Standard 8: Technology
Classroom Application Document

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 collaborate and to create and communicate knowledge.	**By the end of Grade 2**

Strand F: Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Rationale: Each of us can have a global impact in today's world, so filtering information and applying critical thinking to solve problems and make decisions is a foundational skill.

Technology CPI

8.1.2.F.1

Use geographic mapping tools to plan and solve problems.

Content Area CPI

CCSS.MATH.PRACTICE.MP1
Make sense of problems and persevere in solving them.

Social Studies 6.1.4.B.1
Compare and contrast information that can be found on different types of maps and determine how the information may be useful.

Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
- Multiple Means Representation : Engage the students in a discussion connecting their experiences with bus traffic at school or traffic when they are on the highway. The word problem may be graphically depicted with text or offered separately as only visual depictions to explain the concept. Discuss their experiences to construct knowledge.

Sample Activity

Provide a word problem about how road construction may result in traffic being rerouted around the school. Use addition and subtraction to solve the problem involving lengths given in the same units. Use an online mapping tool to look at the features of your community. Use the tool to draw and show the routes with and without construction and measure the distances for each. Show an equation representing each problem with a symbol for the unknown number. Calculate the differences for the routes.

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Technology Options

Geocaching.com: an anytime, anywhere real world adventure. This site has a database identifying geocaches near you. It includes links for free downloads to use on phones, tablets and other technology tools.

- Geocaching Adventure Kits: An educator resource to learn about Geocaching and ignite ideas to create geocaches of your own using the resources available to you. This site includes resources to introduce geocaching to the learners.
- Google Maps: Useful to pinpoint locations, calculate distances between two points and choose alternative paths.
- Quik Maps: Creates maps on which you can add markers and text.

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Strand F: Critical Thinking, Problem Solving, and Decision Making

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

	**Social Studies:** http://www.state.nj.us/education/cccs/2014/ss/standards.pdf **CCSS.Math.Practice.MP1**: http://www.corestandards.org/Math/Practice/MP1/ **Technology 8.1.2.F.1**: http://www.state.nj.us/education/aps/cccs/tech/
	**Multiple Means of Representation: Activate or supply background knowledge:** http://www.udlcenter.org/aboutudl/udlguidelines/principle1
	**Passport To Learning Fun: A Geocaching Activity**: http://www.tcea.org/documents/tots/Sample%20Gocaching%20Project%20Lesson%20Plan.pdf **Transportation**: http://www.atozteacherstuff.com/pages/448.shtml **Where am I?**: http://alex.state.al.us/lesson_view.php?id=29928
 	**Geocaching Adventure Kit**: http://www.geocaching.com/articles/education/Adventure_Kit_Boy_Scouts.pdf **Geocaching.com**: **https://www.geocaching.com/play** **Google Maps**: **https://maps.google.com/** **Quik Maps**: http://quikmaps.com/ **The Official Government Global Positioning**: http://www.gps.gov/students/

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 collaborate and to create and communicate knowledge.

By the end of Grade 5

Strand F: Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Rationale: Each of us can have a global impact in today's world, so filtering information and applying critical thinking to solve problems and make decisions is a foundational skill.

Technology CPI

8.1.5.F.1

Apply digital tools to collect, organize, and analyze data that support a scientific finding.

Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
- Multiple Means of Engagement: Peer collaboration can significantly increase support for sustained engagement.

Think, Pair Share activities can be incorporated promoting individual and group thinking which provides scaffolding support and builds confidence.

Sample Activity

Investigate how a potato, much like a battery, can generate electrical current. Use online tools to collect data on voltage produced from potatoes, lemons and oranges. Use digital tools to organize the data logically and format with assigned fields/headings. Develop illustrations, photos or videos of the work to aid comprehension. Individually record observations in a shared file creating a group sampling from the class including number and type of "batteries" and amount of voltage they can produce. Interpret the results to suggest which item works best and what they could power. . Clearly identify needs or wants that include specified criteria for success and constraints, i.e. materials, time, or cost.

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Content Area CPI

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

Science **3-5-ETS1-1**

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Technology Options

Google Drive – Forms: Use forms for collaborative data input and the ability to manipulate and share the data.

