

Technology

Grade 4

Standard 1 Fundamental Operations and Concepts Students understand the operations and function of technology systems and are proficient in the use of technology.	
Concepts	
T04- S1C1 Technology Terminology (1T-E1)	Communicate about technology using developmentally appropriate and accurate terminology
T04- S1C2 Technology Components (1T-E2)	Demonstrate increasingly sophisticated operation of technology components
T04- S1C3 Troubleshooting (1T-E3)	When a system is not working properly, demonstrate an understanding of hardware, software and connectivity problem solving processes

Students should know and be able to...					
Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S1C1 (1T-E1)	Technology Terminology: Communicate about technology using developmentally appropriate and accurate terminology	1	Use basic vocabulary related to technology (e.g., FireWire, USB, parallel, serial, scanning, digitizing, OCR) - USB - Scanning <i>T: USB: An abbreviation of Universal Serial Bus. USB is a standard port that enables you to connect external devices (such as digital cameras, scanners, and mice) to Windows and Macintosh computers. USB devices can be connected or disconnected without the need to restart the computer.</i> <i>T: Scanning: The process of producing an electronic image from a physical source, such as a page from a book. Often this involves hardware, similar in some respects to a photocopier, which captures the image through a glass plate, sometimes known as the "scanner bed".</i>		

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S1C2 (1T-E2)	Technology Components: Demonstrate increasingly sophisticated operation of technology components	3	Demonstrate functional operation of technology devices (e.g., presentation devices, digital cameras, scanners, document cameras, scientific probes) <ul style="list-style-type: none"> - Use and incorporate digital cameras (if available on site) - Use and incorporate scanners (if available on site) 		
S1C3 (1T-E3)	Troubleshooting: When a system is not working properly , demonstrate an understanding of hardware, software and connectivity problem solving processes	1 2	Use troubleshooting strategies to solve applications problems (e.g., file management strategies, online help strategies, documentation, collaboration with others) <ul style="list-style-type: none"> - Use the following keys simultaneously; Control, Alt, Delete, with teacher permission, when the computer application freezes - Restart the computer, with teacher permission Use troubleshooting strategies to solve basic hardware problems (e.g., use online help, use documentation, collaboration with others) <ul style="list-style-type: none"> - Restart the computer, with teacher permission 		

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S1C3 (1T-E3)	Troubleshooting: When a system is not working properly , demonstrate an understanding of hardware, software and connectivity problem solving processes	3	Use troubleshooting strategies to identify basic connectivity problems (e.g., use online help, use documentation, collaboration with others) <ul style="list-style-type: none"> - Log on correctly (use correct user name and password) 	Log on	

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Standard 2 Social, Ethical and Human Issues Students understand the social, ethical and human issues related to using technology in their daily lives and demonstrate responsible use of technology systems, information and software.	
Concepts	
T04- S2C1 Responsible Use (2T-E1)	Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use
T04- S2C2 Legal and Ethical Behaviors (2T-E2)	Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse
T04- S2C3 Technology Changes (2T-E3)	Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society
T03- SMPS2C4 Responsible Use of Hardware	Practice proper care of hardware

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S2C1 (2T-E1)	Responsible Use: Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use	1	Explain the purpose of an Acceptable Use Agreement/Policy and the consequences of inappropriate use <ul style="list-style-type: none"> - Tell why an Acceptable Use Policy is important (e.g., to protect the computers from damage, to protect students from improper content on the Internet, to protect student security) - List the consequences for inappropriate use of the computer and Internet use (e.g., loss of computer privileges, parent phone call, principal referral, legal action) 		MPS Acceptable Use Policy, District Code JFCH, JFCH-R: http://www.mpsaz.org/main2/pdf/internet_web_policy.pdf

