

SHORE REGIONAL HIGH SCHOOL DISTRICT

A Regional Collaborative of the Communities Served by the Monmouth Beach, Oceanport, Shore Regional, and West Long Branch School Districts

Aligned to Common Core State Standards/New Jersey Core Curriculum Content Standards as Applicable

Course Title: Grade 2 Technology

Content Area: Technology

Grade Level(s): Grade 2

Course Description: Technology enables students to solve real world problems, enhance life, and extend human capability as they meet the challenges of a dynamic global society in the 21st century.

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Date Created: July 2015

Date Approved by Board of Education: October of 2015

Pacing Guide

Unit 1: Digital Citizenship and Cybersafety

Unit 2: Application of Digital Tools and the Internet

Unit 3: Communication and Collaboration and the Design Process

Unit 4: Technology Systems and Design

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Unit 1 Digital Citizenship and Cybersafety

Unit Summary: Students will be provided an overview of technology equipment, the role of technology in society, digital citizenship, and technology terminology.

Interdisciplinary Connections/Content Area Integrations Including Technology: Utilizing interdisciplinary activities that emphasize the use of technology skills to become lifelong learners.

- English Language Arts
- Mathematics
- Communications Skills
- 21st Century Life and Career Skills
- Problem Solving and Critical Thinking
- Science
- Social Studies

CCSS/NJCCCS Number	CCSS/NJCCCS Content
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8.1	<p>Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</p> <p>A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems, and operations.</p>
8.1.2.A.1	Identify the basic features of a digital device and explain its purpose.
8.1.2A.4	Demonstrate developmentally appropriate navigation skills in virtual environments.
8.1	<p>Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</p> <p>D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.</p>
8.1.2.D.1	Develop an understanding of ownership of print and non-print information.
8.2	<p>Technology Education, Engineering, Design, and Computational Thinking-Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking, and the design world as they relate to the individual, global society, and the environment.</p> <p>B. Technology and Society: Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.</p>
8.2.2.B.1	Identify how technology impacts or improves life.

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8.2.2.B.3

Identify products or systems that are designed to meet human needs.

Summative Assessments: May include but is not limited to:

- Teacher observations
- Student practice/Activities
- Presentations
- Projects



Formative Assessments: May include but is not limited to:

- Exit Tickets
- Verbal Responses
- Teacher Observation
- Self-Assessment
- Thumbs Up/Down
- Active Listening (Think, Pair, Share and Choral Response)
- Large Group Discussion



Enduring Understandings:

- Technology is constantly changing and requires continuous learning of new skills.

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- Selection of technology should be based on personal and /or career needs assessment.
- A tool is only as good as the person using it.
- Technology use can have positive or negative impact on both users and those affected by their use.



Essential Questions:

- In a world of constant change, what skills should we learn?
- How do I choose which technological tools to use, and when it is appropriate to use them?
- What are an individual's responsibilities for using technology?
- What constitutes misuse, and how can it best be prevented?
- How does technology impact or improve life?
- What technology products or systems are designed to meet human needs?



Instructional Outcomes:

Students will:

- Be able to identify the basic features of a digital device and explain its purpose.
- Know the location of keys on the keyboard and utilize special function keys.
- Know how to open and save and print files.
- Create a document using a word processing program.
- Select and use applications effectively and productively.
- Advocate and practice safe, legal, and responsible use of information and technology.

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- Identify the cultural, social, economic, and political effects of technology.
- Identify the role of society in the development and use of technology.



Suggested Learning Activities:

May include but are not limited to the following activities:

- Have students log on to the computers. Review the basics with them and show them how to attach headphones and other devices. Show them the accessibility tools and allow them to practice using the text to speech and speech to text software.
- Have students work in pairs to create an electronic short skit or story that involves at least 5 vocabulary words. They can read their stories or perform their skits for the class.
- Assign each group of students a computer application. Have them come up with 5 different uses of the software, 3 benefits, and 3 disadvantages of using the software. Have the students create electronic posters to display their work and then have the students go on a learning walk to see other groups' posters and take notes.
- Have students explore the Discovery Kids website. Allow them to familiarize themselves with the website. Allow them to play games or solve puzzles. Ask the student to share when they find something "cool" on the site.
- Introduce citations to the students through a PowerPoint presentation. Have students return to the Discovery Kids website. Ask them to choose one of the topics from the "Tell Me" box on the right-hand side of the home page. They should read the article and type a short summary using word processing software. They must include a quote from the article they read and cite it properly.
- Create a graphic organizer that illustrates the technologies discussed, their impact on individuals, family, community, and the environment and the tradeoffs for these devices.
- Review Internet safety rules with the students through the use of a PowerPoint presentation, websites, or class discussion. Have students research common American foods or meals. Introduce an online site where students can interact with children from different countries and

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discuss common foods/meals of that country. Students should write a paragraph on what they learned and how the common foods of each country are similar or different.