- Quickoffice APP: Provides documents, spreadsheets, and presentations for android devices
- Spell Checker: Standard in word processing programs.
- Wise Mapping: An online graphic organizer for brainstorming. The file can be stored or shared as well as embedded into other programs.

Tech Tip: If you have difficulty using the cursor to select text, use the left click mouse button as an alternative. Point the cursor to a word and left click the mouse: one click puts the cursor at the current location, two clicks selects the word and three left clicks selects the paragraph.

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 collaborate and to create and communicate knowledge.	**By the end of Grade 5**

Strand F: Critical Thinking, Problem Solving, and Decision Making

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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.2:** http://www.corestandards.org/ELA-Literacy/CCRA/W/#CCSS.ELA-Literacy.CCRA.W.2 **Next Generation Science – 3-5-ETS1-1:** http://www.nextgenscience.org/3-5ets-engineering-design **Technology 8.1.5.F.1:** http://www.state.nj.us/education/aps/cccs/tech/ **Hands-on Activity: Potato Power-** https://www.teachengineering.org/view_activity.php?url=collection/cub_/activities/cub_energy2/cub_energy2_lesson04_activity2.xml
	**Multiple Means of Engagement:** http://www.udlcenter.org/aboutudl/udlguidelines/principle3 **Think, Pair Share:** http://www.ecu.edu/cs-educ/SecondaryISLES/upload/ISLES-S-Grouping-Declarative-051514.pdf
	**An Era of Innovation:** http://www.discoveryeducation.com/teachers/free-lesson-plans/an-era-of-innovation.cfm **Bias Sampling:** http://sciencenetlinks.com/lessons/bias-sampling/
 	**Google Drive – Forms:** https://support.google.com/docs/answer/2839737?hl=en **Quickoffice APP** for android devices**:** http://quickoffice.en.softonic.com/android **The Top 10 computer mouse tips everyone should know:** http://www.computerhope.com/tips/tip32.htm **Wise Mapping:** A graphic organizer for brainstorming http://www.wisemapping.com

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By the end of Grade 8

Strand F: Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Rationale: Each of us can have a global impact in today's world, so filtering information and applying critical thinking to solve problems and make decisions is a foundational skill.

Technology CPI

8.1.8.F.1
Explore a local issue, by using digital tools to collect and analyze data to identify a solution and make an informed decision.

Content Area CPI

21st Century Life & Career 9.1.8.A.6
Explain how income affects spending decisions

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

Social Studies 6.3.8.C.1
Examine the perspectives of multiple stakeholders involved in the local budget process (e.g., obtaining information, discussion priorities).

Sample Activity

Develop a personal budget and explain how your income affects your spending decisions. Broaden your budgetary perspective by using digital tools to examine, collect and analyze data about your town or county's local budget. Next, look at the perspectives of stakeholders in the town's budget (obtaining information and discussing their priorities). Identify how the town's income affects spending decisions in their budget. Interact with others to produce and publish an explanation of the budget while identifying the relationships and needs among the various stakeholders and this budget.

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Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
- Multiple Means of Representation: Educate and encourage learners to locate resources in varied forms that best accommodate their learning styles, i.e. screen readers to hear text, a screen magnifier to enlarge text or visual support by locating video news reports.

Technology Options

- Bibme.org: A citation tool to format resources
- Live Binder: An online three ring binder. Organize links to external documents and files. Compatible with multiple platforms and devices.
- NaturalReader: text to speech tool used to help close reading gaps and reduce barriers to content
- Newser: Constantly updated news presented in a pictorial grid
- Purdue Owl: an online Writing Lab with general rules for writing, standards for formatting, samples and exercises with solutions.

Tech Tip: Does the mouse jump too quickly when attempting to select text? As an alternative, place the cursor at the beginning OR end of the desired word or section. You can use the mouse and left click once or use the arrow keys to navigate the screen. Next, press and hold the "SHIFT" key and use the arrows to move the cursor.