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S2C1 (2T-E1)	Responsible Use: Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use	2	<p>Describe and practice safe Internet/Intranet usage (e.g., do not post inappropriate or harmful material; do not reveal personal information; follow district Acceptable Use Policy)</p> <ul style="list-style-type: none"> - Use pre-selected sites - Use only kid safe search engines - Avoid revealing personal information (e.g., name, address, phone number, home email address) 	netiquette	<p>MPS Educational Technology Resources Web Site: http://www.mpsaz.org/edtech/</p> <p>Yahooligans: http://yahooligans.yahoo.com/</p> <p>GaggleNet: http://www.gaggle.net/gen? template=/templates/gaggle/html/index.jsp</p>
		3	<p>Describe and practice “netiquette” when using the Internet and electronic mail (e.g., publish photographs of people only with their permission)</p> <ul style="list-style-type: none"> - List two examples of Netiquette - Obtain teacher permission before sending email <p>T: Netiquette: The rules of etiquette on the Internet. (e.g., Don’t type in all caps when communicating on the internet, use correct capitalization and punctuation, avoid using offensive language)</p> <p>T: Students should use only district approved email accounts such as GaggleNet. All student incoming and outgoing email must be reviewed by the teacher</p>		

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S2C2 (2T-E2)	Legal and Ethical Behaviors: Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse	1	Follow the rules for deciding when permission is needed for using the work of others, (e.g., some sites specify whether permission is required or not, some work is in public domain) <ul style="list-style-type: none"> - Discuss procedure for obtaining permission 		
		2	Obtain permission to use the work of others <ul style="list-style-type: none"> - Obtain teacher permission before accessing photos, clip art, and information from teacher selected websites. 		
		3	Provide complete citations from electronic media (e.g., use age-level appropriate, district developed standardized reference formats for citing source of information)		
		4	Explain copyright laws and “fair use” guidelines (e.g., in relationship to print, video, computer software, multimedia project, music) <ul style="list-style-type: none"> - Use “fair use” guidelines when copying media from the Internet <ul style="list-style-type: none"> o Motion media- up to 10% or 3 minutes, whichever is less o Text- up to 10% or 1000 words, whichever is less o Music- up to 10%, no more that 30 seconds 		

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S2C2 (2T-E2)	Legal and Ethical Behaviors: Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse		<ul style="list-style-type: none"> ○ Illustrations and Photographs- not more than 10% of, or 15 images from a single publication 	copyright guidelines	NoodleBib: http://www.noodletools.com/noodlebib/index.php Cyberbee: http://www.cyberbee.com/cb_copyright.swf
		5	Describe copyright guidelines for multimedia creation and Internet development <ul style="list-style-type: none"> - List 3 copyright guidelines for multimedia creation 		
		6	State personal consequences (e.g., fines, loss of privileges, grade reduction, academic probation) related to violations of: <ul style="list-style-type: none"> a) Copyright (e.g., sheet music, prerecorded music, print, video, images) 		

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S2C2 (2T-E2)	Legal and Ethical Behaviors: Exhibit legal and ethical behaviors when using technology and information and discuss consequences of misuse	7	b) Password security c) Privacy (e.g., student files on a network, floppy disk and hard drive) d) Internet usage (e.g., inappropriate postings, accessing inappropriate material) Discuss the negative impact of unauthorized intrusions into networked data and describe actions to prevent these intrusions - Access only your assigned folder		
S2C3 (2T-E3)	Technology Changes: Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society	1 2 3	Compare information technologies from past to present and describe the implications of computer power doubling every 18 months (Moore’s Law) (e.g., size, speed, cost) Describe the impact of technology use on individuals at home and in the workplace (e.g., computer has replaced the TV for some individuals; free time is spent using technology versus outdoor activities; jobs have been created and/or eliminated due to technological advances; possible infringement of privacy) Discuss the social implications of the “digital divide” (e.g., homes and schools with much technology and connectivity versus those with less or none)	digital divide	

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S2C3 (2T-E3)	Technology Changes Demonstrate knowledge of current changes in technologies and the effect those changes have on the workplace and society		T: Digital Divide: The gap that exists between those who have and those who do not have access to technology (telephones, computers, Internet access) and related services.		
SMPS2 C4	Responsible Use of Hardware: Practice proper care of hardware	1	<i>Demonstrate proper care of hardware (computer, peripherals, other equipment) and media.</i> <ul style="list-style-type: none"> - <i>Use clean hands</i> - <i>Have a clean work area</i> - <i>No magnets, drink or food around computer</i> <i>T: Peripheral: A device that can communicate directly with a computer, such as printers, scanners, cameras, CD-ROMs and laserdisc players.</i>		

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Standard 3 Technology Productivity Tools Students use technology tools to enhance learning, to increase productivity and creativity, and to construct technology-enhanced models, prepare publications and produce other creative works.	
Concepts	
T04- S3C1 Formatting Capabilities (3T-E1)	Use formatting capabilities of technology tools for communicating and illustrating
T04- S3C2 Data Collection and Analysis (3T-E2)	Use a variety of technology tools for data collection and analysis
T04- S3C3 Publishing and Presenting (3T-E3)	Publish and present information using technology tools
T04- S3C4 System Analysis and Modeling (3T-E4)	Use technology tools to support system analysis and modeling

Students should know and be able to...					
Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S3C1 (3T-E1)	Formatting Capabilities: Use formatting capabilities of technology tools for communicating and illustrating	1	Use word processing editing tools to revise a document (e.g., cut and paste, tabs and margins, font size, font style, delete and undo, selecting, spell check, click and drag) <ul style="list-style-type: none"> - Cut, copy, paste and delete - Use spell check - Write stories or poems - Type reports - Generate letters <i>T: Word Processor: Software that allows you to enter, edit and format text. Some software will allow the use of graphics.</i>		Inventions Research Reports* Microsoft Office Software – Word AppleWorks Software – Word Processing

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S3C1 (3T-E1)	Formatting Capabilities: Use formatting capabilities of technology tools for communicating and illustrating	2	<p>Design a word processing document with graphical elements (e.g., clip art, digital photographs, symbols, using text wrap, cropping, sizing, drawing tools)</p> <ul style="list-style-type: none"> - Create a one page double spaced word processing document - Add clip art from the program library - Resize the clip art to fit the document - Use text wrap <p>T: Clip Art: Graphics that can be cut and pasted electronically into documents. Clip art can be photographs, diagrams, maps, illustration or cartoons</p> <p>T: Text Wrap: A feature supported by many word processors that enables you to surround a picture or diagram with text. The text wraps around the graphic. Text wrap is also called text flow.</p>		<p>Microsoft Office Software – Word</p> <p>AppleWorks Software – Word Processing</p>
S3C2 (3T-E2)	Data Collection and Analysis: Use a variety of technology tools for data collection and analysis	1	<p>Use technology device(s) to collect and record data (e.g., science probe, graphing calculator, PDA {personal digital assistant}, alternative keyboards, webcams, GPS and Internet)</p> <ul style="list-style-type: none"> - Access appropriate webcams on the Internet - Collect and record data 	webcam	<p><u>Weather Cams:</u> http://www.wetterklima.de/cams/camera_engl.htm</p> <p><u>San Diego Zoo:</u> http://www.sandiegozoo.org/</p>
		2	<p>Create and use a spreadsheet to analyze data (e.g., use formulas, create charts and graphs)</p> <ul style="list-style-type: none"> - Create a spreadsheet - Generate charts and graphs from a spreadsheet 	spreadsheet	<p><u>Sunrise Sunset*</u></p> <p>Microsoft Office</p>

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S3C4 (3T-E4)	System Analysis and Modeling: Use technology tools to support system analysis and modeling	1	Manipulate several variables in a computer simulation to reach a desired outcome (e.g., simulation software, Web-based simulation, textbook support software)		

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Standard 4 Technology Communications Tools Building on productivity tools, students will collaborate, publish, and interact with peers, experts and other audiences using telecommunications and media.	
Concepts	
T04- S1C1 Telecommunications (4T-E1)	Use telecommunications efficiently and effectively to access remote information and communicate with others in support of facilitated and independent learning
T04- S1C2 Technology Tools (4T-E2)	Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and outside the classroom
T04- S1C3 Collaboration (4T-E3)	Collaboratively use telecommunications and online resources

Students should know and be able to...					
Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S1C1 (4T-E1)	Telecommunications Use telecommunications efficiently and effectively to access remote information and communicate with others in support of facilitated and independent learning	1	Communicate independently via e-mail, Internet, and/or videoconference with people in a remote location	e-mail	EPals: http://www.epals.com/ Ask an Expert: http://www.askanexpert.com/

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S1C2 (4T-E2)	Technology Tools: Use technology tools for individual and collaborative writing, communication and publishing activities to create curricular related products for audiences inside and	1	Plan, design and present an academic product using technology tools (e.g., multimedia authoring, presentation software, digital cameras, scanners, projection devices) <ul style="list-style-type: none"> - <i>Prepare and share an original presentation</i> <ul style="list-style-type: none"> ○ <i>Create and edit slides/screens</i> ○ <i>Add and edit text (font, size, color)</i> ○ <i>Add transitions to an original slide show</i> ○ <i>Change the background using color or picture</i> ○ <i>Arrange objects on the slide/screen</i> ○ <i>Insert graphics, clip art, digital pictures, paint, and/or original scanned artwork</i> ○ <i>Use Word Art to enhance titles or to create original art (PowerPoint)</i> ○ <i>Incorporate audio and video appropriately</i> ○ <i>Use custom animation with text and objects</i> 	<i>transitions, background, digital pictures animation</i>	Microsoft Office Software- PowerPoint IMovie Software (if available at school site) HyperStudio Software Arizona Counties* Desert Animal Presentation*

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S1C3 (4T-E3)	Collaboration	1	Request collaborative exchanges among people in local and/or remote locations (e.g., e-mail, online discussions, Web environments)		
	Collaboratively use telecommunications and online resources	2	Communicate electronically to collaborate with experts, peers and others to analyze data and/or develop an academic product (e.g., e-mail, discussion group, videoconferencing)		
		3	Present an academic product to share data and/or solutions (e.g., Web site, multimedia presentation, video) <ul style="list-style-type: none"> - Create an electronic presentation using research in a real world context - Incorporate audio and video appropriately 		

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Standard 5 Technology Research Tools
Note: The performance objectives described in Standard 5 rely upon the mastery of skills and understanding of concepts from Standards 1-4 of this document

Students will utilize technology-based research tools to locate and collect information pertinent to the task as well as evaluate and analyze information from a variety of sources.

Concepts

T04- S5C1 Electronic Resources **Locate information from electronic resources**
(5T-E1)

T04- S5C1 Evaluate Electronic Sources **Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources**
(5T-E2)

Students should know and be able to...

Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S5C1 (5T-E1)	Electronic Information: Recognize electronic information sources	1	Identify electronic research resources (e.g., CD encyclopedia, on-line encyclopedia, Media Center software)	subject search, electronic research resources	MPS Study Dog: http://www.mpsaz.org/main2/ Reference CD-ROMs (if available at school site)
		2	Define subject searching and devise a search strategy to locate information using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources, grade level appropriate Internet resources) <ul style="list-style-type: none"> - List 3 examples of subject searching (e.g., Arthropods, Arizona, Fractions, Weather, Famous People, etc.) - Conduct a subject search utilizing available resources 		

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Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S5C1 (5T-E1)	Electronic Information: Recognize electronic information sources	3	<p>Explain the difference between subject and keyword searching</p> <ul style="list-style-type: none"> List an example of a keyword search (e.g., Arizona, animals, desert, and arthropods) <p>T: Subject searches: A subject search is used to provide research on a general topic, for example, Arizona.</p> <p>T: Keyword search: A keyword search is more specific than a subject search, for example, The Grand Canyon.</p>	key word search, directory	
		4	<p>Construct keyword searches including basic Boolean logic using available electronic research resources (i.e., electronic card catalog, online or CD-ROM reference sources and grade level appropriate Internet resources)</p> <ul style="list-style-type: none"> Identify an example of a search using Boolean logic (e.g. Arizona and Famous People, Arthropods –insects) Use safe search engines Use child safe directories <p>T: Boolean (also Boolean Operator): A system of logic that, when applied to searches, modifies search terms with the “operators” AND, OR and NOT. Boolean operators allow you to broaden or narrow the range of your search.</p>		

[Arizona Historical Person*](#)

[Yahooligans:](#)
http://yahooligans.yahoo.com/

[Kids Click:](#)
http://www.kidsclick.com/

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S5C1 (5T-E1)	Electronic Information: Recognize electronic information sources	5	T: Directory: Directories are compiled lists of sites, categorized and organized by topic. Each directory listing contains short, descriptive information about the site. Unlike search engines (like Google), directories are compiled by human editors who approve listings Identify the author, copyright date and publisher of information located in electronic resources, including Internet resources <ul style="list-style-type: none"> - Locate the author of a Web site - Locate the copyright date on a Web site - Locate publisher of a Web site 		
S5C2 (5T-E2)	Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources	1 2 3	Create citations for electronic research sources following a prescribed format (<i>See Technology 2T-E2, PO2</i>) Gather research from a variety of electronic sources and identify the most appropriate information for answering the research question (<i>See Technology 5T-D2, PO2</i>) <ul style="list-style-type: none"> - Take notes and paraphrase from an approved web site Obtain permission, when appropriate, to use the work of others (<i>See Technology 2T-E2, PO3</i>)		

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S5C2 (5T-E2)	Evaluate the accuracy, relevance, appropriateness, comprehensiveness and bias of electronic information sources	4	<p>Identify the components of a URL to determine the source of the information (e.g., www .com, .org, .gov)</p> <p>T: URL: (Uniform Resource Locator) The global address of documents and other resources on the World Wide Web. The first part specifies the IP address or the domain name where the resource is located.</p> <p>T: Components of a URL: www—World Wide Web .com— a commercial site .org— a nonprofit organization .gov—a government site</p>	URL.	
		5	<p>Identify the author of the information found from electronic resources and determine whether the author is an authority, displays bias and is a primary or secondary source</p> <ul style="list-style-type: none"> - Identify primary source material - Identify secondary source material <p>T: Primary source: Primary sources are original records created at the time historical events occurred or well after events in the form of memoirs and oral histories.</p> <p>T: Secondary source: Secondary sources offer an analysis or a restatement of primary sources.</p>		

Plain text/MPS denotes Mesa Public Schools guidelines and/or performance objective.

Bold text denotes exact wording and punctuation from the Arizona Academic Content Standard of what students should know and be able to do by the end of 8th grade.

*Indicates a technology lesson plan from the MPS Ed Tech Resource Bank: <http://www.mpsaz.org/resource/>

Italic text denotes a repetition of a concept or performance objective (learned in an earlier grade) that is to be applied to more complex technology situations.

T= Teacher Information

<p>Standard 6 Technology as a Tool for Problem Solving and Decision-making Note: Problem solving is inherent in all disciplines. Technology Standard 6 is designed to provide a cumulative (capstone) experience</p> <p>Students use technology to make and support decisions in the process of solving real-world problems.</p>	
<p>Concepts</p>	
<p>T04- S6C1 Problem Solving (6T-E1)</p>	<p>Determine when technology is useful and select and use the appropriate tools and technology resources to solve problems</p>

Students should know and be able to...					
Concept Number	Concept	PO No.	Performance Objective	Vocabulary	Notes/Support Materials
S6C1 (6T-E1)	Problem Solving: Determine when technology is useful and select and use the appropriate tools and technology resources to solve problems	1	Based on a problem selected by the student, identify and use appropriate technology tools to: a) collect data (e.g., counting versus using a probe, book index versus online index) b) interpret data (e.g., use of a spreadsheet instead of a graphic organizer) c) develop a solution to the problem (e.g., creating a model versus using a spreadsheet) d) present findings (e.g., create a poster versus an electronic presentation) - Create a spreadsheet - Generate charts and graphs from a spreadsheet	spreadsheet	AppleWorks Software Microsoft Office Software Science Fair Project

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