- While working independently, students will identify how technology has been and is used to meet their needs and the needs of their families both at home and in school (or work). Students will digitally draw a picture illustrating how they use technology and/or technology resources. In addition, students will write how they use technology and/or technology resources. The students will find a picture of a technological product and narrate an explanation of the product.
- Using website <https://code.org/curriculum/course3/20/Teacher.pdf>, in collaboration with Common Sense Media, this lesson helps students learn to think critically about the user information that some websites request or require. Students learn the difference between private information and personal information, distinguishing what is safe and unsafe to share online. Students will also explore what it means to be responsible and respectful to their offline and online communities as a step toward learning how to be good digital citizens.
- For a lesson on navigating the Internet, go this website <https://code.org/curriculum/course3/18/Teacher.pdf>. In this lesson, students will pretend to flow through the Internet, all the while learning about Internet connections, URLs, IP Addresses, and the DNS.



Suggested Differentiation:

Provide differentiated instruction through any or all of the following strategies:

- Visual and verbal instructions
- Choice activities
- Chunking information
- Video and written tutorials



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Curriculum Development Resources:

- New Jersey Standards: <http://www.state.nj.us/education/cccs/2014/tech/>
- Internet Safety PowerPoint or Discussion Topics
- Internet Safety Websites: <http://www.fbi.gov/fun-games/kids/kidssafety>
- <http://www.ou.edu/oupd/kidsafe/start.htm>
- <http://www.gcflearnfree.org/internetsafetyforkids>
- <http://www.netsmart>
- <https://code.org/curriculum/course3>



Notes/Comments:

Unit 2 Application of Digital Tools and the Internet

Unit Summary: In this unit, students will learn about different digital tools and use them to create original work pieces. They will understand and use various technology systems and select and use the applications effectively and productively.

Interdisciplinary Connections/Content Area Integrations Including Technology: Utilizing interdisciplinary activities that emphasize the use of technology skills to become lifelong learners.

- Problem Solving and Critical Thinking

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- Communication
- Writing
- 21st Century Life and Career Skills
- Mathematics

CCSS/NJCCCS Number	CCSS/NJCCCS Content
8.1	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge. A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems, and operations.
8.1.2.A.2	Create a document using a word processing application.
8.1.2.A.3	Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each.
8.1.2.A.5	Enter information into a spreadsheet and sort the information.
8.1.2.A.6	Identify the structure and components of a database.
8.1.2.A.7	Enter information into a database or spreadsheet and filter the information.

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8.1	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products and process using technology.
8.1.2.B.1	Illustrate and communicate original ideas and stories using multiple digital tools and resources.

Summative Assessments: May include but is not limited to:

- Teacher observations
- Student practice/Activities
- Presentations
- Projects



Formative Assessments: May include but is not limited to:

- Exit Tickets
- Verbal Responses
- Teacher Observation
- Self-Assessment
- Thumbs Up/Down
- Active Listening (Think, Pair, Share and Choral Response)



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Enduring Understandings:

- Digital tools provide enhanced opportunities to design innovative solutions and express ideas creatively.
- A tool is only as good as the person using it.
- Technology is constantly changing and requires continuous learning of new skills.



Essential Questions:

- How do people use tools and techniques to help them do things?
- What are technological systems, and how do the parts or components work together to accomplish a goal?
- How do I choose which technological tools to use and when it is appropriate to use them?
- How can I transfer what I know to new technological situations/experiences?



Instructional Outcomes:

Students will:

- Create a document using a word processing application.
- Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each.
- Enter information into a spreadsheet and sort the information.
- Identify the structure and components of a database.
- Enter information into a database or spreadsheet and filter the information.
- Illustrate and communicate original ideas and stories using multiple digital tools and resources.



