| Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. | By the end of Grade 2 |
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**Strand B: Technology and Society**

**Rationale:** Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.

### Technology CPI

**8.2.2.B.1**

Identify how technology impacts or improves life.

### Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
  - Technological Pedagogical Content Knowledge (TPACK)
  - Multiple Means of Representation: Provide examples of technologies (i.e., airplanes, trucks, car, bicycles, and wagons). Illustrate through multiple media, videos and/or pictures how transportation impacts our lives. Use small groups to generate discussion and examples of these technologies and how they impact lives.

### Sample Activity

In a classroom discussion, determine technology that is used to improve our lives. Students should examine the positive and negative impacts of technology i.e. environmental concerns. Students should then examine how advances in technology have changed their lives. Present facts and definitions to the class which conclude how technology impacts or improves life and actions taken to improve any negative impacts. (See Technology at Work lesson plan).

### Content Area CPI
**Social Studies 6.1.4.B.9**

Relate advances in science and technology to environmental concerns, and to actions taken to address them.

**CCSS.ELA-LITERACY.CCRA.SL.4**
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

### Technology Options

Audacity: A digital audio recorder and editor which can create files containing content and/or directions for a lesson. These files can be shared online allowing students and parents to hear and repeat as needed.

- Printable flash cards: An alternative format to organize thoughts. These cards can include equation characters and support for multiple languages.

- Sketchnotes & visual thinking note-taking apps : An application that can be used to draw notes and also color code them.

- Wise Mapping: A graphic organizer for brainstorming. Files can be shared, stored online and embedded into other programs.

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**Strand B:  Technology and Society**

| Legend | Symbols used are a quick reference to indicate additional resources have been included. Additional information to locate resources is provided on a supplemental page. | | |
|---|---|---|---|
| | Time Tips That Transform Practice | | Supporting Research and Resources |
| | Professional Development and/or Classroom Resources | | Multiple Means of Representation |
| L | Lessons | | Multiple Means of Actions and Expressions |
| | Technology Resources | | Multiple Means of Engagement |

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|---|---|
| | **Social Studies 6.1.4.B.9**- http://www.state.nj.us/education/cccs/2014/ss/standards.pdf **CCSS.ELA-LITERACY.CCRA.SL.4**- http://www.corestandards.org/ELA-Literacy/CCRA/SL/ **Technology 8.2.2.B.1:** http://www.state.nj.us/education/aps/cccs/tech/ **Technological Pedagogical Content Knowledge (TPACK):** http://www.tpack.org/ |
| | **Multiple Means of Representation: Illustrate through Multiple Media -** http://www.udlcenter.org/aboutudl/udlguidelines/principle1 |
| L | **Flip Cameras and QR Code:** http://www.digitalwish.com/dw/digitalwish/view_lesson_plans?id=5896 **Technology at Work 2:** http://www.discoveryeducation.com/teachers/free-lesson-plans/technology-at-work-2.cfm |
| | **Audacity:** http://audacity.sourceforge.net/ **Free Printable Flash Cards:** http://www.kitzkikz.com/flashcards/ **Sketchnotes & visual thinking note-taking apps:** http://www.ipadartroom.com/visual-thinking-note-taking-apps/ **Wise Mapping:** http://www.wisemapping.com |

| **Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. | **By the end of Grade 5** |
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**Strand B: Technology and Society**

**Rationale:** Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.

### Technology CPI

**8.2.5.B.5**
Explain the purpose of intellectual property law.

### Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
- Multiple Means of Action and Expression: Use role-play, develop posters, write a play or create a video to demonstrate understanding of the purpose of intellectual property law.

### Sample Activity

Discuss the definition and purpose of intellectual property law. Make a list of circumstances of when this law would come into play. Look at examples to determine if text has been plagiarized or not. Write an informational text explaining when it is acceptable to use other people's work and how to give them credit for their work.

### Content Area CPI

21st Century Life and Careers CRP 9
Model integrity, ethical leadership, and effective management.

CCSS.ELA-LITERACY.CCRA.W.2
Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

### Technology Options

- Digital Literacy & Citizenship Classroom Curriculum: An online resource with printable activities, assessment suggestions, lesson plans and external links to relevant resources that can extend the classroom activities.

- R.I.P.- Respect Intellectual Property: A collection of resources with links to define intellectual property, and to both print and video-based cases that ignite thinking and discussion. Explore these both as a teacher preparation resource and/or a classroom resource.

- The United States Patent and Trademark Office: A collection of relevant online activities and resources.

- Wise Mapping: A graphic organizer for brainstorming where files can be shared, stored online, and also embedded into other programs.
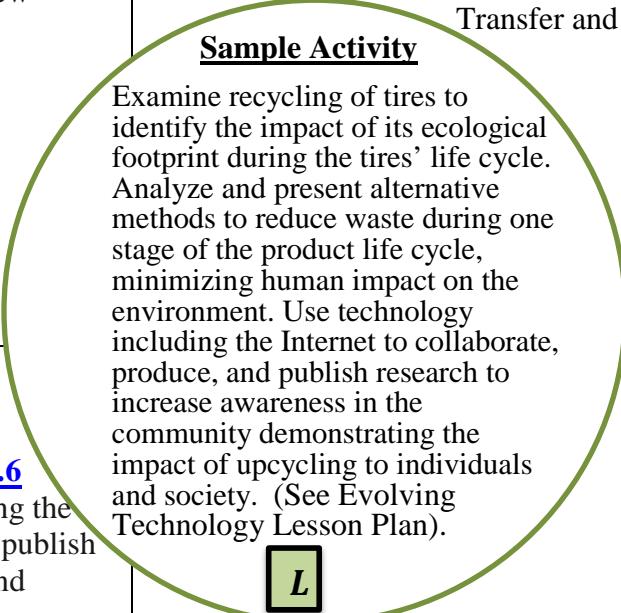
| Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment | By the end of Grade 5 |
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| L | Lessons | | Multiple Means of Actions and Expressions |
| | Technology Resources | | Multiple Means of Engagement |

| | **21st Century Life and Careers  CRP 9:** http://www.state.nj.us/education/cccs/2014/career/CareerReadyPractices.pdf <br> **CCSS.ELA-Literacy.W.2:** http://www.corestandards.org/ELA-Literacy/CCRA/W/ <br> **Technology 8.2.5.B.5:** http://www.state.nj.us/education/aps/cccs/tech/ |
|---|---|
| | **Multiple Means of Action and Expression: Facilitate Managing Information and Resources**: http://www.udlcenter.org/aboutudl/udlguidelines/principle2 <br> **Rubistar:** http://rubistar.4teachers.org/index.php - A resource for creating rubrics |
| L | **Copyright and Fair Use Guidelines for School Projects:** http://www.schrockguide.net/uploads/3/9/2/2/392267/copyright_schrock_original.pdf <br> **Whose is it Anyway?:** https://www.commonsensemedia.org/educators/lesson/whose-it-anyway-4-5 |
| | **Digital Literacy and Citizenship Classroom Curriculum:** https://www.commonsensemedia.org/educators/curriculum/digitalcitizenship/lessons/ <br> **R.I.P. – Respect Intellectual Property:** http://www.schrockguide.net/intellectual-property.html <br> **The United States Patent and Trademark Office:** http://www.uspto.gov/kids/index.html <br> **Wise Mapping:** http://www.wisemapping.com -A graphic organizer for brainstorming |

| **Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking –Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. | **By the end of Grade 8** |
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**Strand B: Technology and Society**

**Rationale:** Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.

### Technology CPI

**8.2.8.B.7**
Analyze the historical impact of waste and demonstrate how a product is upcycled, reused or remanufactured into a new product.

### Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
  - Multiple Means of Representation: Maximize Transfer and Generalization:
    Develop a list of waste items from home or school and using a graphic organizer or concept map organize and discuss their life cycle and impacts.

### Sample Activity

Examine recycling of tires to identify the impact of its ecological footprint during the tires' life cycle. Analyze and present alternative methods to reduce waste during one stage of the product life cycle, minimizing human impact on the environment. Use technology including the Internet to collaborate, produce, and publish research to increase awareness in the community demonstrating the impact of upcycling to individuals and society.  (See Evolving Technology Lesson Plan).

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### Content Area CPI

**CCSS.ELA-LITERACY.CCRA.W.6**
Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

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

### Technology Options

Google Drive:  A free cloud-based site where files can be created, saved, published and exported. It supports multiple platforms and provides access to the content from any internet device.

- The Life Cycle of a CD or DVD: An online or printable poster that identifies the stages from the development to the disposal of a CD. It also provides activities and enduring questions.

- Wikispaces Classroom: Create a class page that can be shared with all learners. Students can see the entries of their classmates. Individual pages can be created where students may draft and share responses.  The creator and instructor can see all pages and historical entries.

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| *L* | Lessons | | Multiple Means of Actions and Expressions |
| | Technology Resources | | Multiple Means of Engagement |

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|---|---|
| | **CCSS.ELA-Literacy.W.6:** http://www.corestandards.org/ELA-Literacy/CCRA/W/ **Next Generation Science MS-ESS3-3:** http://www.nextgenscience.org/ms-ess3-3-earth-and-human-activity **Technology 8.2.8.B. 7:** http://www.state.nj.us/education/aps/cccs/tech/ |
| | **Multiple Means of Representation: Maximize Transfer and Generalization -** http://www.udlcenter.org/aboutudl/udlguidelines/principle1 |
| *L* | **Classroom Paper Recycling:** http://tryengineering.org/sites/default/files/lessons/paper.pdf **Evolving Technology- Change How People Live:** http://www.inventivekids.com/wp-content/uploads/2011/01/IK_Evolving-Technologies-Change-How-People-Live.pdf **Have and Have Not:** http://files.earthday.net/lesson%20plans/haveandhavenot.pdf |
| | **Getting Started with Google Drive:** https://support.google.com/drive/answer/2424384?hl=en **Publishing with Google Drive:** https://support.google.com/docs/answer/183965?hl=en **The Life Cycle of a CD or DVD:** http://www.epa.gov/osw/education/pdfs/finalposter.pdf **Wikispaces Classroom:** https://www.wikispaces.com/content/classroom |

| Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment. | By the end of Grade 12 |
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**Strand B: Technology and Society**

**Rationale:** Knowledge and understanding of human, cultural and societal values are fundamental when designing technology systems and products in the global society.

### Technology CPI

**8.2.12.B.4**

Investigate a technology used in a given period of history, e.g., stone age, industrial revolution or information age, and identify their impact and how they may have changed to meet human needs and wants.

### Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.

- Multiple Means of Engagement: Heighten salience of goals and objectives

Prompt or require learners to provide pictures, drawings, and videos of technologies that have changed over time. Use a graphic organizer or concept map to associate the wants and needs that drove these changes and further identify their social, economic, and/or cultural impacts.

### Sample Activity

Investigate and report on a technology used in a given period of history (e.g., Stone Age, industrial revolution or information age). Determine its impact and changes made to meet human wants and needs. Research how and the extent to which this technology brought about massive social, economic and cultural changes (scientific and technological changes, transportation, and new forms of energy).

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### Content Area CPI

**CCSS.ELA-LITERACY.CCRA.W.7**

Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

**Social Studies 6.2.12.C.3.d**

Determine how, and the extent to which, scientific and technological changes, transportation, and new forms of energy brought about massive social, economic and cultural changes.

### Technology Options

- Bibme.org: A citation tool to assist in formatting resources.

- Live Binder: An online, digital three ring binder that organizes links to external documents, and files.

- NaturalReader: A text to speech application used to assist with reading and language barriers.

- The Office of Energy Efficiency and Renewable Energy: This website includes over 29,000 lesson plans and energy related resources for student research. A lesson plan that supports the sample activity is Transportation Fuels: The Future is Today.

- United States Environmental Protection Agency: A site with many links to articles about health and safety and to lessons, presentation files and more.

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### Strand B:  Technology and Society

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| **L** | Lessons | 🎭 | Multiple Means of Actions and Expressions |
| ▦ | Technology Resources | ✓ | Multiple Means of Engagement |

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| 📘 | **CCSS.ELA-Literacy.CCRA.W2:** http://www.corestandards.org/ELA-Literacy/CCRA/W/ <br> **Social Studies Standards 6.2.12.C.3.d:** http://www.state.nj.us/education/cccs/2014/ss/ <br> **Technology 8.2.12.B.4:** http://www.state.nj.us/education/aps/cccs/tech/ |
| ✓ 🧠 | **Multiple Means of Engagement: Heighten Salience of Goals and Objectives** - http://www.udlcenter.org/aboutudl/udlguidelines/principle3 <br> **The Surprising Science of Motivation:** http://www.wimp.com/surprisingmotivation/ |
| **L** | **Electric Messages: Then and Now-** http://tryengineering.org/sites/default/files/lessons/electricmessages.pdf <br> **Mobile Phones:** http://www.teachingenglish.org.uk/sites/teacheng/files/mobile-phone-lesson-plan.pdf <br> **Search Engine Lesson:** http://www.trycomputing.org/lesson-plans/search-engines-lesson |
| ▦ | **Bibme.org: A bibliography maker**- www.bibme.org <br> **Live Binder:** http://www.livebinders.com/welcome/education?showsubtab=education <br> **Live Binders Tips and Tricks:** http://www.livebinders.com/play/play?present=true&id=3342 <br> **NaturalReader:** http://www.naturalreaders.com/ <br> **Transportation Fuels: The Future Is Today -** http://energy.gov/eere/education/downloads/transportation-fuels-future-today-6-activities <br> **United States Environmental Protection Agency:** http://www2.epa.gov/learn-issues/learn-about-health-and-safety |