

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

### **Introduction:**

All students in Grade 6 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, coding, creating spreadsheets, and problem solving. Students will learn the parts of a computer, and use individual Chromebook devices to create collaborative, digital artifacts. All technology units follow the NJ Student Learning Objectives. Student progress will be measured in a variety of methods.

**Long Beach Island Consolidated School District Curriculum Guide**

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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<b>Original Adoption:</b> August 20, 2019
<b>Created By:</b> Chloe Sheplin
<b>Revised on:</b> August 16, 2022
<b>Revised By:</b> Cathy McBride

<b>Recommended Pacing Guide</b>	
Unit 1: Cybersafety	5 Days
Unit 2: Engineering Design Process	10 Days
Unit 3: Coding	10 Days
Unit 4: Interacting with Data	5 Days
Unit 5: Research	5 Days

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

<b>Unit 1: Cybersafety</b>	<b>Duration:</b> 5 Days
<b>Standards/Learning Targets</b>	
<p><b>New Jersey Technology Strands:</b></p> <ul style="list-style-type: none"> <li>● 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.</li> <li>● 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.</li> </ul>	
<p><b>New Jersey Technology Standards:</b></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 8.1.8.CS.1, 8.1.8.CS.2, 8.1.8.CS.3</p> <p>NI: Network and Internet 8.1.8.NI.1, 8.1.8.NI.2</p> <p>IC: Impacts of Computing 8.1.8.IC.1, 8.1.8.IC.2</p> <p>DA: Data &amp; Analysis 8.1.8.DA.1, 8.1.8.DA.2, 8.1.8.DA.3, 8.1.8.DA.5</p>	

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

AP: Algorithms & Programming 8.1.8.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 8.2.8.ED.1, 8.2.8.ED.2, 8.2.8.ED.4

ITH: Interaction of Technology and Humans 8.2.8.ITH.1, 8.2.8.ITH.2, 8.2.8.ITH.3, 8.2.8.ITH.4

NT: Nature of Technology 8.2.8.NT.1, 8.2.8.NT.2

ETW: Effects of Technology on the Natural World 8.2.8.ETW.1, 8.2.8.ETW.2, 8.2.8.ETW.3

EC: Ethics & Culture 8.2.8.EC.1

### **Primary Interdisciplinary Connections:**

#### **English Language Arts**

RST.6-6-2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions

RST.6-6-8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

### **Career Readiness, Life Literacies, and Key Skills 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**

9.4.8.DC.3: Describe tradeoffs between allowing information to be public (e.g., within online games) versus keeping information private and secure.

9.4.8.DC.4: Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.

9.4.8.DC.5: Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.

9.4.8.DC.6: Analyze online information to distinguish whether it is helpful or harmful to reputation.

9.4.8.IML.2: Identify specific examples of distortion, exaggeration, or misrepresentation of information.

9.4.8.IML.10: Examine the consequences of the use of media.

9.4.8.IML.11: Predict the personal and community impact of online and social media activities

9.4.8.IML.9: Distinguish between ethical and unethical uses of information and media.

9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active

**Long Beach Island Consolidated School District Curriculum Guide**

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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discussions to achieve a group goal.  
 9.4.8.IML.12: Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

**Evidence of Student Learning**

**Formative Tasks:**

- Teacher Observation
- Teacher Checklist
- Verbal question & answer
- Self-evaluation of performance and progress
- Class discussions
- Peer editing
- Self-evaluation

**Alternative Assessments:**

- End of Unit Project
- Portfolios
- Performance Tasks

**Summative Assessments:**

- Student participation
- Student presentation of completed project

**Benchmark Assessments:**

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

**Knowledge & Skills**

**Unit Objectives:**

*Students will know...*  
 What cyber safety is.  
 How to maintain cybersecurity and cyber ethics.  
 How to use appropriate online behaviors.

**Unit Objectives:**

*Students will be able to...*  
 Explain cybersafety  
 Determine and maintain cybersecurity and cyberethics using appropriate online behavior  
 Create a comic illustrating two or three of the rules regarding Internet etiquette..  
 Create a presentation that demonstrates appropriate behavior when faced with situations that deal with issues of cyber safety, cyber bullying, cyber security and cyber ethics to share with younger students or parents.

**Enduring Understandings:**

Students will understand...