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Suggested Learning Activities:

- Using word processing software, review with the students how to open, save, insert clipart, print, etc. Demonstrate how to insert wordart, special characters, and how to change the font, font size, and justification (left, right, center). Have them create an electronic poster about Fire Safety to be displayed during the month of October.
- As a class, brainstorm ways to improve recess. Then have the students form groups based on which improvement they think will be the most beneficial. Have the groups create a persuasive presentation as to why their improvement would be the best. They should use text, pictures, video, and recording of their voices to make their presentation effective. Prior to starting this activity, the teacher will need to review the different software options with the students.
- You are a researcher, and your task is to collect and post the results of a digital survey about a problem and use the data to suggest solutions. You will create a document with text in a word processing program to publish your results and solutions. You will also communicate with students in the other classes using digital tools to share your findings.
- Students will create a class list of technologies they use. Students will break into groups and discuss. Then, independently, they will type 2-3 sentences and illustrate how technology is used.
- Make a list of addresses of the local police station, firehouse, hospital, and library. Use Google's mapping tools to identify where each of these buildings is located in relation to the school.
- Students will create an animated story using website <https://code.org/curriculum/course3/16/Teacher.pdf>. In this activity, students will have the opportunity to apply all of the coding skills they have learned to create an animated story. It is time to get creative and create a story in the Play Lab!



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

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- Visual and verbal instructions
- Choice activities
- Chunking information
- Video and written tutorials
- Peer tutoring



Curriculum Development Resources:

- New Jersey Standards: <http://www.state.nj.us/education/cccs/2014/tech/>
- Coding website for lesson plans <https://code.org/>
- Word Processing program
- Google Maps



Notes/Comments:

Unit 3 Communication and Collaboration and the Design Process

Unit Summary: Students will further investigate digital media and how it can be used to communicate all around the world. They will continue to explore various aspects of coding such as, creating algorithms, debugging an algorithm, and using appropriate terminology.

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Interdisciplinary Connections/Content Area Integrations Including Technology: Utilizing interdisciplinary activities that emphasize the use of technology skills to become lifelong learners.

- English Language Arts
- Mathematics
- Communications Skills
- 21st Century Life and Career Skills
- Problem Solving and Critical Thinking
- Science
- Social Studies

CCSS/NJCCCS Number	CCSS/NJCCCS Content
8.1	<p>Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</p> <p>C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.</p>
8.1.2.C.1	Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using various media formats such as online collaborative tools and social media.

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8.2	<p>Technology Education, Engineering, Design, and Computational Thinking-Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking, and the designed world as they relate to the individual, global society, and the environment.</p> <p>E. Computational Thinking: Programming: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.</p>
8.2.2.E.2	Demonstrate an understanding of how a computer takes input through a series of written commands and then interprets and displays information as output.
8.2.2.E.3	Create algorithms (sets of instructions) using a pre-defined set of commands (e.g., to move a student character through a maze).
8.2.2.E.4	Debug an algorithm (i.e. correct an error).
8.2.2.E.5	Use appropriate terms in conversation (e.g., basic vocabulary words: input, output, the operating system, debug, and algorithm).

Summative Assessments: May include but is not limited to:

- Teacher observations
- Student practice/Activities
- Presentations
- Projects

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Formative Assessments: May include but is not limited to:

- Exit Tickets
- Verbal Responses
- Teacher Observation
- Self-Assessment
- Thumbs Up/Down
- Active Listening (Think, Pair, Share and Choral Response)



Enduring Understandings:

- Technology products and systems are made up of resources.
- The design process is fundamental to technology and engineering.
- Digital tools provide enhanced opportunities to design innovative solutions and express ideas creatively.
- By using technology effectively, we can live, learn, and work more effectively.



Essential Questions:

- How can digital tools be used for creating original and innovative works, ideas, and solutions?
- How has the use of digital tools improved opportunities for communication and collaboration?

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- How can I transfer what I know to new technological situations/experiences?
- What skills do I need to learn to be a 21st century learner/student?



Instructional Outcomes:

Students Will:

- Understand that computational thinking and computer programming are tools used in design and engineering.
- Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.
- Communicate information and ideas to multiple audiences using a variety of media and formats.
- Develop cultural understanding and global awareness by engaging with learners of other cultures.
- Contribute to project teams to produce original works or solve problems.