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Strand F: Critical Thinking, Problem Solving, and Decision Making

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	Technology Resources		Multiple Means of Engagement

	**21st Century Life & Career 9.1.8.A.6**: http://www.state.nj.us/education/cccs/2014/career/91.pdf **Social Studies 6.3.8.C.1**: http://www.state.nj.us/education/cccs/2014/ss/ **CCSS.ELA-LITERACY.CCRA.W.6:** http://www.corestandards.org/ELA-Literacy/CCRA/W/#CCSS.ELA-Literacy.CCRA.W.6 **Technology 8.1.8.F.1**: http://www.state.nj.us/education/aps/cccs/tech/
 	**Provide Multiple Means of Representation: Offer Ways of Customizing the Display of Information**- http://www.udlcenter.org/aboutudl/udlguidelines/principle1 Through the use of technology many accommodations can be made to meet student needs: • Visual content: font, layout, size, contrast and color. • Sound: volume and/or rate of speech
	**The Mystery of Is it Mine or Ours?**: http://www.econedlink.org/lessons/index.php?lid=462&type=educator#
	**Bibme.org**: www.bibme.org **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 **NaturalReader**: http://www.naturalreaders.com/ **Newser**: http://www.newser.com **Purdue Owl**: https://owl.english.purdue.edu/owl/

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 collaborate and to create and communicate knowledge.

By the end of Grade 12

Strand F: Critical Thinking, Problem Solving, and Decision Making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Rationale: Each of us can have a global impact in today's world, so filtering information and applying critical thinking to solve problems and make decisions is a foundational skill.

Technology CPI

8.1.12.F.1

Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.

Instructional Design Ideas

- Interdisciplinary Learning: Content area standards are developed while cultivating relevant technology applications and skills.
- Multiple Means of Action and Expression: Include opportunities for students to choose the digital tools they are familiar with and have access to, with the requirement that the product must be viewable for feedback and sharing. Encourage the use of video and audio (both can be done with smart phones and tablets), supplementing the text to increase access for end users. Use voice recognition to create documents that convey information and ideas.

Sample Activity

Research an emerging technology (i.e. drones, self driving cars, electric cars, GPS) and new and advanced techniques and its ability to provide solutions for transportation, distribution and logistics problems. Describe the application and use of this technology. Write an informative/ explanatory text to convey this concept and impacts clearly and accurately through the effective selection, organization and analysis of the technology. Evaluate the further impacts on education, career, personal or social needs.

Content Area CPI

CCSS.ELA-LITERACY.CCRA.W.2

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

Career & Technical Education

9.3.12.TD.2

Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.

Technology Options

Google Drive: Provides tools to create, collaborate, share and store documents that are compatible with a wide variety of operating systems. Documents can be accessed from any internet connection.

- Prezi: cloud-based presentation software which is compatible with multiple types of hardware for creating and sharing
- Purdue Owl: an online writing lab with general rules for writing, standards for formatting, samples and exercises with solutions.
- Teachertube: a collection of resources
- Wikispaces Classroom: Create a class page shared with all learners, where students can see entries of their classmates. Individual pages can also be created where students may draft a response and copy it to the shared page.

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Strand F: Critical Thinking, Problem Solving, and Decision Making

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	**Career & Technical Education 9.3.12.TD.2**: http://www.state.nj.us/education/cccs/2014/career/93.pdf **CCSS.ELA Literacy.CCRA.W.2:** http://www.corestandards.org/ELA-Literacy/CCRA/W/#CCSS.ELA-Literacy.CCRA.W.2 **Technology 8.1.12.F.1:** http://www.state.nj.us/education/aps/cccs/tech/
	**Multiple Means of Action and Expression**: http://www.udlcenter.org/aboutudl/udlguidelines/principle2
	**Buy, Use Toss**: http://www.nea.org/tools/lessons/60370.htm **Energy and Cars: What does the future hold?**: http://www.discoveryeducation.com/teachers/free-lesson-plans/energy-and-cars-what-does-the-future-hold.cfm **Robotics and Future Technology**: http://www.navystemfortheclassroom.com/lesson-plans
 	**Google Drive: Documents**: https://www.google.com/docs/about/ **Google Drive: Presentations**: https://www.google.com/slides/about/index.html **Prezi**: http://prezi.com/ **Purdue Owl**: https://owl.english.purdue.edu/owl/ **Teachertube**: http://www.teachertube.com/ **Wikispaces Classroom**: https://www.wikispaces.com/content/classroom