- Cybersecurity and cyberethics
- How to keep personal information safe

**Essential Questions:**

What is cybersecurity?  
 How do I keep my personal information safe?  
 What are appropriate behaviors associated with cyberbullying?

## Long Beach Island Consolidated School District Curriculum Guide

Grade: 6

Content Area: Computer Science and Design Thinking

### Core Instructional & Supplemental Materials

#### Suggested Activities/Resources:

- [SafeKids Quiz](#)
- [Fifth Grade, Cybersecurity Projects, Lessons, Activities](#)
- Simple encryption activity  
<https://curriculum.code.org/pwc/ayp/8/>
- [Free Cyber Security Games | Education Arcade](#)
- [Play Interland - Be Internet Awesome](#)
- Demonstrate proper use and practices
- KidPix
- BrainPopJr.
- Google Earth
- G-Suite
- GMail
- Classroom Library
- Computers
- iPad
- Chromebooks
- Internet
- Google
- [www.brainpopjr.co](http://www.brainpopjr.co)
- [www.abcya.com Cyber-Five Internet Safety • ABCya!](#)
- Code.org
- Tynker.com
- Kodable.com
- Scratch
- Qwertytown for practicing keyboard skills for accuracy and speed
- [Tools and videos](#) code.org video library
- [www.lbischools.org](http://www.lbischools.org)
- [www.scholastic.com](http://www.scholastic.com)
- [www.readingeggs.com](http://www.readingeggs.com)

#### Varied Levels of Text:

- [Cyber Safety Simply: A Cautionary Picture Book](#) by Dee Smith
- [Bully](#) by Patricia Pollaco
- [Cell Phony](#)
- [What Does it Mean to Be Safe?](#)

### Accommodations/Modifications

#### English Language Learners:

- Collaborate with ELL department to make necessary modifications for students
- Provide translated material

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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
- 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

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

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- 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
- 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

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

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 classmates

**Unit 2: Engineering Design Process**

**Duration:** 10 Days

### 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.
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## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

### **Primary Interdisciplinary Connections:**

#### **English Language Arts**

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

RI.6.10 By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.10 By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

#### **Science**

**MS-ESS3-3** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3- 4, MS-ETS1-1, MS-ETS-3

Science is a Human Endeavor

Scientists and engineers are guided by habits of mind such as intellectual honesty, tolerance of ambiguity, skepticism and openness to new ideas

### **Career Readiness, Life Literacies, and Key Skills 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**

9.4.8.CT.1: Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective.

9.4.8.CT.2: Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option.

9.4.8.CT.3: Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome.

9.4.8.DC.1: Analyze the resource citations in online materials for proper use.

9.4.8.DC.2: Provide appropriate citation and attribution elements when creating media

**Long Beach Island Consolidated School District Curriculum Guide**

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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products.

9.4.8.GCA.1: Model how to navigate cultural differences with sensitivity and respect.

9.4.8.GCA.2: Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.

9.4.8.IML.4: Ask insightful questions to organize different types of data and create meaningful visualizations.

9.4.8.IML.7: Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose.

9.4.8.IML.8: Apply deliberate and thoughtful search strategies to access high-quality information on climate change.

9.4.8.IML.10: Examine the consequences of the use of media.

9.4.8.IML.12: Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

9.4.8.TL.2: Gather data and digitally represent information to communicate a real-world problem.

9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

9.4.8.TL.4: Synthesize and publish information about a local or global issue or event.

