

New Jersey Core Curriculum Content Standards
Classroom Application Document – Technology
Educational Technology – Technology Operations and Concepts

Standard 8.1 Educational Technology: 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.		By the end of Grade 2
Strand A: Technology Operations and Concepts		
Essential Questions	Enduring Understandings	
In a world of constant change, what skills should we learn?	Technology is constantly changing and requires continuous learning of new skills.	
How do I choose which technological tools to use and when it is appropriate to use them?	Selection of technology should be based on personal and /or career needs assessment.	
How can I transfer what I know to new technological situations/experiences	A tool is only as good as the person using it.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<u>Content</u>	<u>Instructional Guidance</u>	
The use of technology and digital tools requires knowledge and appropriate use of operations and related applications .	<i>To assist in meeting this CPI, students may:</i>	
	<ul style="list-style-type: none"> • Enhance writing pieces by using different font styles, sizes and colors. • See Health Classroom Applications Documents for 2.1.2.C.2. 	
	<ul style="list-style-type: none"> ✓ Note: At this level, students should be able to: <ul style="list-style-type: none"> ○ Open files, software programs and save files ○ Become familiar with the location of keys ○ Utilize special function keys (e.g., shift, backspace, delete, etc.) 	
<u>CPI</u>	<u>Sample Assessments</u>	
8.1.2.A.4 Create a document with text using a word processing program.	<i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	As a class, create an “All About the Students in _____ ’ Class” book. Write 2-3 sentences about the things that you like to do. Revise, edit and type the final version in paragraph form. Print the story.	
	The All About Your Class book can be shared with other classes, parents and new students upon arrival to their school.	

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The use of technology and digital tools requires knowledge and appropriate use of operations and related applications .	<p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Document a science activity by inserting a digital image into a word document and typing a brief explanation. • Write a book review that can be posted on the media center’s website. Include a paragraph that briefly summarizes the story and another paragraph that describes the type of student that might enjoy reading the book. In addition, include at least one picture that relates directly to the book. <p style="color: red;">✓ Note: At this level, students should be able to:</p> <ul style="list-style-type: none"> ○ Name files appropriately, make folders and print correctly ○ Use home row keys and appropriate keyboarding techniques to increase key stroking speed and accuracy ○ Format documents with correct text alignment for title and paragraphs ○ Utilize features such as bold, underline and italics appropriately. 	

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CPI

8.1.4.A.2

Create a document with text formatting and graphics using a word processing program.

Sample Assessments

To show evidence of meeting this CPI, students may complete the following assessment:

Interview someone of personal of interest (a family member, friend, teacher or someone in the local community). Write an article about that person and include a digital picture and / other relevant graphics. Submit the article to the school online newspaper/magazine.

Resources

- [My Hero](#) hosts stories, artwork and short films that students create about their heroes.
- [Making Teachers Nerdy](#) provides a website list of links to public domain images and sounds that can be used for student projects.
- [Dance Mat Typing](#) provides an introduction to touch typing for children ages 7-11.

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	<ul style="list-style-type: none"> • Investigate how database queries can be used to access specific information. http://www.scorecard.org/ http://www.twincities.com/dataplanet http://earthtrends.wri.org/ • See Science Classroom Applications Documents for 5.4.6.F.1. 	
<u>CPI</u>	<u>Sample Assessments</u>	
8.1.8.A.2 Plan and create a simple database, define fields, input data, and produce a report using sort and query.	<i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	Create a collaborative database with classmates that will become the class playlist for an iPod or media player on a laptop. Collect data on music preferences. Fields will include the genre of music, song titles and names of recording artists. Sort the database by the songs that occur most frequently on the list. Develop a query of every song by the recording artist of the top three songs. Generate a report from the query of the songs for the playlist. Have class choose the songs to include on	

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the class playlist from the report. Post results on the class website, compare with data collected from another class at your same grade level, or download onto an iPod or class computer.

Resources

- [Classrooms that EXCEL Resources](#) provides tutorials and examples of databases on different topics.

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	<ul style="list-style-type: none"> • See Science Classroom Applications Documents for 5.1.12.B.4. ✓ Note: Images from public domain sites can be used or students can create their own. In addition, students should be familiar with copyright regulations if they are using resources that they did not create. 	
<u>CPI</u>	<u>Sample Assessments</u>	
8.1.12.A.2 Produce and edit a multi-page document for a commercial or professional audience using desktop publishing and/or graphics software.	<i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	Prepare a publication about a non-profit organization to convince other people to contribute to the cause as part of a service learning project. Gather important information, relevant images and statistics about this organization. Contact someone from the organization to provide a quote and ask for permission to use their logo. Include a graph that illustrates the percentage of donations that actually go to the cause. Consider the audience when determining the layout and design of the publication.	

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Resources

- [ReadWriteThink](#) provides a section called Brochures: Writing for a Purpose Lesson Plan
- [Charity Navigator](#) evaluates charities based on a variety of factors.
- [Copyright and Fair Use Guidelines for Teachers](#)
- [Creative Commons](#)

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Strand B: Creativity and Innovation		
Essential Questions	Enduring Understandings	
How can digital tools be used for creating original and innovative works, ideas, and solutions?	Digital tools provide enhanced opportunities to design innovative solutions, and express ideas creatively.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.</p> <p><u>CPI</u></p> <p>8.1.2.B.1 Illustrate and communicate original ideas and stories using digital tools and media-rich resources.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Create a digital scrapbook about family members. Include information about how each family member contributes to the family unit and talk about anything that makes the person special. Images can be hand drawn and scanned or digital pictures may be used. • Create a short video about a favorite activity. • See Science Classroom Applications Documents for 5.4.2.G.2. <p style="color: red;">✓ Note: If digital photographs are not available, teacher may want to create an image bank (using public domain images) for students to select images from.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> • Pics4Learning provides copyright-friendly images for student and teacher use. 	

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Strand B: Creativity and Innovation		
Essential Questions	Enduring Understandings	
How can digital tools be used for creating original and innovative works, ideas, and solutions?	Digital tools provide opportunities for people to have new experiences, recognize problems, design solutions, and express their ideas. Revise as above	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<u>Content</u>	<u>Instructional Guidance</u>	
The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.	<i>To assist in meeting this CPI, students may:</i>	
	<ul style="list-style-type: none"> • Interview classmates, friends, family members, teachers and/or other adults to gather information about a recent event occurring in the school or local community. • See Health Classroom Applications Documents for 2.4.4.A.1 	
<u>CPI</u>	<u>Sample Assessments</u>	
8.1.4.B.1 Produce a media-rich digital story about a significant local event or issue based on first-person interviews.	<i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	Create a digital story with images based on first-person interviews and publish online to share with school and community members.	

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How can digital tools be used for creating original and innovative works, ideas, and solutions?	Digital tools provide opportunities for people to have new experiences, recognize problems, design solutions, and express their ideas.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>The use of digital tools and media-rich resources enhances creativity and the construction of knowledge.</p> <p><u>CPI</u></p> <p>8.1.8.B.1 Synthesize and publish information about a local or global issue or event on a collaborative, web-based service (also known as a shared hosted service).</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • See Visual and Performing Arts Classroom Applications Documents for 1.2.8.A.3. • See Social Studies Classroom Application Document 6.3.8.C.1. <p><u>Resources</u></p> <ul style="list-style-type: none"> • YouTube • TeacherTube • Slideshare.net • Schooltube hosts student and teacher created videos and promotes contests related to current educational topics. • Testtoob hosts student created videos illustrating science experiments. 	

