clothing, etc)
- Provide resources for basic needs outside of school (medical, shelter, food, etc)
- Pair with adult mentor or buddy
- Rephrase vocabulary
- Provide structure and adhere to a consistent daily routine with clear and concise rules
- Facilitate successful experiences

Economically Disadvantaged:

- Provide clear, achievable expectations, do not lower academic requirements for them.

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Content Area: Computer Science and Design Thinking

- Build a safe and nurturing atmosphere
- Perspective and experiences of the children need to be considered
- Create ways for students to share their emotions
- Give every student the same opportunity for success.
- Use real-world examples and create mental models for abstract idea
- Provide increased knowledge base and vocabulary use about real world experiences.
- Share the decision making in class.
- Daily affirmations
- Asking to hear students' hopes and offering reinforcements of those hopes
- Telling students why they can succeed

Culturally Diverse:

- Involve families in student learning
- Provide social/emotional support
- Recognize native languages and cultures
- Respect cultural traditions
- Build in more group work to encourage interaction with peers
- Show photos, videos, and definitions when possible for culturally unique vocabulary

Gifted and Talented

- Peer mediated strategies
- Cooperative learning groups
- Differentiated instruction

Presentation accommodations allow a student to:

- Vary the method of presentation: lecture, small groups, large group, demonstration, individual experimentation
- Explore real world connections
- Use technology tools to enhance content

Response accommodations allow a student to:

- Turn and Talk
- Reward risk taking while encouraging students to think "outside of the box"

Setting accommodations allow a student to:

- Use flexible seating
- Have choice in seating/grouping

Timing accommodations allow a student to:

- Have flexible pacing in terms of content, assignments, and assessments
- Explore extended activities

Scheduling accommodations allow a student to:

- Establish a timeline for completing a project

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Content Area: Computer Science and Design Thinking

- Have rigorous Pacing

Organization skills accommodations allow a student to:

- Model executive functioning
- Utilize independent skills practices

Assignment modifications allow a student to:

- Complete enrichment tasks
- Write longer passages on essays and open ended responses including academic vocabulary
- Answer higher order thinking questions
- Cite text evidence
- Create alternate projects or assignments, student developed rubrics, student choice when completing a project or alternate labs

Curriculum modifications provide:

- Topics of interest to the student and/or relevant to how the world works
- Students access to supplemental reading materials matched to individual student lexiles
- Opportunities for open-ended, self-directed activities
- Opportunities to get graded or assessed using a different standard than the one for others