9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

**Evidence of Student Learning**

**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

**Knowledge & Skills**

Long Beach Island Consolidated School District Curriculum Guide

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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<p><b>Unit Objectives:</b> Students will know...</p> <ul style="list-style-type: none"><li>• The importance of teamwork through a group activity.</li><li>• Engineering and how engineers use science concepts to create and/or improve technology</li><li>• The design process to solve a problem.</li><li>• Impacts of technology on the environment.</li><li>• How to optimize a solution to improve its environmental impact.</li></ul>	<p><b>Unit Objectives:</b> Students will be able to...</p> <ul style="list-style-type: none"><li>• Research a technological artifact of the past and present.</li><li>• Describe engineering and explain how engineers participate in or contribute to the invention and innovation of products.</li><li>• Describe the impacts that technology has had on society.</li><li>• Describe the design process and how it is used to aid in problem solving.</li><li>• Use the design process to solve a technical problem or an environmental problem.</li><li>• Create a digital presentation showing this problem and solution.</li><li>• Review the design of an invention and apply the design elements to the invention.</li><li>• Communicate ideas for a design using various sketching methods, notes and drafting views.</li><li>• Define problems related to humans' resources or impacts on living things to determine the necessary criteria and constraints for successful solutions, and use those criteria and constraints to evaluate proposed solutions.</li><li>• Optimize technological invention and innovate it in such a way that the positive impacts on society, environment, and value outweigh the negative impacts.</li></ul>
<p><b>Enduring Understandings:</b> Students will understand...</p> <ul style="list-style-type: none"><li>• The Engineering Design Process</li><li>• Effects of technology on the environment</li><li>• How to optimize solutions</li></ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"><li>• What is the Engineering Design Process?</li><li>• How do engineers and scientists work together?</li><li>• How can technology impact the environment?</li></ul>

## Long Beach Island Consolidated School District Curriculum Guide

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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	<ul style="list-style-type: none"><li>• How can we improve technology to reduce effects on the environment?</li></ul>
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### Core Instructional & Supplemental Materials

<b>Suggested Activities/Resources:</b> <ul style="list-style-type: none"><li>• Google for research purposes</li><li>• Various iPad apps for digital learning environments</li><li>• Computer hardware</li><li>• Computer programs and software</li><li>• SmartBoard</li><li>• Google</li><li>• KidPix</li><li>• BrainPopJr.</li><li>• G-Suite/Google Drive</li><li>• GMail</li><li>• <a href="#">Tools and videos</a> code.org video library</li><li>• <a href="http://www.lbischools.org">www.lbischools.org</a></li><li>• <a href="http://www.scholastic.com">www.scholastic.com</a></li><li>• <a href="#">Tools for Creating Digital Student Portfolios   Edutopia</a></li><li>• <a href="#">The Complete Guide To Student Digital Portfolios   CampusPress</a></li><li>• <a href="#">Digital Portfolios   Creative Educator</a></li><li>• <a href="http://www.readingeggs.com">www.readingeggs.com</a></li></ul>	<b>Varied Levels of Text:</b> <ul style="list-style-type: none"><li>• Spires, A. (2014). <u>The most magnificent thing</u></li><li>• Drummond, A. (2015). <u>Energy island: How one community harnessed the wind and changed their world.</u></li><li>• Beaty, A. (2013). <u>Rosie Revere, engineer.</u></li><li>• Fleming, C. (2013) <u>Papa's mechanical fish</u></li><li>• Yamada, K. (2016). <u>What do you do with a problem</u></li><li>• Offill, J. (2011). <u>11 experiments that failed</u></li><li>• <u>Mistakes that Worked: 40 Familiar Inventions &amp; How they Came to Be</u> by Charlotte Foltz Jones</li><li>• <u>STEM Lesson Essentials</u> by JoAnne Vasquez, Cary Sneider &amp; Michael Comer</li><li>• <u>E+S Integrating Engineering and Science in Your Classroom</u> NSTA Press Edited by Eric Brunsell</li></ul>
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### Accommodations/Modifications

<b>English Language Learners:</b> <ul style="list-style-type: none"><li>• Collaborate with ELL department to make necessary modifications for students</li><li>• Provide translated material</li><li>• Provided differentiation for students as needed</li><li>• Use student helpers and cooperative learning</li><li>• Use visual aids</li><li>• Rephrase vocabulary</li><li>• Allow for alternate forms of responses</li></ul>
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## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

### **Special Education/504 Plans/Students with Disabilities:**

- Provide differentiated instruction as needed
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- Shorten assignments to focus on mastery of key concepts
- Restate, reword and clarify directions
- Lessen the amount of information presented
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- Increase eye contact
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### **Students at Risk of Failure:**

- Make sure children feel welcome and comfortable while being discrete
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### **Economically Disadvantaged:**

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- Share the decision making in class.
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### **Culturally Diverse:**

- Involve families in student learning
- Provide social/emotional support
- Recognize native languages and cultures
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- Build in more group work to encourage interaction with peers
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### **Gifted and Talented**

- Peer mediated strategies
- Cooperative learning groups

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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:*

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*Scheduling accommodations allow a student to:*

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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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*Curriculum modifications provide:*

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Long Beach Island Consolidated School District Curriculum Guide

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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<b>Unit 3: Coding</b>	<b>Duration: 10 Days</b>
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**Standards/Learning Targets**

**New Jersey Technology Strands:**

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**Primary Interdisciplinary Connections:**

**English Language Arts**

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.  
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RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades*

**Long Beach Island Consolidated School District Curriculum Guide**

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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*6-8 texts and topics.*

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.10 By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

**Science**

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

**Career Readiness, Life Literacies, and Key Skills Practices**

Act as a responsible and contributing community members

Consider the environmental, social and economic impacts of decisions.

Demonstrate creativity and innovation

Utilize critical thinking to make sense of problems

Use technology to enhance productivity increase collaboration and communicate effectively

Work productively in teams while using cultural/global competence.

**Career Readiness, Life Literacies, and Key Skills**

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

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

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 progress
- Class discussions
- Peer editing
- Self-evaluation

**Alternative Assessments:**

- End of Unit Project
- Portfolios
- Performance Tasks

**Summative Assessments:**

- Student participation
- Student presentation of completed project

**Benchmark Assessments:**

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

**Knowledge & Skills**



**Long Beach Island Consolidated School District Curriculum Guide**

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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<p><b>Unit Objectives:</b> Students will know...</p> <ul style="list-style-type: none"> <li>• How to develop and follow directions as part of daily life.</li> <li>• How to create a plan for solving a task.</li> <li>• Sequence steps can be expressed as an algorithm that a computer can process.</li> <li>• Complex steps can be broken down into simpler instructions.</li> <li>• Computers follow precise sequences of steps that automate tasks.</li> </ul>	<p><b>Unit Objectives:</b> Students will be able to...</p> <ul style="list-style-type: none"> <li>• Identify the problem to be solved.</li> <li>• Use appropriate vocabulary to solve the problem.</li> <li>• Solve an assigned puzzle by step by step directions.</li> <li>• Be able to debug a program step by step.</li> <li>• Understand and use an algorithm.</li> </ul>
<p><b>Enduring Understandings:</b> Students will understand that...</p> <ul style="list-style-type: none"> <li>• Computers follow precise sequences of steps that automate tasks</li> <li>• Complex steps can be broken down into simpler instructions.</li> </ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What is the right tool to use?</li> <li>• How can I use my digital tools and skills in new situations?</li> <li>• How do I follow directions on a digital device?</li> <li>• How do I add a sequence of steps?</li> <li>• Can I describe the sequence of steps I added to get to the end result?</li> <li>• What is a graphic organizer?</li> </ul>

**Core Instructional & Supplemental Materials**

<p><b>Suggested Activities/Resources:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Decontamination Algorithm   Tech at Home</a></li> <li>• <a href="#">Get in the Game!</a> Design a board game involving habitats, endangered species, or space concepts.</li> <li>• Identify causes and effects of making environmental decisions <a href="#">Responsible Reservoirs   Tech at Home</a></li> <li>• Use World Book Online and other teacher approved web resources to demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).</li> <li>• KidPix</li> <li>• BrainPopJr.</li> <li>• G-Suite</li> <li>• Gmail</li> </ul>	<p><b>Varied Levels of Text:</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Florence the Data Scientist and Her Magical Bookmobile</a> by Ryan Kelly</li> </ul>
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## Long Beach Island Consolidated School District Curriculum Guide

Grade: 6

Content Area: Computer Science and Design Thinking

- [Tools and videos](#) code.org video library
- [www.lbischools.org](http://www.lbischools.org)
- [www.scholastic.com](http://www.scholastic.com)
- [www.readingeggs.com](http://www.readingeggs.com)

### 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:

- 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

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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
- Have rigorous Pacing

### *Organization skills accommodations allow a student to:*

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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 classmates

**Unit 5: Research and Data**

**Duration: 5 Days**

### 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, 8.1.5.DA.2

AP: Algorithms & Programming 8.1.5.AP.1, 8.1.5.AP.2, 8.1.5.AP.3, 8.1.5.AP.4, 8.1.5.AP.5, 8.1.5.AP.6

8.2 Design Thinking: All students will develop an understanding of the nature and impact of

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

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

NT: Nature of Technology 8.2.5.NT.1

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

EC: Ethics & Culture 8.2.5.EC.1

### **Primary Interdisciplinary Connections: English Language Arts**

RI.6.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

RI.6.10 By the end of the year, read and comprehend literary nonfiction in the grades 6-8 text complexity band proficiently, with scaffolding as needed at the high end of the range.

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.10 By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text complexity band independently and proficiently.

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

### **Science**

MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

MS-ESS3-3 Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4 Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

### **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

## Long Beach Island Consolidated School District Curriculum Guide

Grade: 6

Content Area: Computer Science and Design Thinking

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

## Long Beach Island Consolidated School District Curriculum Guide

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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- 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 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

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

### Knowledge & Skills

<b>Unit Objectives:</b> Students will know... <ul style="list-style-type: none"> <li>● How to research topics to expand or restrict a set of internet search results</li> </ul>	<b>Unit Objectives:</b> Students will be able to...
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Long Beach Island Consolidated School District Curriculum Guide

<b>Grade: 6</b>	<b>Content Area: Computer Science and Design Thinking</b>
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<p>by changing the search terms.</p> <ul style="list-style-type: none"><li>• How to expand or restrict a set of internet search results by adding Boolean modifiers to the search terms.</li><li>• How to analyze search results for relevance to a research question.</li><li>• How to describe the logic of an analysis using pseudocode</li></ul>	<ul style="list-style-type: none"><li>• Use Google Sheets to apply formulas and set up tables and create graphs.</li><li>• Demonstrate cause and effect relationships in making environmental decisions</li><li>• Communicate and work with others to achieve a common goal or solution</li><li>• Logically organize and analyze data.</li><li>• Represent data through abstractions such as models and simulations.</li><li>• Automate solutions through algorithmic thinking.</li><li>• Generalize and transfer this problem-solving process to a wide variety of problems.</li><li>• Research topics to expand or restrict a set of internet search results by changing the search terms.</li><li>• Demonstrate the ability to expand or restrict a set of internet search results by adding Boolean modifiers to the search terms.</li><li>• Demonstrate the ability to analyze search results for relevance to a research question.</li><li>• Demonstrate the ability to describe the logic of an analysis using pseudocode</li></ul>
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<p><b>Enduring Understandings:</b> Students will understand that...</p> <ul style="list-style-type: none"><li>• Researching topics can be more effective when expanding or restricting search results by adding Boolean modifiers to the search terms.</li><li>• We can use technology and digital tools to create data tables and graphs for organizing and analyzing data.</li></ul>	<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"><li>• How can we improve search results when researching a topic?</li><li>• How can we logically organize data?</li><li>• How can we use technology and digital tools to create data tables and graphs?</li></ul>
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Long Beach Island Consolidated School District Curriculum Guide

Grade: 6

Content Area: Computer Science and Design Thinking

Core Instructional & Supplemental Materials

**Suggested Activities/Resources:**

- Create computational artifact (animation, image, picture, audio, video or multimedia presentation)
- Research topics to expand or restrict a set of internet search results by changing the search terms.
- Demonstrate the ability to expand or restrict a set of internet search results by adding Boolean modifiers to the search terms.
- Demonstrate the ability to analyze search results for relevance to a research question.
- Demonstrate the ability to describe the logic of an analysis using pseudocode
- 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](http://www.scholastic.com)
- [www.readingeggs.com](http://www.readingeggs.com)
- <https://www.readwritethink.org/classroom-resources/lesson-plans/scaffolding-methods-research-paper>
- [https://cdn.iste.org/www-root/2020-10/STE\\_CT\\_Teacher\\_Resources\\_2ed.pdf?\\_ga=2.101725313.1498453155.1656178137-1286997053.1656178137](https://cdn.iste.org/www-root/2020-10/STE_CT_Teacher_Resources_2ed.pdf?_ga=2.101725313.1498453155.1656178137-1286997053.1656178137)

**Varied Levels of Text:**

## Long Beach Island Consolidated School District Curriculum Guide

Grade: 6

Content Area: Computer Science and Design Thinking

### 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.
- 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.

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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
- Have rigorous Pacing

#### *Organization skills accommodations allow a student to:*

- Model executive functioning
- Utilize independent skills practices

#### *Assignment modifications allow a student to:*

## Long Beach Island Consolidated School District Curriculum Guide

**Grade: 6**

**Content Area: Computer Science and Design Thinking**

- 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 classmates