

West Virginia 21st Century Technology Tools Matrix

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Objectives	Grades PK-2	Grades 3-4	Grades 5-8	Grades 9-12
Information and Communication Skills	The student will access, analyze, manage, integrate, evaluate, and create information in a variety of forms using appropriate technology skills and communicate that information in an appropriate oral, written, or multimedia format.	The student will access, analyze, manage, integrate, evaluate, and create information in a variety of forms using appropriate technology skills and communicate that information in an appropriate oral, written, or multimedia format.	The student will access, analyze, manage, integrate, evaluate, and create information in a variety of forms using appropriate technology skills and communicate that information in an appropriate oral, written, or multimedia format.	The student will access, analyze, manage, integrate, evaluate, and create information in a variety of forms using appropriate technology skills and communicate that information in an appropriate oral, written, or multimedia format.
	Student uses keyboard and mouse to enter name and User ID, types sentences and follows on-screen prompts to successfully operate computers. Student uses printers, audiotapes, and other technologies. Student names common technologies (e.g., CD player, DVD player, video camera, cell phone). 21C.O.PK-2.1.TT1	Student uses keyboard, mouse and other common input and output devices (including adaptive devices when necessary) efficiently and effectively; student handles diskettes, CD/DVDs, USB drives, microphones, and headphones with care; student opens files independently, saves documents, and sends documents to the printer. 21C.O.3-4.1.TT1	Student connects peripheral devices (e.g., scanners, digital cameras, video projectors, USB drives, printers, media storage devices) to computers and uses them efficiently and effectively. Student accesses server and/or network resources (e.g., file folders/software programs, bookmarked sites). 21C.O.5-8.1.TT1	Student makes informed choices among available advanced technology systems, resources and services (e.g., global positioning software, graphing calculators, personal digital assistants, web casting, online collaboration tools) for completing curriculum assignments and projects and for managing and communicating personal/professional information. 21C.O.9-12.1.TT1
	Student demonstrates correct keyboarding posture and correct hand and finger placement for the home row, knows how to use keyboard to create lower and upper case letters, knows how to locate and use the letters, numbers and special keys (e.g., enter, space bar, arrow keys, delete, shift, punctuation keys, number keys, left and right hand position), knows how to use a mouse to point and click, place cursor at a specified location, click and drag, and right click. 21C.O.PK-2.1.TT2	Student demonstrates correct keyboarding posture and technique, uses correct hand and finger placement for alphabetic, numeric, and special purpose keys such as arrows, escape, backspace, delete, caps lock, and control; student knows how to correctly use these keys; students know how to use Edit menu to cut, copy, paste, change font, and other common editing features. 21C.O.3-4.1.TT2	Student increases keyboarding facility and uses mouse and keyboard shortcut techniques and identified assistive technology to improve speed and accuracy. 21C.O.5-8.1.TT2	Student routinely applies keyboarding skills, keyboard shortcut techniques, and mouse skills with facility, speed and accuracy. 21C.O.9-12.1.TT2
	Student logs on to computer, starts and exits programs, finds files, and handles and uses output devices (e.g., CDs, DVDs, USB drives, diskettes) with care. Student uses file menu commands (e.g., New, Open, Close, Save, Save as, Print) and saves computer files to diskette, hard drive and server. 21C.O.PK-2.1.TT3	Student uses menu options in software applications to create documents, simple spreadsheets and presentations and to save files to various locations (e.g., USB drive, diskette, hard drive, server). Student begins to use e-mail to exchange documents with other teachers and students. Students know how to organize files through the use of folders. 21C.O.3-4.1.TT3	Student recognizes different file format extensions (e.g., .doc, .xls, .ppt, .rft, .pdf, .jpeg, .gif, .mpg, .wav, .mp3) and can import the different formats into documents, presentations, spreadsheets and databases. 21C.O.5-8.1.TT3	Student uses advanced utilities (e.g., zipping or compressing files, file level anti-virus scans), converts files to different formats (e.g., .doc, .xls, .mdb, .htm, .pdf) and saves finished products to multiple media sources (e.g., CDRW, DVDR, USB drives, shared folders, web-based file storage). 21C.O.9-12.1.TT3

<p>(Information and Communication Skills-cont'd)</p>	<p>Student uses electronic drawing and paint programs to create graphics. Student participates in a group to locate and create pictures, clip art, graphs, tables and other appropriate objects and to insert into documents and presentations. 21C.O.PK-2.1.TT4</p>	<p>Student finds, imports, inserts, and resizes or moves pictures, images and charts in word processing documents, spreadsheets, presentations and other electronic templates. 21C.O.3-4.1.TT4</p>	<p>Student uses audio, video, pictures, clip art, moviemaker programs, webpage design software, electronic documents, and other files to create and publish electronic products to communicate with various audiences inside and outside the classroom. 21C.O.5-8.1.TT4</p>	<p>Student uses audio, video, pictures, clip art, moviemaker programs, webpage design software, electronic documents and other files to collaborate for the creation of electronic products that inform multiple audiences both inside and outside the school environment. 21C.O.9-12.1.TT4</p>
	<p>Student creates text, types words and sentences, and inserts images using word processing software. Student creates, saves, prints and opens existing files. Student uses editing functions in word processing software (e.g., font, boldface, underline, font color). Student inserts graphics that enhance the understanding of the text. 21C.O.PK-2.1.TT5</p>	<p>Student uses word processing software to create and format a document (e.g., paragraphs, tabs, page justification, margins, spell check, grammar check, word count, insert page breaks, page numbers), uses Edit menu to cut, copy, paste, change font type, size and color, select and highlight text, and other common editing features. 21C.O.3-4.1.TT5</p>	<p>Student uses advanced features and utilities of word processing software (e.g., bullets, numbering, tables, find and replace, thesaurus, help menus and toolbars). 21C.O.5-8.1.TT5</p>	<p>Student uses advanced features of word processing software (e.g., outline, table of contents, index feature, draw tool, headers and footers, track changes, macros, hyperlinks to other file formats, etc.). 21C.O.9-12.1.TT5</p>
	<p>Student, working in a teacher-led whole group project, enters simple data into a spreadsheet and creates graphs electronically (i.e., use of chart wizard). 21C.O.PK-2.1.TT6</p>	<p>Student enters data into a spreadsheet, performs simple calculations (e.g., Sum, Average), aligns data (e.g., left, right, center justification), applies different formats (e.g., number format, currency format, general format), and creates simple graphs and charts using the chart wizard. 21C.O.3-4.1.TT6</p>	<p>Student uses advanced features and utilities of spreadsheet software, (e.g. functions, formulas, filters, sorts, creates graphs and charts), to perform calculations and to organize, analyze and report data. 21C.O.5-8.1.TT6</p>	<p>Student uses advanced features and utilities of spreadsheet software, (e.g., formulas, filters, pivot tables, pivot charts, macros, conditional formatting), to perform calculations and to organize, analyze and report data. 21C.O.9-12.1.TT6</p>
	<p>Student, working in a teacher-led whole group project, uses presentation software to illustrate concepts and communicate ideas. 21C.O.PK-2.1.TT7</p>	<p>Student creates a presentation of at least four to six slides. Student inserts slides and chooses backgrounds, fonts, and slide layouts. Student understands and uses different formats for viewing (e.g., slide sorter menu, slide show menu, normal view). 21C.O.3-4.1.TT7</p>	<p>Student uses advanced features and utilities of presentation software (e.g., design templates, design layouts (fonts/ colors/ backgrounds) animation and graphics, inserting pictures, objects, movies, sound, charts, hyperlinks, and graphs) to create an original product. 21C.O.5-8.1.TT7</p>	<p>Student uses advanced features and utilities of presentation software (e.g., slide transitions, master slides, narrations and timings, creating web-enabled presentations, creating a non-linear presentation) to communicate ideas to multiple audiences. 21C.O.9-12.1.TT7</p>
	<p>Student, working in a teacher-led whole group project, uses existing common databases (e.g., online or CD-ROM encyclopedias, electronic dictionaries, and other online library archives) to find information for classroom assignments. 21C.O.PK-2.1.TT8</p>	<p>Student uses existing common databases (e.g., online or CD-ROM encyclopedias, electronic dictionaries, and other online library archives) to find, sort and interpret information for classroom assignments. 21C.O.3-4.1.TT8</p>	<p>Student enters data relevant to class assignments into a database and performs simple queries. 21C.O.5-8.1.TT8</p>	<p>Student uses advanced features and utilities of database software (e.g., to create tables, forms, perform table relationships, advanced queries, and simple reports) to test hypotheses or research questions and to report results. 21C.O.9-12.1.TT8</p>

<p>(Information and Communication Skills-cont'd)</p>	<p>Student identifies the Internet and email as tools to locate information and communicate. Student, with assistance from teachers or student partners, views identified Internet sites and uses email to read and send messages to other students, teachers, and online experts. 21C.O.PK-2.1.TT9</p>	<p>Student participates in several curriculum-based telecommunications projects as class activities (e.g., web quests, ask an expert, collaborative email projects, online discussions). Student uses telecommunications efficiently and effectively to access remote information and communicate with audiences. 21C.O.3-4.1.TT9</p>	<p>Student uses telecommunications tools (e.g., email, web pages, blogs, discussion groups, list-servs, etc.) to learn academic content and to gather, share and publish information to various audiences. 21C.O.5-8.1.TT9</p>	<p>Student uses advanced telecommunication tools (e.g., email, video conferencing, interactive websites, newsgroups, video phones, chats) to create collaborative projects that are relevant to real world situations and contribute to the communication process among various groups. 21C.O.9-12.1.TT9</p>
	<p>Student begins to locate information in a variety of developmentally appropriate technology resources (e.g., interactive books, educational software, CD-ROMs, elementary multi-media encyclopedias and web-based search engines) to support classroom assignments. 21C.O.PK-2.1.TT10</p>	<p>Student selects and uses appropriate software, other technologies, and grade level appropriate search engines to locate and acquire information from electronic resources (e.g., interactive books, multi-media encyclopedias, Internet sites). Student evaluates information found for content and usefulness. 21C.O.3-4.1.TT10</p>	<p>Student uses Internet browsers, various search engines, book marking features, and advanced search techniques to gather information; student evaluates the information for validity, bias, appropriateness, content and usefulness. 21C.O.5-8.1.TT10</p>	<p>Student implements various Internet search techniques (e.g., Boolean searches, meta-searches, web bots) to gather information; student evaluates the information for validity, appropriateness, content, bias, currency, and usefulness. 21C.O.9-12.1.TT10</p>
				<p>Student imports and exports multiple data formats and integrates to multiple productivity programs (e.g., exports comma delimited files, standard data formats) and understands transferability of data among different programs. 21C.O.9-12.1.TT11</p>

Thinking and Reasoning Skills	The student will demonstrate the ability to explore and develop new ideas, to intentionally apply sound reasoning processes and to frame, analyze and solve complex problems using appropriate technology tools.	The student will demonstrate the ability to explore and develop new ideas, to intentionally apply sound reasoning processes and to frame, analyze and solve complex problems using appropriate technology tools.	The student will demonstrate the ability to explore and develop new ideas, to intentionally apply sound reasoning processes and to frame, analyze and solve complex problems using appropriate technology tools.	The student will demonstrate the ability to explore and develop new ideas, to intentionally apply sound reasoning processes and to frame, analyze and solve complex problems using appropriate technology tools.
	Student identifies procedures for caring for and using developmentally appropriate technologies (e.g., computers, CD/DVD players, videotapes, diskettes, CD-ROMs, remote controls). 21C.O.PK-2.2.TT1	Student troubleshoots simple hardware and software problems (e.g., rebooting, closing applications, powering off and restarting computers, using simple help menus, clearing print queues). 21C.O.3-4.2.TT1	Student solves problems related to hardware, software and networks by applying problem solving techniques (e.g., Task Manager to close tasks, Ctrl-Alt-delete, restarting the systems, accessing help menus, performing online searches, checking cable connections). 21C.O.5-8.2.TT1	Student knows how to find information necessary to solve advanced problems related to hardware, software, networks, and connections (e.g., by accessing online help, Internet searches, technical documentation, system utilities, and communication with technical experts). 21C.O.9-12.2.TT1
	Student collaborates with classmates, families and others using telecommunications (e.g., class electronic pen pal projects, children's online message boards, e-cards, ask an expert online). 21C.O.PK-2.2.TT2	Student collaborates with peers, experts and others using telecommunications and online resources (e.g., e-mail, online discussions) to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom. 21C.O.3-4.2.TT2	Student collaborates with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom. 21C.O.5-8.2.TT2	Student collaborates with peers, experts and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. 21C.O.9-12.2.TT2
	Student identifies different purposes among software applications (e.g., puzzles, writing tools, graphing tools, concept mapping tools). Student selects technology tools and software to solve problems (e.g., presentation software to explain and communicate information, drawing or paint software to make a picture, email software to send messages, Internet browser to access websites, and word processing software to write a story). 21C.O.PK-2.2.TT3	Student uses technology tools (e.g., presentation software, word processing software, publishing software, group web page design, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create informative products for audiences inside and outside the classroom. 21C.O.3-4.2.TT3	Student uses multiple technology tools for gathering information in order to solve problems, make informed decisions, and present and justify the solutions. 21C.O.5-8.2.TT3	Student uses multiple electronic sources of information and multiple technology tools and resources tools (e.g., digital cameras, graphing calculators, probes, mp3 players, handheld devices, other emerging technologies, simulations, models, browsers, word processing, authoring tools, spreadsheets, databases) to collaborate with others, to formulate a hypothesis, to solve problems, make decisions, and present and justify the solutions. 21C.O.9-12.2.TT3
	Student identifies how technology could be used to solve problems in our everyday world. 21C.O.PK-2.2.TT4	Student uses technology tools (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. 21C.O.3-4.2.TT4	Student formulates a plan and uses technology tools and multiple media sources to compare and analyze information in order to solve real-world problems. 21C.O.5-8.2.TT4	Student uses technology tools and multiple media sources to analyze a real-world problem, design and implement a process to assess the information, and chart and evaluate progress toward the solution. 21C.O.9-12.2.TT4

Personal and Workplace Skills	The student will exhibit leadership, ethical behavior, respect for others; accept responsibility for personal actions considering the impact on others; take the initiative to plan and execute tasks; and interact productively as a member of a group.	The student will exhibit leadership, ethical behavior, respect for others; accept responsibility for personal actions considering the impact on others; take the initiative to plan and execute tasks; and interact productively as a member of a group.	The student will exhibit leadership, ethical behavior, respect for others; accept responsibility for personal actions considering the impact on others; take the initiative to plan and execute tasks; and interact productively as a member of a group.	The student will exhibit leadership, ethical behavior, respect for others; accept responsibility for personal actions considering the impact on others; take the initiative to plan and execute tasks; and interact productively as a member of a group.
	Student identifies and practices the responsible use of technology systems and software. 21C.O.PK-2.3.TT1	Student practices responsible use of technology systems. Student identifies the consequences of viruses, vandalism and inappropriate use of hardware and software. 21C.O.3-4.3.TT1	Student protects software, hardware and network resources from viruses, vandalism, and unauthorized use and uses proper techniques to access, use and shut down technology equipment. 21C.O.5-8.3.TT1	Student protects software, hardware and network resources from viruses, vandalism, and unauthorized use and employs proper techniques to access, use and shut down technology equipment. 21C.O.9-12.3.TT1
	Student discusses with the teacher how the Internet can be a source of information. 21C.O.PK-2.3.TT2	Student evaluates bookmarked Internet sites or teacher-directed sites for relevance to curriculum tasks. 21C.O.3-4.3.TT2	Student conducts online research and evaluates the accuracy, relevance, and appropriateness of electronic information sources 21C.O.5-8.3.TT2	Student works collaboratively to acquire information from electronic resources, conducts online research, and evaluates information as to validity, appropriateness, usefulness, comprehensiveness and bias. 21C.O.9-12.3.TT2
	Student identifies how technology is commonly used in homes, community, and other environments. 21C.O.PK-2.3.TT3	Student identifies and describes the impact of technology on homes, school and business environments. Student identifies how technology supports individual and group work and assistance for students with disabilities. 21C.O.3-4.3.TT3	Student analyzes current information technologies and the effect these technologies have on the workplace and society. 21C.O.5-8.3.TT3	Student evaluates current trends in information technology, discusses the potential social, ethical, political, and economic impact of these technologies, and analyzes the advantages and disadvantages of widespread use and reliance on technology in the workplace and society. 21C.O.9-12.3.TT3
	Student discusses the requirements of acceptable use policies (AUP). Student recognizes and gives examples of an individual's right of ownership to computer-generated work. 21C.O.PK-2.3.TT4	Student complies with county acceptable use policy. Student identifies the need for acceptable use policies (AUP), discusses basic issues related to responsible use of technology and information and describes personal consequences of inappropriate use, and begins to cite sources for information found through electronic searches. 21C.O.3-4.3.TT4	Student complies with county acceptable use policy. Student discusses legal and ethical behaviors related to acceptable use of information and communication technology (e.g., privacy, security, copyright, file-sharing, plagiarism) and predicts the possible effects of unethical use of technology (e.g., consumer fraud, intrusion, spamming, virus setting, hacking) on the individual and society, as well as identify methods for addressing these risks. 21C.O.5-8.3.TT4	Student adheres to acceptable use policy and displays ethical behaviors related to acceptable use of information and communication technology (e.g., privacy, security, copyright, file-sharing, plagiarism); student predicts the possible cost and effects of unethical use of technology (e.g., consumer fraud, intrusion, spamming, virus setting, hacking) on culture and society; student identifies the methodologies that individuals and businesses can employ to protect the integrity of technology systems. 21C.O.9-12.3.TT4

<p>(Personal and Workplace Skills Cont'd)</p>	<p>Student demonstrates positive social and ethical behaviors when using technology. Student identifies appropriate and inappropriate use of computers and describes how to work collaboratively with others when using technology at home or in school. 21C.O.PK-2.3.TT5</p>	<p>Student identifies why technology is important to them, the purpose of using login names and passwords, and reasons for keeping them private. Student models acceptable use and understands the etiquette of email communications. 21C.O.3-4.3.TT5</p>	<p>Student models ethical behavior relating to security, privacy, computer etiquette, passwords and personal information. Student demonstrates an understanding of copyright by citing sources of copyrighted materials in papers, projects and multi-media presentations. 21C.O.5-8.3.TT5</p>	<p>Student models ethical behavior relating to security, privacy, computer etiquette, passwords and personal information and demonstrates an understanding of copyright by citing sources of copyrighted materials in papers, projects and multi-media presentations. Student advocates for legal and ethical behaviors among peers, family, and community regarding the use of technology and information. 21C.O.9-12.3.TT5</p>
	<p>Student discusses how technology is used in the classroom, during leisure time, and for communication with others. 21C.O.PK-2.3.TT6</p>	<p>Student selects appropriate technology tools and resources needed to communicate information to others, to achieve personal goals, and to support independent learning. 21C.O.3-4.3.TT6</p>	<p>Student applies productivity/ multimedia tools and peripherals to support personal productivity, group collaboration, self-directed learning, lifelong learning, and assistance for individuals with disabilities including supplemental assistive technology tools. 21C.O.5-8.3.TT6</p>	<p>Student evaluates and applies technology tools for research, information analysis, problem solving, content learning, decision making, and lifelong learning. 21C.O.9-12.3.TT6</p>
	<p>Student participates in teacher-led discussion about Internet safety and the importance of protecting identity on-line, in email, and/or websites, and of limiting distribution of information and pictures. 21C.O.PK-2.3.TT7</p>	<p>Student identifies need to protect identity online, in email, and/or websites, and the importance of limiting distribution of information/pictures. Student begins to apply strategies for protecting identity online, in email, and on websites. 21C.O.3-4.3.TT7</p>	<p>Student develops an understanding of the need to protect his/her identity online, in e-mail, and or websites, limits the distribution of personal information and pictures, and evaluates the authenticity of e-mail that solicit personal information. Student identifies the methodologies that individuals and businesses can employ to protect the integrity of technology systems. 21C.O.5-8.3.TT7</p>	<p>Student protects his/her identity online and in email and/or websites, limits the distribution of personal information/pictures, and evaluates the authenticity of emails that solicit personal information. Student identifies the methodologies that individuals and businesses can employ to protect the integrity of technology systems. 21C.O.9-12.3.TT7</p>
			<p>Student recognizes personal limits in his/her knowledge and develops strategies and skills for using technology to seek information. 21C.O.5-8.3.TT8</p>	<p>Student uses technology to seek strategies and information to address limits in their own knowledge. 21C.O.9-12.3.TT8</p>