Suggested Learning Activities:

- Using website <https://code.org/curriculum/course3/2/Teacher.pdf>, your students work through the puzzles. Observe how they plan the path for the zombie. Identify different strategies used and ask students to share with the whole class. This helps students to recognize that there are many ways to approach these problems. You may want to go through a few puzzles on the projector. While doing this, you can ask one student to trace the path on the screen while another writes the directions on a whiteboard.
- Using website <https://code.org/curriculum/course3/1/Teacher.pdf>, for this activity, no instructions are provided. Instead, students will use examples of what imaginary players have done to figure out how to play the game. This lesson gives students the opportunity to practice the four arts of computational thinking (decomposition, pattern matching, abstraction, and algorithms) in one cohesive activity.

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- For a debugging activity, use this website <https://code.org/curriculum/course3/14/Teacher.pdf>. Debugging is an essential element of learning to program. In this lesson, students will encounter puzzles that have been solved incorrectly. They will need to step through the existing code to identify errors including missing blocks, extra blocks, and incorrectly ordered blocks.
- Crowdsourcing activity for teamwork use this website <https://code.org/curriculum/course3/19/Teacher.pdf>. In computer science, we face some big, daunting problems. Challenges like finding large prime numbers or sequencing DNA are almost impossible to do alone. Adding the power of others makes these tasks manageable. This lesson will show your students how helpful teamwork can really be.



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Visual and verbal instructions
- Choice activities
- Chunking information
- Video and written tutorials



Curriculum Development Resources:

- New Jersey Standards: <http://www.state.nj.us/education/cccs/2014/tech/>
- E-mail Buddy or Pen Pal site http://www.studentsoftheworld.info/menu_penpals.php
- Coding website lesson plans for K-5 <https://code.org/educate/k5>



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Notes/Comments:

Unit 4 Technology Systems and Design

Unit Summary: This unit will provide students with the opportunity to explore how technology impacts life and the environments we live in. They will also investigate how a product is designed to meet a certain goal.

Interdisciplinary Connections/Content Area Integrations Including Technology: Utilizing interdisciplinary activities that emphasize the use of technology skills to become lifelong learners.

- English Language Arts
- Mathematics
- Communications Skills
- 21st Century Life and Career Skills
- Problem Solving and Critical Thinking
- Science
- Social Studies

CCSS/NJCCCS Number	CCSS/NJCCCS Content
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8.2	<p>Technology Education, Engineering, Design, and Computational Thinking-Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking, and the designed world as they relate to the individual, global society, and the environment.</p> <p>A. The Nature of Technology: Creativity and Innovation Technology systems impact every aspect of the world in which we live.</p>
8.2.2.A.1	Define products produced as a result of technology or of nature.
8.2.2.A.2	Describe how designed products and systems are useful at school, home, and work.
8.2.2.A.3	Identify a system and the components that work together to accomplish its purpose.
8.2.2.A.4	Choose a product to make and plan the tools and materials needed.
8.2.2.A.5	Collaborate to design a solution to a problem affecting the community.
8.2	<p>Technology Education, Engineering, Design, and Computational Thinking-Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking, and the designed world as they relate to the individual, global society, and the environment.</p> <p>C. Design: The design process is a systematic approach to solving problems.</p>
8.2.2.C.1	Brainstorm ideas on how to solve a problem or build a product.
8.2.2.C.2	Create a drawing of a product or device that communicates its function to peers and discuss.

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8.2.2.C.3	Explain why we need to make new products.
8.2.2.C.4	Identify designed products and brainstorm how to improve one used in the classroom.
8.2.2.C.5	Describe how the parts of a common toy or tool interact and work as part of a system.
8.2.2.C.6	Investigate a product that has stopped working and brainstorm ideas to correct the problem.
8.2	D. Abilities for a Technological World: The designed world is the product of a design process that provides the means to convert resources into products and systems.
8.2.2.D.2	Discover how a product works by taking it apart, sketching how parts fit, and putting it back together.
8.2.2.D.3	Identify the strengths and weaknesses in a product or system.
8.2.2.D.4	Identify the resources needed to create technological products or systems.