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Strand C: Communication and Collaboration		
Essential Questions	Enduring Understandings	
How has the use of digital tools improved opportunities for communication and collaboration?	Recognize problems, design solutions, and express their ideas. Digital tools allow for communication and collaboration anytime/anyplace worldwide.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
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<p>Content The use of digital tools and media-rich resources enhances creativity and the construction of Digital tools and environments support the learning process and foster collaboration in solving local or global issues and problems.</p> <p>CPI</p> <p>8.1.12.B.1 Design and pilot a digital learning game to demonstrate knowledge and skills related to one or more content areas or a real world situation.</p> <p>CPI</p> <p>8.1.2.C.1 Engage in a variety of developmentally appropriate</p>	<p>Instructional Guidance <i>To assist in meeting this CCI, students may:</i></p> <ul style="list-style-type: none"> Explore digital learning games available in a variety of content areas. Use a graphic organizer to record information that will help in the design of a new game. Compare information about plants, animals and non-living objects found in the schoolyard with other students from around the country and the world. Information about the Square of Life educational games and animations in different content areas project can be found at: http://www.k12science.org/curriculum/squareproj/index.htm. Contact an expert in the field or the computer science department at a local college or university to get advice about designing digital learning games. Participate in a project that combines artwork with the development of reading and writing skills. Information about Create A Monster project can be found at: http://www.monsterexchange.org/ <p>Resources</p> <ul style="list-style-type: none"> Create and interpret graphs, use descriptive text, develop mapping skills and collaborate internationally using the Internet while tallying lost teeth. Information about The Tooth Tally Project can be found at: http://toothtally.com/default.htm. Alice is an innovative 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game. Scratch is a programming language that makes it easy to create interactive stories, animations, games, music, and art. See Visual and Performing Arts Classroom Applications Documents for 1.1.2.C.3. The Eduweb site provides information about the design process it uses to create online learning activities. <p>Resources</p> <ul style="list-style-type: none"> Classtools.net provides free, customizable flash templates to embed into blogs, wikis and websites. Students and teachers can create free websites, participate in global projects or communicate with students from around the world using game-based education, e-Learning and training compiled by Marc Prensky. The Center for Innovation in Engineering and Science Education 	

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learning activities with students in other classes, schools, or countries using electronic tools.

(CIESE) has designed interdisciplinary projects that utilize real time data for teachers and students worldwide.

- [Here Birdy, Birdy Project](#) is an example of a collaborative project in which students from five North American schools gathered data about birds over time and analyzed trends.
- [Global SchoolNet](#) is the Internet's oldest (1995) and largest clearinghouse for teacher-conducted global learning projects.
- A [list of teachers who teach at International Schools](#)

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Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Digital tools and environments support the learning process and foster collaboration in solving local or global issues and problems.</p> <p><u>CPI</u></p> <p>8.1.4.C.1 Engage in online discussions with learners in the United States or from other countries to understand their perspectives on a global problem or issue.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • See Social Studies Classroom Application Document for 6.3.4.A.4. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>View the UN video: http://www.youtube.com/view_play_list?p=CB987F15ABB65F79.</p> <p>If you were offered the ability to address world leaders, what would you wish to tell them? Discuss with students in the U.S. and other countries to find out their ideas and create a podcast that summarizes the varying points of view. Send your podcast to the Committee on Teaching about the UN (CTAUN) at: http://www.teachun.org/.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> • Epals has developed collaborative projects about a variety of topics including global warming and the world’s water supply. • Students and teachers can create free websites, participate in global projects or communicate with students from around the world using Thinkquest. 	

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Web-based conferencing tools:

- Skype.com
- illuminate.com (v-room for 3 connects)
- dindim.com
- openacircle.com
- yugma.com

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<p><u>Content</u></p> <p>Digital tools and environments support the learning process and foster collaboration in solving local or global issues and problems.</p> <p><u>CPI</u></p> <p>8.1.8.C.1 Participate in an online learning community with learners from other countries to understand their perspectives on a global problem or issue, and propose possible solutions.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • See Visual and Performing Arts Classroom Application Document for 1.1.8.A.3. • See Social Studies Classroom Application Document for 6.3.8.A.3. <p><u>Resources</u></p> <ul style="list-style-type: none"> • Classroom20 is an online community for educators who are interested in incorporating Web 2.0 and collaborative technologies in their classes. It is designed for teachers at different technology skill levels. • Connecting Across Classrooms provides resources to create a 21st century classroom. • Epals has developed collaborative projects about a variety of topics for students at different grade levels. • Flat Classrooms is an online community for educators who are interested in incorporating Web 2.0 and collaborative technologies in their classes. Teachers can join projects or post their own ideas for projects in search for partners. • Global Collaborations is an online community for educators who are interested in incorporating Web 2.0 and collaborative technologies in their classes. Projects are grouped by grade level. • http://globaleducation.ning.com/ • www.globalschoolnet.org • A list of teachers who teach at International Schools • http://onlineproj4tchrs.ning.com/ 	

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- <http://teachersconnecting.com/?q=node/34>
- Students and teachers can create free websites, participate in global projects or communicate with students from around the world using [Thinkquest](#).

Web-based conferencing tools:

- [Skype.com](#)
- [illuminate.com](#) (v-room for 3 connects)
- [dimdim.com](#)
- [openacircle.com](#)
- [yugma.com](#)

Understanding video conferencing:

- <http://www.edutopia.org/youtube-educational-videos-classroom>

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<p><u>Content</u></p> <p>Digital tools and environments support the learning process and foster collaboration in solving local or global issues and problems.</p> <p><u>CPI</u></p> <p>8.1.12.C.1 Develop an innovative solution to a complex, local or global problem or issue in collaboration with peers and experts, and present ideas for feedback in an online community.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may</i></p> <ul style="list-style-type: none"> • See Visual and Performing Arts Classroom Application Document for 1.1.12.D.1. • See Social Studies Classroom Application Document for 6.3.12.B.1. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Design a scientific investigation in collaboration with an online learning community that includes research and interviews with experts in the field and leads to the development of an innovative product or idea.</p>	

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Strand D: Digital Citizenship		
Essential Questions	Enduring Understandings	
What are an individual’s responsibilities for using technology? What constitutes misuse and how can it best be prevented?	Technology use can have positive or negative impact on both users and those affected by their use.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.2.D.1 Model legal and ethical behaviors when using both print and non-print information by citing resources.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> Recognize ownership of work by identifying the title, author or source of a book, article, song or poem provided by their teacher. This does not require the use of APA or MLA styles. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Cite the specific website beneath a picture that is used for a project.</p>	

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<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.4.D.1 Explain the need for individuals and members of the global community to practice cyber safety, cyber security, and cyber ethics when using existing and emerging technologies.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> Review the resources listed below to learn about cyber safety, cyber security and cyber ethics. Create a cartoon featuring an Internet Superhero that helps resolve cyber issues affecting children worldwide. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Create a multimedia slideshow that explains the importance of cyber safety, cyber security and cyber ethics and post online. Invite students from schools worldwide to post comments.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> McGruff Road Poster illustrates important ideas about cyber safety. Cyberbee interactive explains how to use Internet resources appropriately by following copyright regulations. Netsmartz provides lesson plans, activities and resources for kids, teens, parents and educators. Cybertreehouse provides videos and interactive activities for students. Cybersmart provides a curriculum with lesson plans for students in grades K-12. Cyberethics for Kids website, developed by the Department of Justice, has interactive activities about this topic. 	

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	<ul style="list-style-type: none"> • Digizen provides videos and interactive activities about cyber bullying.
<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.4.D.2 Analyze the need for and use of copyrights.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Explore the various consequences of not following copyright policies and regulations in school and in the workplace <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Create a public service announcement that explains copyright protection regulations and how they affect the resources that are posted online. Submit to the school or town media specialist for posting on their website.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> • Copyright Kids website explains how copyright works in kid-friendly terms.
<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.4.D.3 Explain the purpose of an Acceptable Use Policy (AUP) and the consequences of inappropriate use of technology.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Review the school’s acceptable use policy (AUP) and discuss how the AUP is designed to protect the rights of students and promote appropriate behavior when using technology. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <ul style="list-style-type: none"> • Create an online cartoon for younger students explaining the school’s AUP.

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What are an individual’s responsibilities for using technology? What constitutes misuse and how can it best be prevented?	Technology use can have positive or negative impact on both users and those affected by their use.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors</p> <p><u>CPI</u></p> <p>8.1.8.D.1 Model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Demonstrate understanding of cyber safety, cyber bullying, cyber security and cyber ethics by completing the activities found on the websites below. • Create a poster with tips about how to respond to a cyber bully and post on the school’s website or around the school and community. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>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. Share with younger students or parents.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> • Netsmartz provides lesson plans, activities and resources for kids, teens, parents and educators. • Cybertreehouse provides videos and interactive activities for students. • Cybersmart provides a curriculum with lesson plans for students in grades K-12. • Cyberethics for Kids website, developed by the Department of Justice, has interactive activities about this topic for students at different grade levels. • Digizen provides videos and interactive about cyber bullying. 	

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<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.8.D.2 Summarize the application of fair use and creative commons.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none">• Create an online survey to determine what students know about fair use and creative commons.• Read current news articles about violations of fair use policies and the impact they have on individuals and businesses.• Review and compare licensing and use policies on photo sharing websites.• Interview a local artist or musician to determine why they think it is important for people to follow fair use policies. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Create a video that demonstrates the application of fair use policies in educational and personal situations and show it during a parent’s night program.</p> <p><u>Resources</u></p> <ul style="list-style-type: none">• CreativeCommons.org• Media Education Lab website provides resources including lesson plans, PowerPoint slides, videos, case studies, podcasts, and FAQs.• Curriki website provides open source lesson plans and activities.• Teacher Tap provides a list of links to public domain, copyright free, open source, images and media for student use.• Morgue File provides a public image archive and links to other free photo sites.• Gimp Savvy website provides images and photos from three main sources: the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Fish and Wildlife Service (FWS).
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Standard 8.1 Educational Technology: 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.		By the end of Grade 12
Strand D: Digital Citizenship		
Essential Questions	Enduring Understandings	
What are an individual’s responsibilities for using technology? What constitutes misuse and how can it best be prevented?	Technology use can have positive or negative impact on both users and those affected by their use.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.</p> <p><u>CPI</u></p> <p>8.1.12.D.3 Compare and contrast international government policies on filters for censorship.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Research a foreign government’s control of media/Internet during the aftermath of a domestic or international incident. • Discuss the controls that were put in place (e.g., media, Internet, security) and if these actions would be considered safe, legal or ethical in the United States. • Create a blog to discuss when and if it is appropriate for governments to create policies about filters for censorship. Invite students, business people, lawyers, members of non-governmental agencies and government officials worldwide to share their ideas. • Contact major search engine companies to find out their policies about filters for censorship. • Read news articles about censorship using worldwide news sources. • Read Article 19 of the Universal Declaration of Human Rights. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Create a video about government policies on filters for censorship and share with the Committee on Teaching about the United Nations (CTAUN).</p>	

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Resources

- [China: Internet Censorship lesson plan](#) created by PBS
- [Teaching About Freedom of Speech](#) on the Internet lesson plan created by American Bar Association
- [Human Rights Watch](#) website provides information about protecting human rights and upholding political freedom worldwide. Search for censorship on this website to find information about current issues related to this topic.
- [Online Newspapers](#) website provides links to newspapers worldwide.

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Standard 8.1 Educational Technology: 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.		By the end of Grade 2
Strand E: Research and Information Literacy		
Essential Questions	Enduring Understandings	
Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?	Information is spread worldwide within seconds due to technological advancements and has an immediate impact.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Effective use of digital tools assists in gathering and managing information.</p> <p><u>CPI</u></p> <p>8.1.2.E.1 Use digital tools and online resources to explore a problem or issue affecting children, and discuss possible solutions.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Use websites that provide age appropriate current events articles such as www.timeforkids.com and find 2-3 important facts about an issue that relates to children. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Use a class blog to inform other students about a problem that affects children. Provide at least 2-3 important facts and one possible solution. Ask other students to provide comments and offer other possible solutions.</p> <p><u>Resources</u></p> <ul style="list-style-type: none"> • Time For Kids • Weekly Reader 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 4
Strand E: Research and Information Literacy		
Essential Questions	Enduring Understandings	
Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?	Information is spread worldwide within seconds due to technological advancements and has an immediate impact.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<u>Content</u>	<u>Instructional Guidance</u>	
Effective use of digital tools assists in gathering and managing information.	<i>To assist in meeting this CPI, students may:</i>	
	<ul style="list-style-type: none"> • Determine where in the United States and around the world access to clean water is an issue using appropriate websites. • Gather data about how much water students use each day (e.g., # of minutes they take a shower, # of water bottles/ glasses of water they drink etc.) and record information in a spreadsheet. Create a digital chart and analyze results. • Research strategies that have been proven effective in saving water using appropriate websites or by contacting the local water department via email or Skype. • Contact classes from other schools in the United States and around the world to discover how they conserve water. 	
<u>CPI</u>	<u>Sample Assessments</u>	
8.1.4.E.1 Investigate a problem or issue found in the United States and/or another country from multiple perspectives, evaluate findings, and present possible solutions, using digital tools and online resources for all steps.	<i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	Create a digital presentation that describes appropriate water conservation methods and share with other students online.	
	<u>Resources</u>	
	<ul style="list-style-type: none"> • The Environment Challenge Website is designed for use with elementary school students and includes information about how to live more sustainably by reducing waste, water, energy etc. It also includes six different challenges complete with information sheets 	

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about calculating water use, doing home and school water audits as well as suggestions for how to save water.

- [Epals](#) website provides opportunities for students to collaborate with classes worldwide about global issues.

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Standard 8.1 Educational Technology: 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.		By the end of Grade 8
Strand E: Research and Information Literacy		
Essential Questions	Enduring Understandings	
Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?	Information is spread worldwide within seconds due to technological advancements and has an immediate impact.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Effective use of digital tools assists in gathering and managing information.</p> <p><u>CPI</u></p> <p>8.1.8.E.1 Gather and analyze findings using data collection technology to produce a possible solution for a content-related or real-world problem.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Use the Current Global Air Quality Feature available through Google Maps to determine real time air quality in Hong Kong, United Kingdom and United States. Use digital tools to record this information over a period of time. Analyze findings and determine the best time to participate in outside activities. <p><u>Resources</u></p> <ul style="list-style-type: none"> • Google Maps 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 12
Strand E: Research and Information Literacy		
Essential Questions	Enduring Understandings	
Why is the evaluation and appropriate use of accurate information more important than ever in the technological age?	Information is spread worldwide within seconds due to technological advancements and has an immediate impact.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Effective use of digital tools assists in gathering and managing information.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Investigate publicized incidences of computer hacking by individuals such as David L. Smith, Robert Tappan Morris, Kevin Mitnick and Gary McKinnon. Determine the personal consequences to the hackers and the extent of the impact on society, business and education. • Contact a legal expert on copyright laws to determine the legal recourse for infringement. • Research current cases regarding unethical use of digital tools in educational and business settings worldwide. Compare the impact of these cases on other events. 	
<p><u>CPI</u></p> <p>8.1.12.E.2 Predict the impact on society of unethical use of digital tools, based on research and working with peers and experts in the field.</p>	<p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Research statistics about illegal downloading of one of the following: music, movies, books, etc. Based on the statistics available, predict the economic loss to the artist. Use the findings to create content for a YouTube video to discourage further misuse of digital tools for this purpose.</p>	
	<p><u>Resources</u></p> <ul style="list-style-type: none"> • http://www.ifpi.org/content/section_resources/dmr2009.html • http://www.riaa.com/faq.php • http://www.fbi.gov/cyberinvest/cyberhome.htm • http://www.justice.gov/criminal/cybercrime/ 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 2
Strand F: Critical Thinking, Problem Solving, and Decision-Making		
Essential Questions	Enduring Understandings	
<p>How do I choose which technological tools to use and when it is appropriate to use them?</p> <p>How can I transfer what I know to new technological situations/experiences?</p>	<p>Selection of technology should be based on personal and/or career needs assessment.</p> <p>A tool is only as good as the person using it.</p>	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Information accessed through the use of digital tools assists in generating solutions and making decisions.</p> <p><u>CPI</u></p> <p>8.1.2.F.1 Use mapping tools to plan and choose alternate routes to and from various locations.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Make a list of addresses of the local police station, fire house, hospital, and library. Use Google’s mapping tools to identify where each of these buildings is located in relation to the school. • Decide which building is closest to the school using the distance measurement tool from the school to each building. <p style="color: red;">✓ Note: When using Google maps, select My Maps and select ‘Browse from the Directory’ and search for the Distance Measurement tool.</p> <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Current road construction has caused a major street in your community to be closed. Plan an alternate route from school to your home avoiding that street.</p> <p><u>Resources:</u></p> <ul style="list-style-type: none"> • Google Maps 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 4
Strand F: Critical Thinking, Problem Solving, and Decision-Making		
Essential Questions	Enduring Understandings	
<p>How do I choose which technological tools to use and when it is appropriate to use them?</p> <p>How can I transfer what I know to new technological situations/experiences?</p>	<p>Selection of technology should be based on personal and/or career needs assessment.</p> <p>A tool is only as good as the person using it.</p>	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Information accessed through the use of digital tools assists in generating solutions and making decisions.</p> <p><u>CPI</u></p> <p>8.1.4.F.1 Select and apply digital tools to collect, organize, and analyze data that support a scientific finding.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • See Science Classroom Application Document for 5.2.4.B.1. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <p>Investigate motion and forces by using a ramp, toy car, meter stick and stopwatch to record the time it takes for the card to travel down the ramp. Record the data in a spreadsheet and graph the results to determine trends.</p> <p><u>Resources:</u></p> <ul style="list-style-type: none"> • http://nces.ed.gov/nceskids/graphing/Classic 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 8
Strand F: Critical Thinking, Problem Solving, and Decision-Making		
Essential Questions	Enduring Understandings	
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?	Selection of technology should be based on personal and/or career needs assessment. A tool is only as good as the person using it.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<u>Content</u> Information accessed through the use of digital tools assists in generating solutions and making decisions.	<u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i>	
<u>CPI</u> 8.1.8.F.1 Use an electronic authoring tool in collaboration with learners from other countries to evaluate and summarize the perspectives of other cultures about a current event or contemporary figure.	<ul style="list-style-type: none"> • Participate in an online discussion with students from other countries about who are the five most influential contemporary figures in a particular area of interest (e.g., sports figure, musician, actor, politician, etc.) 	
	<u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following assessment:</i>	
	Work collaboratively with students from other countries to select a recent event that has had a global impact. Create an electronic poster using an application such as http://edu.glogster.com/ to illustrate the different viewpoints. Consider including images, video, podcasts along with text.	
	<u>Resources:</u>	
	<ul style="list-style-type: none"> • Epals has developed collaborative projects about a variety of topics for students at different grade levels. • Class Blogmeister provides a list of blogs from different states and countries. • www.blogspot.com • www.wikispaces.com • www.pbwiki.com • www.skype.com 	

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Standard 8.1 Educational Technology: 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.		By the end of Grade 12
Strand F: Critical Thinking, Problem Solving, and Decision-Making		
Essential Questions	Enduring Understandings	
How do I choose which technological tools to use and when it is appropriate to use them?	Selection of technology should be based on personal and/or career needs assessment.	
How can I transfer what I know to new technological situations/experiences?	A tool is only as good as the person using it.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content</u></p> <p>Information accessed through the use of digital tools assists in generating solutions and making decisions.</p> <p><u>CPI</u></p> <p>8.1.12.F.2 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address educational, career, personal, and social needs.</p>	<p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following assessment:</i></p> <ul style="list-style-type: none"> Determine 5-10 digital tools that will best address your educational, career and personal needs and create a digital presentation in which you highlight their features. Post online and ask other people to review your list and provide feedback. <p><u>Resources:</u></p> <ul style="list-style-type: none"> www.go2web20.net 	

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8.2 Technology Education, Engineering, and Design: 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.		Grades: K-2
Strand A: Nature of Technology: Creativity and Innovation		
Essential Questions	Enduring Understandings	
Can we control the pace at which technology is created? Should we, even if we can?	Technology evolves at an ever accelerating pace based on the needs/wants of society and is influenced by cultural, political and environmental values and constraints.	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>Technology products and systems impact every aspect of the world in which we live.</p> <p><u>CPI:</u></p> <p>8.2.2. A.1 Describe how technology products, systems, and resources are useful at school, home, and work.</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Engage in classroom discussion regarding technological products like planes or computers that make life easier on a daily basis. Discuss how they are used and how they would improve them. Draw a picture of the improvements and post for classmates. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Identify a favorite technological advancement and create a photo gallery to explain its impact and how daily life would be different without it.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.noogenesis.com/inventing/pencil/pencil_page.html • http://www.pbs.org/wgbh/amex/telephone/gallery/index.html • www.edheads.org • http://www.knowitall.org/nasa/simulations/invention_process/timeline.html • http://kids.aol.com/homework-help/junior/science/inventions 	
8.2 Technology Education, Engineering, and Design: 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.		Grades: 3-4
Strand A: Nature of Technology: Creativity and Innovation		
Essential Questions	Enduring Understandings	

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<p>Can we control the pace at which technology is created? Should we, even if we can?</p>	<p>Technology evolves at an ever accelerating pace based on the needs/wants of society and is influenced by cultural, political and environmental values and constraints.</p>
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p><u>Content:</u></p> <p>Technology products and systems impact every aspect of the world in which we live.</p> <p><u>CPI:</u></p> <p>8.2.4. A.1 Investigate factors that influence the development and function of technology products and systems.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Investigate how the cell phone was developed and its impact on society and other technologies. Interview senior citizen to design a cell phone that meets their needs. www.edheads.org • Investigate and share with classmates how other inventions and innovations came to be. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Research cell phones online and evaluate and recommend a cell phone in production that would meet the needs of the senior citizens. Present your results to the senior citizens that you interviewed.</p> <p>Using the results of your research write a “Did You Know” feature article for the local newspaper.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://sciencespot.net/Pages/kdzinvent.html • http://edtech.kennesaw.edu/web/inventor.html • http://www.factmonster.com/ipka/A0768091.html • http://jefferson.lib.co.us/kids/kids_inventions.html# • http://www.timelineindex.com/content/view/482 • http://www.kidinfo.com/american_history/inventors_inventions.htm • http://kids.yahoo.com/directory/Science-and-Nature/Machines/Inventions • http://www.xtimeline.com/
<p><u>Content:</u></p> <p>Technology products and systems impact every aspect of the world in which we live.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Compare and contrast modern buses with those of the past and explore how technology and economics impacted the safety of people in many countries and share this with members of your class

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<p><u>CPI:</u></p> <p>8.2.4. A.2 Using a digital format compare and contrast how a technology product has changed over time due to economic, political, and/or cultural influences.</p>	<p>in a digital product (i.e. podcast, Jingproject, glog, slidecast).</p> <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Create a digital narrative comparing and contrasting the positive and negative effects that modern transportation has had on our society.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.nps.gov/history/nr/TwHP/wwwlps/lessons/25edison/25putting.htm • www.jingproject.com • www.glogster.com
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	
<p>Grades: 5-8</p>	
<p>Strand A: Nature of Technology: Creativity and Innovation</p>	
<p>Essential Questions</p>	<p>Enduring Understandings</p>
<p>Can we control the pace at which technology is created? Should we, even if we can?</p>	<p>Technology evolves at an ever accelerating pace based on the needs/wants of society and is influenced by cultural, political and environmental values and constraints.</p>
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u></p> <p>Technology products and systems impact every aspect of the world in which we live.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Focus on the current manufacturing climate in America. Entire products are no longer constructed at a single location. More often than not, products are created in smaller components over great distances, and then assembled in a centralized location. Examples of this include but are not limited to automobiles or airplanes (engines, seats, glass, sheet metal are all constructed then shipped to an assembly plant). Contact a car service company and /or online resources to investigate where car parts come from. Explain why you think that manufacturing has decentralized in this way. • Collaborate in small groups to create a product using any materials available. Using messages-- hand written or digital-- as your means

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<p><u>CPI:</u></p> <p>8.2.8. A.1 Explain the impact of globalization on the development of a technological system over time.</p>	<p>of communication, each group should create a component of the solution without communicating verbally with other groups. Parts must then be assembled together. Skype with experts about the challenges of this manufacturing approach. This challenge will demonstrate the importance of clear communication and make students aware of global engineering practices. Discuss issues discovered in this process.</p> <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Identify a technological system and research the source of its components. Explain the positive and negative issues with global parts and local repairs.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://manufacturing.stanford.edu/ • http://aftermarketbusiness.search-autoparts.com/aftermarketbusiness/Features/Is-outsourcing-a-birthright-for-manufacturers/ArticleStandard/Article/detail/489103 • http://ublib.buffalo.edu/libraries/e-resources/ebooks/records/7182.html (see Human Footprint) • http://www.pbs.org/wgbh/nova/teachers/activities/3507_car.html • PiratePad or TypeWith.me (free online collaborative word processing)
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	
<p style="text-align: right;">Grades: 9-12</p>	
<p>Strand A: Nature of Technology: Creativity and Innovation</p>	
<p style="text-align: center;">Essential Questions</p> <p>Can we control the pace at which technology is created? Should we, even if we can?</p>	<p style="text-align: center;">Enduring Understandings</p> <p>Technology evolves at an ever accelerating pace based on the needs/wants of society and is influenced by cultural, political and environmental values and constraints.</p>
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p><u>Content:</u></p> <p>Technology products and</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p>

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systems impact every aspect of the world in which we live.

CPI:

8.2.12. A.1 Design and create a technology product or system that improves the quality of life and identify trade-offs, risks, and benefits.

- Investigate suspension cables and how they were designed by the Roebling family to solve a problem. Work together as a team to develop multiple solutions to creating a suspension cable out of newspaper and test its ability to hold the most weight; document your process. Identify the problems, issues faced and constraints involved in its development. Test and document other materials in your electronic journal. Decide which cable and its material offered the most benefits, outline these benefits and also what tradeoffs were involved.

Sample Assessments

To show evidence of meeting this CPI, students may complete the following performance assessment:

Design the car dashboard of the future by enter the DASH Competition and use your science, technology, engineering, and math (STEM) skills to create a design that incorporates feedback mechanisms and supports behavior change to help drivers maximize fuel efficiency and reduce environmental impact.

Resources (electronic/non-electronic print or non-print)

- <http://www.progressiveautoxprize.org/education>
- <http://www.inventionfactory.com/history/RHAgen/rstory/rsfound.html>
- http://www.pbs.org/wgbh/nova/teachers/activities/2404_sle1inca.html
- http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501021
- <http://www.aiaatlanta.org/displaycommon.cfm?an=1&subarticlenbr=59>
- <http://www.bentley.com/en-US/Community/Academic/Networking+and+Development/BE+Awards/>
- http://www.pbs.org/wgbh/nova/teachers/activities/3602_spyfactory.html
- http://www.pbs.org/wgbh/nova/teachers/activities/3004_xplanes.html
- http://www.pbs.org/wgbh/nova/teachers/activities/3311_wtc.html

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8.2 Technology Education, Engineering, and Design: 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.		Grades: K-2
Strand B: Design: Critical Thinking, Problem Solving, and Decision-Making		
Essential Questions	Enduring Understandings	
<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools the best to use? • 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? 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>The design process is a systematic approach to solving problems.</p> <p><u>CPI:</u></p> <p>8.2.2. B.1 Brainstorm and devise a plan to repair a broken toy or</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Examine a broken toy(s). Identify the parts and their interactions with each other. Discuss how the toy(s) could be fixed or improved. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p>	

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<p>tool using the design process.</p>	<p>Working in groups, create a set of instructions to reassemble a toy(s) they have examined.</p>
<p><u>Content:</u></p> <p>The design process is a systematic approach to solving problems.</p> <p><u>CPI:</u></p> <p>8.2.2. B.2 Investigate the influence of a specific technology on the individual, family, community, and environment.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> Brainstorm with classmates to develop a list of technologies intended to make life easier (e.g., human assistive devices, such as crutches, wheelchairs, prosthetics). <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Create a graphic organizer that illustrates the technologies discussed, their impact on individuals, family, community and the environment and the trade offs for these devices.</p> <p>Compare findings with other grade level classes and post results in the class electronic newsletter.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> http://www.kids.gov/6_8/6_8_science_scientists.shtml http://www.graphic.org/ http://www.inspiration.com/kidspiration
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	
<p>Grades: 3-4</p>	
<p>Strand B: Design: Critical Thinking, Problem Solving, and Decision-Making</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? When are sophisticated tools required and when are the simplest tools the best to use? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> Technological outcomes have the potential for anticipated and unanticipated positive and negative results. The design process is fundamental to technology and engineering.

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<ul style="list-style-type: none"> • 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? 	<ul style="list-style-type: none"> • 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.
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<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 5-8</p>
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<p>Strand B: Design: Critical Thinking, Problem Solving, and Decision-Making</p>

<p><u>Content:</u> The design process is a systematic approach to solving problems.</p> <p><u>CPI:</u> 8.2.8. B.1 Design and create a product that addresses a real-world problem using the design process and working with specific criteria and constraints.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <p>Collaborate with students from another class, school or country using the steps in the design process:</p> <ol style="list-style-type: none"> 1. <i>Identify the problem.</i> 2. <i>Conduct research.</i> 3. <i>Brainstorm several possible solutions by sketching.</i> 4. <i>Select the best solution by weighing product feasibility and trade-offs.</i> 5. <i>Design the final solution utilizing technical drawing techniques.</i> 6. <i>Build/model solution according to plan.</i> 7. <i>Test and evaluate the solution.</i> <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Collaborate in the development and design of a rain harvesting model to conserve rain and present the model to the local water authority in their respective communities. Document the steps in the design process using a digital invention/engineering notebook and include in a digital portfolio.</p> <p>Note: the product may address one of many global issues. Teachers may</p>
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	<p>wish to have students determine which issue they would like to address with the development of their product.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://pbskids.org/designsquad/parentseducators/program/viewing_tips.html • http://www.wonderhowto.com/how-to/video/how-to-recycle-rain-water-154714/ • http://www.off-grid.net/2004/07/14/rainwater-harvesting-2/ • http://www.swfwmd.state.fl.us/conservation/rainbarrel/
<p><u>Content:</u></p> <p>The design process is a systematic approach to solving problems.</p> <p><u>CPI:</u></p> <p>8.2.8. B.2 Identify the design constraints and trade-offs involved in designing a prototype (i.e., how the prototype might fail and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Research products powered without gas engines developed in the U. S. and other countries, and how the design process was used in designing the prototype and its constraints and trade-offs. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Use available materials to create a prototype of a windmill that will provide power. Products may showcase general improvements or innovations to an existing product. Create a “sales” presentation showcasing the prototype and highlight the elements of the design process. http://www.teachersdomain.org/resource/phy03.sci.phys.matter.zmiII/</p> <p>Design a recreational vehicle powered by something other than a gas engine. Create a video that shows how the design process was used to create the prototype (e.g., your boat) and post it online.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://www.startupnation.com/articles/1361/1/invention-prototype.asp • http://www.teachersdomain.org/resource/eng06.sci.engin.design.funnyboat/
<p><u>Content:</u></p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p>

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<p>The design process is a systematic approach to solving problems.</p> <p><u>CPI</u></p> <p>8.2.8. B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.</p>	<ul style="list-style-type: none"> • Search the web for student/teacher sites that offer the opportunity to participate in a design challenge that provides specific criteria for the development of the product. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Work in teams as waste management engineers to design flatware (forks, knives and spoons) that can biodegrade in a relatively short amount of time.</p> <p>Teams:</p> <ul style="list-style-type: none"> • Plan and design the flatware using geometric proportions; • Select appropriate materials for construction; • Predict decay rates; and • Test the durability and the rate of biodegradation of the flatware. <p>Using ideas generated from research on the Web, and various criteria that must be met for a particular design, solve a design challenge that requires the use of math and science principles. Focus on a local and/or global health or human rights challenge. Present the design for peer review and then submit in a local or online engineering competition.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.allbusiness.com/company-activities-management/product-management/6484721-1.html • https://www.kyfb.com/media/files/fed/ag-in-the-classroom/lesson-plans/Make%20Your%20Own%20Biodegradable%20Plastic%20Stuff%204-6.pdf • http://www.kycorn.org/documents/corninclassroom.pdf
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 9-12</p>
<p>Strand B: Design: Critical Thinking, Problem Solving, and Decision-Making</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results.

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<p>Should technologies that produce negative impact continue to be used?</p> <ul style="list-style-type: none"> • When are sophisticated tools required and when are the simplest tools the best to use? • 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? 	<ul style="list-style-type: none"> • 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.
<p><u>Content:</u></p> <p>The design process is a systematic approach to solving problems.</p> <p><u>CPI:</u></p> <p>8.2.12. B.3 Analyze the full costs, benefits, trade-offs, and risks related to the use of technologies in a potential career path.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Investigate nuclear installations in NJ, other states or other countries for the purpose of creating a presentation that analyzes the costs, benefits, trade-offs and risks to the local community. Post the presentation online for comment from engineers or college professors in the engineering field <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Evaluate trash collection in their town by analyzing the costs, benefits, trade-offs and risks to determine if there is a more efficient means for municipalities to collect and dispose of garbage. Present findings to local officials. Findings should include recommendations based on a comparative analysis of waste disposal in similar towns in the U. S. and/ or abroad.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.tryengineering.org/ • http://www.discoverengineering.org/

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8.2 Technology Education, Engineering, and Design: 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.		Grades: K-2
Strand C: Technological Citizenship, Ethics, and Society		
Essential Questions	Enduring Understandings	
<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • The design process is fundamental to technology and engineering. 	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society.</p> <p><u>CPI:</u></p> <p>8.2.2.C.1 Demonstrate how reusing a product affects the local and global environment.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Choose a product within the classroom or at home that can be continually reused (e.g., plastic bags, pencil sharpeners, and bicycle) identify the steps necessary to maintain it. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Create a poster, tri-fold or flyer explaining the effect of reusing paper on the environment and have your teacher share this in an effort to raise awareness among the general community</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.epa.gov/ow/kids.html • http://www.kidsrecycle.org/reduction.php • http://www.kidsrecycle.org/recycling.php • http://www.epa.gov/epawaste/education/pdfs/k-3.pdf 	

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8.2 Technology Education, Engineering, and Design: 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.		Grades: 3-4
Strand C: Technological Citizenship, Ethics, and Society		
Essential Questions	Enduring Understandings	
<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are the most sophisticated tools required and when are the simplest tools best? 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • The design process is fundamental to technology and engineering. 	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society.</p> <p><u>CPI:</u></p> <p>8.2.4.C.1 Explain the impact of disposing of materials in a responsible way.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Identify products that require special care when disposed. • Summarize the benefits to recycling products over disposing of them in a landfill. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Many people don't recycle because they don't know what to do or where to bring materials. As a team investigate ways to recycle in your community. Design an electronic brochure to inform your class and school of what recycling they can do (e.g., paper, garbage, leaves, electronics, etc.), how and where to do it and the impact of recycling on the environment. Urge use of green products, reuse and proper disposal of recyclables. Ask your teacher to assist with disseminating the information to local organizations.</p>	

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	<p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://www.recycleworks.org/ewaste/index.html • http://www.resourcefulschools.org • http://www.recyclemore.org/article.asp?key=19 • http://www3.sympatico.ca/dsloly/zerowaste/index.html • http://www.fcgov.com/recycling/reduction.php • http://aggie-horticulture.tamu.edu/sustainable/slidesets/kidscompost/cover.html • http://www.dnr.state.wi.us/org/caer/ce/eeek/earth/recycle/index.htm • http://www.kidsrecycle.org/recycling.php • http://www.kineticcity.com/lab/HCHO/hcho11.html
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 5-8</p>
<p>Strand C: Technological Citizenship, Ethics, and Society</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are the most sophisticated tools required and when are the simplest tools best? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • The design process is fundamental to technology and engineering.
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p>Content:</p> <p>Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society.</p>	<p>Instructional Guidance</p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Investigate the life of Iqbal Masih a child who at four years old was forced into bonded labor making carpets. (http://childrensworld.org/page.html?pid=53) • Research regulations about children working in the United States in the past and present and what protections they offer you.

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<p><u>CPI:</u></p> <p>8.2.8.C.2 Compare and contrast current and past incidences of ethical and unethical use of labor in the United States or another country and present results in a media-rich presentation.</p>	<ul style="list-style-type: none"> Summarize how currently regulations about children working would have protected Iqbal. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Investigate Lewis Hines, a former school teacher, photographer and investigative photographer for the National Child Labor Committee in the early 1900s. His photographic work demonstrated child labor as a means of profit and abuse of children compounded by inhumane and unsafe working conditions. Today UNICEF tells us that An estimated 158 million children aged 5-14 are engaged in child labor - one in six children in the world. Millions of children are engaged in hazardous situations or conditions, such as working in mines, working with chemicals and pesticides in agriculture or working with dangerous machinery. (http://www.unicef.org/protection/index_childlabour.html) Research child labor in the past and present around the world. Produce a documentary for students demonstrating its impacts.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> http://www.iccle.org/Shortened%20Resource%20List.pdf http://www.archives.gov/education/lessons/hine-photos/ http://edsitement.neh.gov/view_lesson_plan.asp?id=430 http://georgemiller.house.gov/blogs/blog/1999/05/letter-to-president-clinton-on-sweatshops.shtml http://www.globalmarch.org/ http://www.ilo.org/ipecc/Regionsandcountries/lang--en/index.htm http://www.readwritethink.org/lesson_images/lesson289/web-child-labor.html
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	
<p style="text-align: right;">Grades: 9-12</p>	
<p>Strand C: Technological Citizenship, Ethics, and Society</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> How does technology extend human capabilities? What are the positive and negative consequences of technology? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> Technological outcomes have the potential for anticipated and unanticipated positive and negative results.

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<p>Should technologies that produce negative impact continue to be used?</p> <ul style="list-style-type: none"> • When are sophisticated tools required and when are the simplest tools best? 	<ul style="list-style-type: none"> • The design process is fundamental to technology and engineering.
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u></p> <p>Knowledge and understanding of human, cultural, and societal values are fundamental when designing technology systems and products in the global society.</p> <p><u>CPI:</u></p> <p>8.2.12.C.3 Evaluate the positive and negative impacts in a design by providing a digital overview of a chosen product and suggest potential modifications to address the negative impacts.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Develop an in-depth understanding of the properties and characteristics of a product through the completion of a design activity. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Research types of cell phone networks which includes types of access, coverage areas, towers locations, providers, plans, systems (e.g., G3, CDMA, GSM, TDMA, etc.), cost effectiveness, services available, and overseas usage.</p> <p>Analyze the various networks and services and make recommendations for improvements in connectivity. Based on your research, recommend a provider and a phone for students that offers reliable, cost effective service and substantiate with data and service maps.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u> http://www.fcc.gov/cgb/consumerfacts/cellcoverage.html http://www.tech-faq.com/mobile-telephone-systems.shtml http://www.phonescoop.com/glossary/ http://cell-phone-providers-review.toptenreviews.com/</p>

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<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: K-2</p>
<p>Strand D. Research and Information Fluency</p>		
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>	
<p><u>Content:</u></p> <p>Information-literacy skills, research, data analysis, and prediction provide the basis for the effective design of technology systems.</p> <p><u>CPI:</u></p> <p>8.2.2. D.1 Collect and post the results of a digital classroom survey about a problem or issue and use data to suggest solutions.</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Complete a survey regarding a product that evaluates the product based on comfort, function, aesthetics, etc. Compare and chart results of the class. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <ul style="list-style-type: none"> • Evaluate your desk for shape, function, height and use and complete a teacher facilitated online survey about this. Draw conclusions on 	

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	<p>what types of modifications could be made to the desk to improve it. Provide the results to the school principal for comment.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://www.ergonomics4schools.com/lzone/evaluation.htm • www.surveymonkey.com • www.doodle.com
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 3-4</p>
<p>Strand D. Research and Information Fluency</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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.
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p><u>Content:</u></p> <p>Information-literacy skills, research, data analysis, and prediction provide the basis for the effective design of technology systems.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Observe a product recommended by the teacher, brainstorm possible ways to make the required improvements.

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<p><u>CPI:</u></p> <p>8.2.4. D.1 Analyze responses collected from owners/users of a particular product and suggest modifications in the design of the product based on their responses.</p>	<p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Research student desks online to see current designs and costs of desks. Analyze the design of desks in your classroom and discuss student needs when using them. Collect this data (height, size, shape, esthetics, potential enhancements) in an online survey. Design a desk that would meet student needs identified through discussions and survey. Construct a model of this desk from paper, cardboard and/or foam that represent the product improvements needed resultant from your analysis of the desks currently used. Present designs to classmates and teachers for evaluation; forward the most appropriate design to your principal for comment.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.ergonomics4schools.com/lzone/evaluation.htm • http://www.theschoolcatalog.com/items.asp?Cc=DISF-CDF&gclid=CMq01_Kh1p4CFR9N5QodPiDd8Q • www.surveymonkey.com • www.doodle.com 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: 5-8</p>
<p>Strand D. Research and Information Fluency</p>		
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • Can a system continue to operate with a missing or malfunctioning component? • Is it always beneficial to use 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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 	

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<p>the most economical material/materials for production of a technological product?</p>	<p>tools/machines, materials, information, energy, capital, time and people.</p>
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u> Information-literacy skills, research, data analysis, and prediction provide the basis for the effective design of technology systems.</p> <p><u>CPI:</u> 8.2.8. D.1 Evaluate the role of ethics and bias on trend analysis and prediction in the development of a product that impacts communities in the United States and/or other countries.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Research and discuss inventions that may have ethical concerns such as weaponry, medical devices, genetic experimentation etc, and discuss the roll of ethics in invention and innovation. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Research the issues surrounding genetically altered foods which may include higher costs to farmers for seeds, questions concerning safety for the consumer and environment, marketing, consumer choices, global impacts, etc. Communicate with students in your schools, other areas of the country and world to understand various positions on this issue. Analyze these perspectives, identify ethical concerns that may exists and weigh them against the benefits of the innovation and present your position online for comment globally.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.marketingteacher.com/Lessons/lesson_plc.htm • http://learning.blogs.nytimes.com/1999/08/30/altered-genes/ • http://www.monsanto.com/ • http://www.usda.gov/wps/portal/usdahome
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 9-12</p>
<p>Strand D. Research and Information Fluency</p>	
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results.

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<p>the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used?</p> <ul style="list-style-type: none"> • When are sophisticated tools required and when are the simplest tools best? • 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? 	<ul style="list-style-type: none"> • 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.
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u></p> <p>Information-literacy skills, research, data analysis, and prediction provide the basis for the effective design of technology systems.</p> <p><u>CPI:</u></p> <p>8.2.12. D.1 Reverse-engineer a product to assist in designing a more eco-friendly version, using an analysis of trends and data about renewable and sustainable materials to guide your work.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Discuss as a class the following questions: <ol style="list-style-type: none"> 1. How can products and systems be modified and adapted to improve their sustainability. 2. How can the sustainability of a product be determined? <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Calculate the impact of waste from the cafeteria through the use of materials trail. Conduct a waste audit, analyzing waste products, their composition, methods of collection and ability to recycle. Reach out to local recycle center or waste management center for information on recycling and collection in your school. Investigate costs for biodegradable replacements for plastics used in cafeteria. Identify changes in materials that could impact recycling, encompass eco-friendly products and reduce wastes locally and beyond with the objective of designing better products, use of products or systems of collection or recycling that improved the overall scenario.</p>

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Create a documentary (e.g., movie, podcast or other multi-media presentation about the overall process, and provide your recommendations to the school principal and waste management company for comment and potential implementation.

Resources (electronic/non-electronic print or non-print)

- http://www.epa.gov/climatechange/emissions/ind_calculator.html
- http://www.americanchemistry.com/Plastics/sec_learning.asp?CID=1102&DID=4256
- <http://www.allplasticbottles.org/products.asp>
- <http://www.recycleworks.org/schools/schoolpgm.html>
- www.jingproject.com
- www.audacity.com
- www.garageband.com
- <http://www.how-to-podcast-tutorial.com/13-basic-podcasting-software.htm>

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<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: K-2</p>
<p>Strand E: Communication and Collaboration</p>		
<p>Essential Questions</p> <ul style="list-style-type: none"> How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> Technological outcomes have the potential for anticipated and unanticipated positive and negative results. 	
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>	
<p>Content:</p> <p>Digital tools facilitate local and global communication and collaboration in designing products and systems.</p> <p>CPI:</p> <p>8.2.2.E.1 Communicate with students in the United States or other countries using digital tools to gather information about a specific topic and share results.</p>	<p>Instructional Guidance <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> E-mail or skype with another school in the district, state, or country to communicate ideas for solutions to a similar problem. <p>Sample Assessments <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Electronically contact students in another school or country to discuss what books they like to read. If there are books you like in common, decide who are your favorite characters in the book and why. Share what you learn with your family.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> http://www.ciese.org/sage/ www.epals.com www.skype.com 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: 3-4</p>
<p>Strand E: Communication and Collaboration</p>		

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<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. 	
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>	
<p>Content:</p> <p>Digital tools facilitate local and global communication and collaboration in designing products and systems.</p> <p>CPI:</p> <p>8.2.4. E.1 Work in collaboration with peers to produce and publish a report that explains how technology is or was successfully or unsuccessfully used to address a local or global problem.</p>	<p>Instructional Guidance <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Identify a community-based need agreed upon by your team and prepare a proposal regarding how that need could be fulfilled utilizing existing technologies. <p>Sample Assessments <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Collaborate with your team to create a time line that documenting the development of the television and explain how it changed over time (e.g., silent movies, news, color screens, multiple channels). Interview parents and senior citizen about their television experiences and how television has changed in their lifetimes. Create a documentary explaining how television impacted their lives and yours and share it with your parents and classmates.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://inventors.about.com/od/tstartinventions/a/Television_Tim_e.htm • http://www.history-timelines.org.uk/events-timelines/08-television-invention-timeline.htm • http://www.tvhistory.tv/ 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p style="text-align: center;">Grades: 5-8</p>	
<p>Strand E: Communication and Collaboration</p>		
<p style="text-align: center;">Essential Questions</p>	<p style="text-align: center;">Enduring Understandings</p>	

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<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results.
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p><u>Content:</u></p> <p>Digital tools facilitate local and global communication and collaboration in designing products and systems.</p> <p><u>CPI:</u></p> <p>8.2.8. E.1 Work in collaboration with peers and experts in the field to develop a product using the design process, data analysis, and trends, and maintain a digital log with annotated sketches to record the development cycle.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Students will produce a digital document detailing a product or system. This document should include documentation of the design process as well as a design created using computer aided design software. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>As a group, decide on the type of shoes you like best. Research that style of the shoe. Identify who designs and manufactures them and where. What the cost range of the shoe style that you like. List the resources that are used in manufacturing this shoe. Investigate how to make shoes and what makes a shoe comfortable. Design a shoe using materials such as paper, cardboard, or papermache or other like materials. The product should be an accurate representation of a concept shoe and be presented in three dimensions. The journal of the product’s development should be included in a digital portfolio outlining the process used to create this design.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://nikeid.nike.com/nikeid/index.jsp?&cp=usid_KW_060309g • http://shoes.about.com/gi/o.htm?zi=1/XJ&zTi=1&sdn=shoes&cdn=style&tm=68&f=00&su=p284.9.336.ip_p504.3.336.ip_&tt=2&bt=1&bts=1&zu=http%3A//simpleshoemaking.com/ • www.sketchup.com
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 9-12</p>

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Strand E: Communication and Collaboration	
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results.
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u></p> <p>Digital tools facilitate local and global communication and collaboration in designing products and systems.</p> <p><u>CPI:</u></p> <p>8.2.12.E.1 Use the design process to devise a technological product or system that addresses a global issue, and provide documentation through drawings, data, and materials, taking the relevant cultural perspectives into account throughout the design and development process.</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Utilize Computer Aided Design (CAD) software to devise a product that addresses a global issue. Create a set of plans, instructions and documents outlining the details of the solution. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Teams of students should collaborate to design a cost effective structure to provide shelter for a family that is temporarily homeless due to a disaster. Evaluate family needs in this scenario. This structure should be able to be transported (e.g. ship by rail or truck), to the disaster site, provide for basic family needs and the design should include furniture, be cost effect and have a waste management system. Students should create a rubric for this shelter to evaluate designs as presented. Documentation should include plans and costs; designs that meet all qualities of rubric should be forwarded to FEMA.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.fema.gov/pdf/library/pfd.pdf • http://www.fema.gov/assistance/process/assistance.shtm

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8.2 Technology Education, Engineering, and Design: 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.		Grades: K-2
Strand F: Resources for a Technological World		
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>Technological products and systems are created through the application and appropriate use of technological resources.</p> <p><u>CPI:</u></p> <p>8.2.2. F.1 Identify the resources needed to create technological products and systems.</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Discuss the seven resources of technology: Time, people, energy, money, tools, materials, knowledge. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Identify the parts of a chair in your classroom and where those parts can be found. As an inventor of a new chair, sketch a picture of a chair you would like and post it on the bulletin board. After looking at all the chairs,</p>	

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	<p>choose the chair you would be most comfortable in and tell its inventor why you like it.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://images.google.com/images?client=safari&rls=en&q=pictures+of+childrens+chairs&oe=UTF-8&um=1&ie=UTF-8&ei=RknS_vEKMXTIAeHqvCYDQ&sa=X&oi=image_result_group&ct=title&resnum=1&ved=0CB4QsAQwAA •
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 3-4</p>
<p>Strand F: Resources for a Technological World</p>	
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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.
<p style="text-align: center;">Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p>Content:</p> <p>Technological products and systems are created through the application and appropriate use of technological resources.</p>	<p>Instructional Guidance</p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Discuss the resources that would be necessary to complete a prototype for a solution to a design problem.

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<p><u>CPI:</u></p> <p>8.2.4. F.1 Describe how resources are used in a technological product or system.</p>	<p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Identify everyday products that use batteries. Research how batteries work and what resources they are made from. What type of batteries do your favorite products use? Make a list of the types of batteries your products use. Find out if the batteries are rechargeable or do they need to be replaced when they wear down? Find out how batteries are recycled in your town when they wear out. Make a video, podcast or electronic poster showing how use and recycle batteries.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.lessonplanet.com/search?keywords=battery&rating=3 • http://www.awesomelibrary.org/Classroom/Science/Ecology/Recycling.html 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: 5-8</p>
<p>Strand F: Resources for a Technological World</p>		
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	

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Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>Technological products and systems are created through the application and appropriate use of technological resources.</p> <p><u>CPI:</u></p> <p>8.2.8.F.2 Explain how the resources and processes used in the production of a current technological product can be modified to have a more positive impact on the environment (e.g., by using recycled metals, alternate energy sources) and the economy.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Study the life cycle of a product from its conception to its disposal. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Schools are powered by energy and utility bills are getting higher. Research the present types of use and cost of power in your school. Survey how power is currently used in the building—some may be automatic usage, some always on and others impacted by human choice. Identify the current types of energy available to consumers and compare cost factors. Energy usage has impact on the environment can the school change its impact by modifying type of power, usage, or user habits? Decide through research if alternate energies such as solar or geothermal can be used? Analyze types of energies, cost factors and what changes that could be made to be greener and more cost effective. Provide a copy of your analysis and recommendations to your school administrator.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.eere.energy.gov/kids/ • http://www.epa.gov/reg5rcra/wptdiv/p2pages/energy.pdf 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: 9-12</p>
<p>Strand F: Resources for a Technological World</p>		
<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • The design process is fundamental to technology and engineering. 	

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<p>required and when are the simplest tools best?</p> <ul style="list-style-type: none"> • 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? 	<ul style="list-style-type: none"> • 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.
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
<p><u>Content:</u></p> <p>Technological products and systems are created through the application and appropriate use of technological resources.</p> <p><u>CPI:</u></p> <p>8.2.12.F.2 Explain how material science impacts the quality of products.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Discuss the following questions as a class: <ol style="list-style-type: none"> 1. What materials properties are the most important? 2. How can an in-depth knowledge of the types, characteristics, properties, and processing techniques of materials assist in the design, development, and construction of quality products? 3. What are some of the “universal” characteristics and properties of materials? 4. What are some of the “universal” processes used to change/alter the size, shape, or attributes of materials? <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Through the process of reverse engineering a product, identify the types of materials used in a product and why they were selected. Be able to identify wood/paper, metal, polymer, ceramic, and composite materials and know their strengths and limitations. Students will be able to identify, select, and use appropriate means to separate, combine, condition, form, and finish a variety of materials. Select and use a variety of appropriate materials throughout this lesson. Measure the physical or mechanical properties of materials. Process materials in a safe and efficient manner throughout this unit and course. Develop an in-depth understanding of the properties and characteristics of a select group of materials through the completion of a design activity. Make recommendations from your review to the product developer.</p>

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	<p><u>Resources</u> (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none">• http://www.kids-science-experiments.com/cat_materials_properties.html
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8.2 Technology Education, Engineering, and Design: 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.		Grades: K-2
Strand G: The Designed World		
Essential Questions	Enduring Understandings	
<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	
Content and Cumulative Progress Indicators (CPIs)	Classroom Applications	
<p><u>Content:</u></p> <p>The designed world is the product of a design process that provides the means to convert resources into products and systems.</p> <p><u>CPI:</u></p> <p>8.2.2. G.2 Explain the importance of safety in the use and selection of appropriate tools</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • General laboratory safety rules will be reviewed by the instructor with the class, safe practices for the use of tools and equipment (emphasize: scissors, stapler, tape dispenser). <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <ul style="list-style-type: none"> • Use recycled paper to construct a freestanding tower and its 	

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<p>and resources for a specific purpose.</p>	<p>component parts using recycled paper provided by the teacher. Create a tower designed to stand as tall as possible while demonstrating the safe use of scissors, stapler and tape dispenser. Hint: a wider base will allow for a taller tower.</p> <p>Resources (electronic/non-electronic print or non-print)</p> <ul style="list-style-type: none"> • http://www.crayola.com/crafts/detail/family-safety-rules-poster-craft/
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<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: 3-4</p>
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<p>Strand G: The Designed World</p>
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<p style="text-align: center;">Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p style="text-align: center;">Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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.
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<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>
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<p><u>Content:</u></p> <p>The designed world is the product of a design process that provides the means to convert</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Create a three-column chart listing a new technology, its positive intention for humanity, and its unintended negative effect on people.
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<p>resources into products and systems.</p> <p><u>CPI:</u></p> <p>8.2.4. G.3 Evaluate the function, value, and esthetics of a technological product, system, or environment from the perspective of the user and the producer.</p>	<p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Evaluate a cell phone using a database that lists its functions and its size. Based on how suited it's the listed functions and size are decide what the best phone is for a student and recommend it to classmates based on your review.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://www.cellphonecarriers.com/cell-phone-features.html • http://www.phonescoop.com/phones/finder.php?w=w 	
<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>		<p>Grades: 5-8</p>
<p>Strand G: The Designed World</p>		
<p>Essential Questions</p> <ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • 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? 	<p>Enduring Understandings</p> <ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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. 	
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p>Classroom Applications</p>	

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<p><u>Content:</u></p> <p>The designed world is the product of a design process that provides the means to convert resources into products and systems.</p> <p><u>CPI:</u></p> <p>8.2.8. G.1 Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.</p>	<p><u>Instructional Guidance</u></p> <p><i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Generate a list of neglected products already encountered during their lives (broken swing seat, park bench, toy, bicycle). Follow up discussion will ask students to respond to the following question: Why do human-designed systems, products, and environments need to be maintained? • Choose one of the items and explain the maintenance that this particular product/system requires to be well maintained. <p><u>Sample Assessments</u></p> <p><i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Identify the components of a car (e.g., radio, brakes, pedal, computers, electric antennae, etc.) that draw power from its battery and their function and the stresses that act on them. Explain how to monitor and maintain these systems to preserve the car’s battery. Research the life span, maintenance needs and recycling process for car batteries.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://earth911.com/automotive/car-batteries/ • http://www.ehow.com/how_2294705_recycle-car-battery.html
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<p>8.2 Technology Education, Engineering, and Design: All students will develop an understanding of the nature and impact of technology, engineering, technological design, and the designed world, as they relate to the individual, global society, and the environment.</p>	<p>Grades: K-2</p>
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Strand G: The Designed World

Essential Questions	Enduring Understandings
<ul style="list-style-type: none"> • How does technology extend human capabilities? What are the positive and negative consequences of technology? Should technologies that produce negative impact continue to be used? • When are sophisticated tools required and when are the simplest tools best? • Can a system continue to operate with a missing or malfunctioning component? • Is it always beneficial to use the most economical 	<ul style="list-style-type: none"> • Technological outcomes have the potential for anticipated and unanticipated positive and negative results. • 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

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<p>material/materials for production of a technological product?</p>	<p>tools/machines, materials, information, energy, capital, time and people.</p>
<p>Content and Cumulative Progress Indicators (CPIs)</p>	<p style="text-align: center;">Classroom Applications</p>
<p><u>Content:</u></p> <p>The designed world is the product of a design process that provides the means to convert resources into products and systems.</p> <p><u>CPI:</u></p> <p>8.2.12. G.1 Analyze the interactions among various technologies and collaborate to create a product or system demonstrating their interactivity.</p>	<p><u>Instructional Guidance</u> <i>To assist in meeting this CPI, students may:</i></p> <ul style="list-style-type: none"> • Discuss as a class the following questions: <ol style="list-style-type: none"> 1. Can a system continue to operate with a missing or malfunctioning component? 2. What types of criteria and constraints are involved in the development of technological products and systems? • Investigate Rube Goldberg machines and the interactivity of their systems. <p><u>Sample Assessments</u> <i>To show evidence of meeting this CPI, students may complete the following performance assessment:</i></p> <p>Many emergency systems interact to provide for safety and security in your school. These systems can include alarms, sprinklers, fire extinguishers, intruder detection, and emergency exits. Identify the impact zones of these systems, fire hydrants and emergency plan for the school. Research the routes to school for the fire and police and response time for both.</p> <p>Describe these emergency systems and their impact zones. Electronically map and label the zones, emergency exits, hydrants, routes for police and fire, student emergency designated area.</p> <p>Analyze these systems to commend and or recommend improvements and provide this documentation to your school administration for dissemination to police and fire officials.</p> <p><u>Resources (electronic/non-electronic print or non-print)</u></p> <ul style="list-style-type: none"> • http://maps.google.com/ • http://mousetrapcontraptions.com/history-4.html • http://pbskids.org/zoom/games/goldburgertogo/index.html

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