

<p>Standard 8.2 Technology Education, Engineering, Design, and Computational Thinking – Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.</p>		<p>By the end of Grade 2</p>
<p>Strand D: Abilities for a Technological World</p>		
<p>Rationale: The designed world is the product of a design process that provides the means to convert resources into products and systems.</p>		
<p><u>Technology CPI</u></p> <p><u>8.2.2.D.2</u> Discover how a product works by taking it apart, sketching how parts fit, and putting it back together.</p> 	<p><u>Instructional Design Ideas</u></p> <ul style="list-style-type: none"> • Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills. • Multiple Means of Representation: Provide physical examples of different products, images or videos of items to support the discussions. Choose different methods to organize products and images. Model the use of a digital graphic organizer to record the notes from discussions. This visual presentation supports all students and can be shared giving access to absent students and all parents. 	
<p><u>Content Area CPI</u></p> <p><u>CCSS.MATH.PRACTICE.MP5</u> Use appropriate tools strategically.</p> <p><u>CCSS.ELA-LITERACY.CCRA.SL.1</u> Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.</p>	<p><u>Sample Activity</u></p> <p>Collaborate in groups and disassemble given products. As groups disassemble the products, sketches should be drawn to show how the parts fit together to create the final product. When appropriate, students should use the appropriate tool to measure the pieces to add to their sketches. Groups should then use the sketches to put the products back together. Groups will then inform how their products work by looking at the parts of the project and how they work together.</p>	<p><u>Technology Options</u></p> <ul style="list-style-type: none"> • <u>MindMup:</u> An application that supports visual thinking by organizing thoughts in a mind map stored online which can be exported to use with other applications. These can be developed individually or the document can be shared to create a collaborative environment. • <u>Prezi:</u> An online application to collect and present information visually and can display “what if” scenarios. • <u>Scriblink:</u> A digital whiteboard that can be displayed for class viewing, shared online in real time to support homebound learners, saved and/or emailed for later reference. Students can use it to create and share their designs. • <u>Screencast-o-matic:</u> A web application that captures the computer screen, a web cam and audio to present, save and/or share online. 

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	Time Tips That Transform Practice		Supporting Research and Resources
	Professional Development and/or Classroom Resources		Multiple Means of Representation
	Lessons		Multiple Means of Actions and Expressions
	Technology Resources		Multiple Means of Engagement
	CCSS.ELA-Literacy.SL.1: http://www.corestandards.org/ELA-Literacy/CCRA/SL/ CCSS.MATH.PRACTICE.MP5: http://www.corestandards.org/Math/Practice/#CCSS.Math.Practice.MP5 Technology 8.2.2.D.2: http://www.state.nj.us/education/aps/cccs/tech/		
	Multiple Means of Representation: Checkpoint 1.2 Offer Alternatives for Auditory Information - http://www.udlcenter.org/aboutudl/udlguidelines/principle1		
	A Week of Inventions: http://teachers.net/lessons/posts/4597.html Curious George: Let’s Build- http://www-tc.pbs.org/teachers/includes/content/curiousgeorge/pdfs/cg_pc_lets_build_guide.pdf Fun Crystal Activities: http://www.sciencekids.co.nz/lessonplans/chemistry/crystals.html		
	Learn What is This Toy Truck Made Of: http://cwmi.css.cornell.edu/TrashGoesToSchool/ToyTruck.html		
	MindMup: https://www.mindmup.com/#m:new Prezi : http://prezi.com/ Scriblink: http://scriblink.com/ Screencast-o-matic: http://www.screencast-o-matic.com/ Teacher Tap: Professional Development Resources for Teachers & Librarians- http://eduscapes.com/tap/topic73.htm		

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Strand D: Abilities for a Technological World

Rationale: The designed world is the product of a design process that provides the means to convert resources into products and systems.

<p><u>Technology CPI</u></p> <p><u>8.2.5.D.4</u> Explain why human-designed systems, products, and environments need to be constantly monitored, maintained, and improved.</p> 	<p><u>Instructional Design Ideas</u></p> <ul style="list-style-type: none"> • Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills. <ul style="list-style-type: none"> • Multiple Means of Actions and Expression: Students can use a graphic organizer, context map or create a play, podcast or video to organize and demonstrate knowledge of how the product is created and used, and to explain factors that influence the design. 
<p><u>Content Area CPI</u></p> <p><u>CCSS.ELA-LITERACY.CCRA.W.7</u> Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.</p> <p><u>Health & PE 2.1.4.D.1</u> Determine the characteristics of safe and unsafe situations and develop strategies to reduce the risk of injuries at home, school, and in the community (e.g., fire safety, poison safety, accident prevention).</p> 	<p><u>Sample Activity</u></p> <p>Identify a commonly used human-designed product or system, (i.e., car, baby carriage, bicycle; a pencil); and guide a discussion with peers that examines how the product was created and used. With guidance from adults research the product’s history reviewing changes made to increase safety. Identify the reasons why this product/ system needs to be monitored, maintained and improved. Develop and publish a two-page news release with images and text identifying the changes, explaining factors which influenced the design and how the user can contribute to product safety.</p> <p style="text-align: center;">L</p> <p><u>Technology Options</u></p> <ul style="list-style-type: none"> • <u>Citation Machine:</u> Website that assists in organizing and formatting sources in the designated method required in the lesson. • <u>Delicious:</u> A social bookmarking site that is compatible with multiple devices and operating systems. Teachers can create a class collection of resources and/or encourage students to make bookmarks and tag relevant resources. • <u>Thinkport:</u> This site includes formatted graphic organizers which can be printed or downloaded to your device to enter content. The site also includes activities, links to additional resources, games and more areas to explore. <p>Tech Tip: Use social bookmarking to organize and share resources online which can help eliminate input errors and distractions while using planned resources.</p> 

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	Time Tips That Transform Practice		Supporting Research and Resources
	Professional Development and/or Classroom Resources		Multiple Means of Representation
	Lessons		Multiple Means of Actions and Expressions
	Technology Resources		Multiple Means of Engagement
	CCSS.ELA-LITERACY.CCRA.W.7: http://www.corestandards.org/ELA-Literacy/CCRA/W/ Health and Physical Education 2.1.4.D.1: http://www.state.nj.us/education/cccs/2014/chpe/ Technology 8.2.5.D.4: http://www.state.nj.us/education/aps/cccs/tech/		
 	Interdisciplinary Research: Findings from the Technology Enhanced Learning Research Programme- http://www.tlrp.org/docs/TELInterdisciplinarity.pdf Multiple Means of Actions and Expression: Checkpoint 6.3 Facilitate Managing Information and Resources- http://www.udlcenter.org/aboutudl/udlguidelines/principle2		
	An Era of Innovation: http://www.discoveryeducation.com/teachers/free-lesson-plans/an-era-of-innovation.cfm Building a Bird House: https://www.teachengineering.org/view_activity.php?url=collection/wpi_/activities/wpi_birdhouse/use/wpi_birdhouse_act_joy.xml Paper Production: http://sciencenetlinks.com/lessons/paper-production/		
 	The Citation Machine: http://www.citationmachine.net/ Delicious: https://delicious.com/ Seven Things You Should Know About Social Bookmarking: https://net.educause.edu/ir/library/pdf/ELI7001.pdf Thinkport: http://www.thinkport.org/technology/template.tp		

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<p><u>Technology CPI</u></p> <p><u>8.2.8.D.5</u> Explain the impact of resource selection and the production process in the development of a common or technological product or system.</p> 	<p><u>Instructional Design Ideas</u></p> <ul style="list-style-type: none"> • Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills. • Multiple Means of Representation: Offer students both digital and paper-based resources on the use of 3D printers and the products they can create; provide access to videos, images or links to informative websites on supply and demand concepts. 	
<p><u>Content Area CPI</u></p> <p><u>CCSS.ELA-LITERACY.CCRA.W.2</u> Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p><u>21st Century Life and Careers 9.1.8.D.5</u> Explain the economic principle of supply and demand.</p> 	<p><u>Activity</u></p> <p>Research and identify how 3D printing is used and products it can create. Examine relevant content about a specific product, (i.e., a robotic hand), to convey its history and identify how and why the resources used have changed, as well as the impact of 3D printing on both supply and demand. Write an informative text that strongly supports your analysis of the impact of resource selection to production and product cost.</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px auto;">L</div>	<p><u>Technology Options</u></p> <ul style="list-style-type: none"> • Bare Bones: A basic tutorial which explores different types of search resources and techniques to improve relevancy of results. • Citelighter: An online writing resource, Citelighter pulls in all relevant information to create accurate citations and to develop skills while organizing and storing research. • Google Drive: Free online site where files can be created, saved, shared and exported into other software programs. It supports access from multiple devices connected to the internet. • Noodle Tools: Provides categories of search tools that align to the type of content being searched. <p>Tech Tip: Increase opportunities to provide formative feedback to students during research by sharing their files. Suggest that students enter questions or comments in their document.</p> 

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Strand D: Abilities for a Technological World

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	<p>Professional Development and/or Classroom Resources</p>		<p>Multiple Means of Representation</p>
	<p>Lessons</p>		<p>Multiple Means of Actions and Expressions</p>
	<p>Technology Resources</p>		<p>Multiple Means of Engagement</p>
	<p>21st Century Life and Careers 9.1.8.D.5: http://www.state.nj.us/education/cccs/2014/career/91.pdf CCSS.ELA-Literacy.CCRA.W.2: http://www.corestandards.org/ELA-Literacy/CCRA/W/#CCSS.ELA-Literacy.CCRA.W.2 Technology 8.2.8.D.5: http://www.state.nj.us/education/aps/cccs/tech/</p>		
 	<p>Activating Prior Knowledge: https://www.teachervision.com/skill-builder/reading-comprehension/48540.html Multiple Means of Representation: Activate or Supply Background Knowledge- http://www.udlcenter.org/aboutudl/udlguidelines/principle1</p>		
	<p>Examining Labor Practices in the Garment Industry: http://www.pbs.org/pov/madeinla/lesson_plan.php Popsicle Bridge: http://tryengineering.org/lessons/popsiclebridge.pdf</p>		
	<p>Bare Bones 101: http://www.sc.edu/beaufort/library/pages/bones/bones.shtml Citelighter: http://www.citelighter.com/ Getting Started with Google Drive: https://support.google.com/drive/answer/2424384?hl=en Noodle Tools: http://www.noodletools.com/debbie/literacies/information/5locate/adviceengine.html</p>		

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<p>Technology CPI</p> <p><u>8.2.12.D.5</u></p> <p>Explain how material processing impacts the quality of engineered and fabricated products.</p> 	<p>Instructional Design Ideas</p> <ul style="list-style-type: none"> • Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills. • Multiple Means of Engagement: Provide photos, physical examples and/or videos to guide students in a discussion of the qualities of items used in their daily lives, (i.e., plastic forks, kites, books, clothing, cars) and use a graphic organizer to identify qualities of these products and how they differ in the chosen example.
<p>Content Area CPI</p> <p><u>CCSS.MATH.CONTENT.HSS.IC.B.4</u></p> <p>Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.</p> <p><u>CCSS.ELA-LITERACY.CCRA.SL.5</u></p> <p>Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.</p>	<p>Sample Activity</p> <p>Compare the materials of two products produced for the same function but made with different materials. Identify how material choices used in production impact performance by examining multiple resources presented in different formats including customer reviews or surveys. Use the data from the reviews and other resources to support which product should be purchased. Assess why both are available and recommend one for purchase in your geographic area. Make strategic use of digital media and resources to support the recommendations in your presentation.</p> <p>Technology Options</p> <ul style="list-style-type: none"> • <u>Bibme.org</u>: An automated citation creator which supports MLA, APA, Chicago or Turabian formatting. • <u>Diigo</u>: A tool to organize bookmarks/links online. It provides the ability to highlight and annotate text on the screen, to tag and bookmark pages for easy reference, and to collaborate and share the sites and information. • <u>Live Binder</u>: An online three ring binder that organizes links to external documents, and files. It is compatible with multiple platforms and devices. • <u>Natural Reader</u>: A text to speech application that is used to support reading and language, reducing barriers to content. • <u>Noodle Tools</u>: Provides categories of search tools that align to the type of content being searched.  

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	CCSS.ELA-LITERACY.CCRA.SL.5: http://www.corestandards.org/ELA-Literacy/CCRA/SL/4/ CCSS.MATH.CONTENT.HSS.IC.B.4: http://www.corestandards.org/Math/Content/HSS/IC/ Technology 8.2.12.D.5: http://www.state.nj.us/education/aps/cccs/tech/		
	Multiple Means of Engagement: Optimize Relevance, Value, and Authenticity- http://www.udlcenter.org/aboutudl/udlguidelines/principle3		
	Design and Build a Better Candy Bag: http://tryengineering.org/lesson-plans/design-and-build-better-candy-bag Engineered Sports: http://tryengineering.org/lesson-plans/engineered-sports		
 	Bibme.org: www.bibme.org Diigo: https://www.diigo.com/ Live Binder: http://www.livebinders.com/welcome/education?showsubtab=education Live Binders Tips and Tricks: http://www.livebinders.com/play/play?present=true&id=3342 Natural Reader: http://www.naturalreaders.com/ Noodle Tools: http://www.noodletools.com/debbie/literacies/information/5locate/adviceengine.html		