Summative Assessments: May include but is not limited to:

- Teacher observations
- Student practice/Activities

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- Presentations
- Projects



Formative Assessments: May include but is not limited to:

- Exit Tickets
- Verbal Responses
- Teacher Observation
- Self-Assessment
- Thumbs Up/Down
- Active Listening (Think, Pair, Share and Choral Response)



Enduring Understandings:

- The design process is fundamental to technology and engineering.
- A system has interrelated components designed to collectively achieve a desired goal.
- All technological activities use resources that include tools/machines, materials, information, energy, capital, time, and people.



Essential Questions:

- How do I choose which technological tools to use and when it is appropriate to use them?

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- Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?
- Can a system continue to operate with a missing or malfunctioning component?
- Is it always beneficial to use the most economical material/materials for production of a technological product?



Instructional Outcomes:

Students Will:

- Understand the attributes of design.
- Understand the application of engineering design.
- Understand the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
- Understand the characteristics and scope of technology.
- Understand the core concepts of technology.
- Understand the relationships among technologies and the connections between technology and other fields of study.
- Apply the design process.
- Use and maintain technological products and systems.
- Assess the impact of products and systems.



Suggested Learning Activities:

- Review with students how to use Google Maps to find directions. Have them map from home to a friend's house. Then show them how to add a location by going to the library. The students should be able to choose a route to the friend's house and to the library and justify why they chose it.

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Have the students use Google Maps to find the closest restaurant, bank, etc., to the school. If possible, take the kids outside and explore the different routes.

- Given specific examples of items with more than two working parts (remote control to a television, remote access to a lock, etc.). Students will prepare a presentation on how the parts work together as part of a system.
- Review the design process with the students using the pbskids.org website. Set up three stations each with a different broken toy or tool. Ask students to work in pairs and visit each station. At each station, students should take notes on what is broken and how they suggest fixing it. Afterwards, take one of the broken items at a time and ask the groups to share what they would do to fix the item. Have the class vote on the best solution and allow that group of students to actually fix the item.
- Have students sit in a circle. Have each student draw or write a technology product on a piece of paper. Have student pass the paper to the right and on the new paper they receive write down how individuals use the product. Then have students pass the papers to the right again. This time students should write how families use the product on the new paper. Pass the papers again and record how communities are affected by the product and then pass one more time and record how the product affects the environment. At the end, the class can compare the posters and see the different ideas their classmates came up with. Alternate assignment can be to create the posters using Google Docs and share the documents with the class.
- Post a survey you created on Survey Monkey on the class page. Have students take the survey. Display the results up front on the Smartboard and choose one question to create a graph for. Show the students how to use either Create a Graph Classic or Create a Graph Online to make various graphs. Once completed, ask the students to create their own survey about a current event on Survey Monkey or similar program. Have the students post their survey to the class page or wiki and allow time for the students to complete each other's surveys. Have the students compile the results and create graphs using Create a Graph. When the graphs are complete, have students write down 1-2 suggestions based on their data.
- Explain what natural resources are and have students play the following game: <http://www.neok12.com/diagram/NaturalResources-01.htm>; Explain energy resources to the students and have them play the following game: <http://www.neok12.com/vocabulary/EnergySources-01.htm>; and Explain renewable resources and have them play the following game: <http://www.neok12.com/vocabulary/EnergySources-02.htm>. Then assign each

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student a technology product and have them list the natural resources, energy resources, and renewable resources necessary to create that product.

- Assign each group of students a commonly recycled item such as, milk gallons, plastic bottles, paper, toilet paper rolls, paper towel rolls, etc. Have each group research how recycling their item will help protect the environment. Also have them research other uses for their item rather than throwing them out. Each group should create a presentation to share with the class.



Suggested Differentiation:

Provide differentiated instruction through any and all of the following strategies:

- Visual and verbal instructions
- Choice activities
- Chunking information
- Video and written tutorials



Curriculum Development Resources:

- New Jersey Standards: <http://www.state.nj.us/education/cccs/2014/tech/>
- Roselle Public Schools <http://www.roselleschools.org>
- Internet: BrainPop, Jr. Reduce, Reuse, Recycle



SHORE REGIONAL HIGH SCHOOL DISTRICT

**A Regional Collaborative of the Communities Served by the Monmouth Beach, Oceanport, Shore Regional, and West Long Branch
School Districts**

Aligned to Common Core State Standards/New Jersey Core Curriculum Content Standards as Applicable

Notes/Comments: