Technology Grade Cluster Expectations

Basic Operations and Concepts

Vermont Standards:	*National Educational Technology Standards (NETS)*
1.19 Students use organizational systems to obtain information from various sources (including libraries and the Internet). 1.20 Students use graphs, charts, and other visual presentations to communicate data accurately and appropriately. 1.18 Students use computers, telecommunications, and other tools of technology to research, to gather information and ideas, and to represent information and ideas accurately and appropriately	➢ Students demonstrate a sound understanding of the nature and operation of technology systems. ➢ Students are proficient in the use of technology.

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	**Advanced**
	ITPK-K:1 Students demonstrate proficiency in the effective use of technology by …	**IT1-2:1 Students demonstrate proficiency in the effective use of technology by…**	**IT3-4:1 Students demonstrate proficiency in the effective use of technology by…**	**IT5-6:1 Students demonstrate proficiency in the effective use of technology by…**	**IT7-8:1 Students demonstrate proficiency in the effective use of technology by…**	**IT9-12:1 Students demonstrate proficiency in the effective use of technology by…**	
Use of Hardware	Using hardware (navigating with a mouse, recognizing and using keys: letters, numbers, and space bar).	Using hardware (Differentiating between right and left mouse click [Windows] or click, hold, and drag [Mac/Windows], recognizing and using keys: letters, numbers, and space bar, shift, return/enter, punctuation, delete/backspace keys)	Using computer hardware (e.g., recognizing and using keys: shift, return/enter, punctuation, delete/backspace, control/command, tab, escape keys)	Using computer hardware (e.g., *Demonstrating* that right clicking [Windows] or clicking, holding, and dragging [Mac/Windows] presents a contextual menu. (ex: right clicking on an image offers a menu of choices about what you want to do with the image), control/command, escape keys)			
			Applying technology skills to learning unfamiliar technologies (e.g., digital cameras, scanners, probes)	Applying technology skills to learning unfamiliar technologies (e.g., digital cameras, scanners, probes)	Applying technology skills to learning unfamiliar technologies (e.g., graphing calculators, digital cameras, scanners, PDAs, probes)	Applying technology skills to learning unfamiliar technologies (e.g., graphing calculators, digital cameras, scanners, PDAs, probes)	
		Using removable media (e.g., floppy disk, CD, DVD, USBport)	Using removable media (e.g., floppy disk, CD, DVD, USB port)	Using removable media (e.g., floppy disk, CD, DVD, USB port)	Using removable media (floppy disk, CD, DVD, USB port)		

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	
Use of Operating System and standard features of applications	**ITPK-K:1 Students demonstrate proficiency in the effective use of technology by** … **NO ASSESSMENT AT THIS LEVEL**	**IT1-2:1 Students demonstrate proficiency in the effective use of technology by …** Launching a program from the desktop using a shortcut or alias. Minimizing applications or windows to place them on the task bar or Dock. Logging in and out of a computer. Creating, opening, saving, and printing a document.	**IT**3-4**:1 Students demonstrate proficiency in the effective use of technology by** … Launching a program from the desktop using a shortcut or alias and using the Start menu/Dock. Using the task bar/Dock to navigate between open windows and applications. Logging in and out of a network. Opening documents from and saving documents to multiple locations (ex: c drive, floppy). Locating files and folders using the Find command. Identifying basic file extensions (ex: .doc, .jpg, .pdf, .gif)	**IT**5-6**:1 Students demonstrate proficiency in the effective use of technology by** … Launching a program by locating it on the internal, external, or network drive. Using the task bar/Dock to navigate between open windows and applications. Opening documents from and saving documents to nested folders. Locating files and folders using the Find command. Saving documents in multiple formats (ex: .doc, .jpg, .pdf). Using electronic Help to solve a problem.	**IT**7-8**:1 Students demonstrate proficiency in the effective use of technology by** … Launching a program by locating it on the internal, external, and network drive. Opening documents from and saving documents to nested folders. Locating files and folders using multiple criteria within the Find command. Saving documents in multiple formats (ex: .doc, .jpg, .pdf). Compressing and decompressing files. Using electronic Help to solve a problem.	**IT**7-8**:1 Students demonstrate proficiency in the effective use of technology by** … Saving documents in multiple formats (ex: .doc, .jpg, .pdf, html, gif). Compressing and decompressing files. Using electronic Help to solve a problem or to learn something new.	

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	
Organization & Navigation	**IT** PK-K**:1 Students demonstrate proficiency in the effective use of technology by …** **NO ASSESSMENT AT THIS LEVEL**	**IT1-2:1 Students demonstrate proficiency in the effective use of technology by …** **NO ASSESSMENT AT THIS LEVEL**	**IT3-4:1 Students demonstrate proficiency in the effective use of technology by …** Creating, naming, and renaming folders. Creating folders within folders (nested folders). Uses shortcuts/alias	**IT5-6:1 Students demonstrate proficiency in the effective use of technology by …** Creating, naming, and renaming folders. Creating folders within folders (nested folders). Copying and moving files and folders Uses shortcuts/alias	**IT7-8:1 Students demonstrate proficiency in the effective use of technology by …** Creating, naming, and renaming folders. Creating folders within folders (nested folders) <u>in a purposeful structure</u>. Copying and moving files and folders <u>Creates</u> shortcuts/alias	**IT9-12:1 Students demonstrate proficiency in the effective use of technology by …** Copying and moving files and folders <u>Creates</u> shortcuts/alias	
Working with Files	**NO ASSESSMENT AT THIS LEVEL**	Cutting, copying, and pasting within a document.	Cutting, copying, and pasting within a document, <u>across documents, and across applications.</u>	Cutting, copying, and pasting within a document, across documents, and across applications. <u>Creating a backup</u>	Cutting, copying, and pasting within a document, across documents, and across applications. Creating a backup.	Creating a backup	

Social, Ethical, & Human Issues

Vermont Standards:	*National Educational Technology Standards (NETS)*
5.14 Students interpret and evaluate a variety of types of media, including audio, graphic images, film, television, video, and on-line resources.	➢ Students understand the ethical, cultural, and societal issues related to technology. ➢ Students practice responsible use of technology systems, information, and software. ➢ Students develop positive attitudes toward technology uses that support life-long learning, collaboration, personal pursuits, and productivity.

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	**Advanced**
Intellectual Property	**ITPK-K:2 Students demonstrate responsible use of technology systems, information, and software by…** **NO ASSESSMENT AT THIS LEVEL**	**IT1-2:2 Students demonstrate responsible use of technology systems, information, and software by…** **NO ASSESSMENT AT THIS LEVEL**	**IT3-4:2 Students demonstrate responsible use of technology systems, information, and software by…** Documenting sources of information obtained through electronic resources (ex: identifying author and URL).	**IT5-6:2 Students demonstrate responsible use of technology systems, information, and software by…** Documenting sources of information obtained through electronic resources using acceptable formats. Demonstrating an understanding of copyright and fair use guidelines for educational purposes.	**IT7-8:2 Students demonstrate responsible use of technology systems, information, and software by…** Documenting sources of information obtained through electronic resources using acceptable formats. Applying copyright and fair use guidelines in student work. Explaining the accuracy and relevancy of the topic	**IT9-12:2 Students demonstrate responsible use of technology systems, information, and software by…** Documenting sources of information obtained through electronic resources using acceptable formats. Comparing and contrasting copyright and fair use guidelines for education and other purposes. Explaining the accuracy and relevancy of the topic.	
Acceptable Use Policy	Describing and practicing responsible use of technology equipment (ex: don't bang on the keyboard).	Describing and practicing responsible use of technology equipment (ex: taking turns using technology equipment).	Describing basic issues related to the responsible use of technology. (ex: appropriate use of email, respect for others' electronic property). Describing personal consequences of inappropriate use.	Exhibiting legal and ethical behaviors when using technology. Describing personal and interpersonal consequences of inappropriate use.	Exhibiting legal and ethical behaviors when using technology. Describing societal consequences of inappropriate use.	Demonstrating and advocating for legal and ethical behaviors among peers and community regarding the use of technology and information.	
Working with Content/ Information	**NO ASSESSMENT AT THIS LEVEL**	**NO ASSESSMENT AT THIS LEVEL**	Articulating why cited internet source(s) are reliable.	Providing examples of relevant, reliable and unreliable internet resources. Analyzing information for reliability.	Comparing and contrasting information found on the internet for relevancy, accuracy, and reliability.	Comparing and contrasting information found on the internet for relevancy, accuracy, and reliability	

Productivity Tools

Vermont Standards:	*National Educational Technology Standards (NETS)*
1.19 Students use organizational systems to obtain information from various sources (including libraries and the Internet). 1.20 Students use graphs, charts, and other visual presentations to communicate data accurately and appropriately. 1.21 Students select appropriate technologies and applications to solve problems and to communicate with an audience. 1.25 tudents employ a variety of techniques to use simulations and to develop models.	➢ Students use technology tools to enhance learning, increase productivity, and promote creativity. ➢ Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Extended
Word processing		**IT1-2:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Entering, selecting, deleting text Manipulating formats (i.e., bold face, italicize and underline).	**IT3-4:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Combining text with pictures on a single page (e.g. inserting clipart) Adding non-textual elements (arrows, lines, shapes, etc.) Manipulating formats (i.e., fonts, style, size, color of text, alignment).	**IT5-6:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Embedding an original piece of art (drawing and digital photograph) applying text wrap and resizing Manipulating formats (e.g. header, footer, borders, page breaks, lists), Using spell check, grammar check and thesaurus Creating a table	**IT7-8:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Manipulating formats (i.e., headers, footers, borders, page breaks, tabs and margins, multiple columns, text boxes) linking text blocks, span multiple columns (e.g.,masthead) Using spell check, grammar check and thesaurus	**IT9-12:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Applying formats (i.e., headers, footers, footnotes/endnotes, borders, page breaks, tabs and margins, multiple columns, text boxes, section breaks, pagination) linking text blocks, span multiple columns to create a complex document (e.g., tri-fold brochure) Using spell check, grammar check and thesaurus Merging from external data source	**IT2:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Creating forms Pagination Table contents Advanced functions Collaborative editing

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Extended
Data bases	Not assessed at this level	**IT1-2:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Not assessed at this level	**IT3-4:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Viewing by single or multiple records Manipulating an existing data base (sorting and searching)	**IT5-6:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Entering data into an existing data base. Manipulating an existing data base (ascending and descending sorting, and searching using single criterio	**IT7-8:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Creating and using a data base, determining type of data, entering, sorting, searching, querying using multiple criteria)	**IT9-12:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Creating and using a data base, determining type of data, entering, sorting, searching, querying using multiple criteria) Generating a report	**IT:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Creating a relational database,
Spread-sheets	Not assessed at this level	Not assessed at this level	Entering data into a spreadsheet template Explaining the relationship between data and visual representation (graph) Creating a graphical representation of numerical data (bar and line)	Creating a spreadsheet from a blank page, including simple formulas and simple functions (SUM and AVG) Manipulating format (i.e. resizing rows and columns, font, colors, hiding grid) Creating a graphical representation of multiple series of numerical data (bar, line, pie)	Creating a spreadsheet from a blank page, including formulas and functions (MEDIAN, MODE, ROUND), formatting cells (e.g. numeric, monetary, percent, values) Manipulating format (i.e. resizing rows and columns, font, colors, hiding grid) Creating a graphical representation appropriate to the numerical data (e.g., scatter plot, x-y)	Creating a spreadsheet from a blank page, including formulas and functions (MIN, MAX, ROUND), formatting cells (e.g. numeric, monetary, percent, values) Documenting spreadsheets with named cells and comments Creating a graphical representation appropriate to the numerical data (e.g., scatter plot, x-y) Referencing formulas from other worksheets	Regression analyses Statistical functions Cross tabs (pivot table)

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Extended
	ITPK-K:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by… Not assessed at this level	**IT 1-2 :3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Not assessed at this level	**IT 3-4:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Illustrating a simple concept using a paint application showing evidence of the following: paint brush; line; rectangle & oval tools; flood fill; line thickness, brush shapes, colors, etc.	**ITP 5-6:3 Students use technology/ productivity tools to enhance learning, increase productivity, and promote creativity by…** Creating original illustrations using paint and draw applications Comparing and contrasting the uses of a paint and a draw application Modifying a digital image using flip; rotate, resize, crop Saving graphic images in multiple formats (e.g., .jpg, tif, gif)	**IT 7-8:3 Students use technology/productivity tools to enhance learning, increase productivity, and promote creativity by…** Selecting and using a draw or paint application appropriate for the task. Modifying a digital image using flip, rotate, resize, crop, select, copy and paste Selecting and saving images in the appropriate format (e.g., jpg, tif, gif)	**IT 9-12:3 Students use technology/productivity tools to enhance learning, increase productivity, and promote creativity by…** Selecting and using a draw or paint application appropriate for the task. Modifying a digital image using flip, rotate, resize, crop, select, copy, paste Selecting, saving and converting images in the appropriate format (e.g., jpg, tif, gif)	Filters layers
Visual organizer	Not assessed at this level	Entering information into a teacher created visual organizer template (e.g. concept map)	Illustrating a simple concept using a visual organizer (e.g., concept map, web, bubble, etc.)	Illustrating, using a visual organizer, a concept with topic and sub-topics, selecting different shapes and colors to differentiate various levels or processes (e.g., concept map, web, bubble, flow chart)	Illustrating, using a visual organizer, a variety of relationships, ideas and topics (e.g. cause and effect, venn diagram, organizational charts, flow chart) Importing an illustration into a visual organizer Linking an element in the visual organizer to appropriate files and URL(s)	Choosing and creating effective visual organizer to illustrate a variety of relationships, ideas and topics (e.g. cause and effect, venn diagram, organizational charts, flow chart) Importing an illustration into a visual organizer Linking an element in the visual organizer to appropriate files and URL(s)	
Calculators			Using grade appropriate calculator and applications/functions (e.g. basic operations)	Using grade appropriate calculator and applications/functions (e.g. basic operations, fraction-decimal conversion, percentage)	Using a graphing calculator and grade appropriate applications/ functions (e.g., graphing, statistics, tables)	Using a graphing calculator and grade appropriate applications/ functions (e.g., graphing, statistics, tables, equations, matrix)	

Communication

Vermont Standards:	*National Educational Technology Standards (NETS)*
1.17 Students interpret and communicate using mathematical, scientific, and technological notation and representation. 1.19 Students use graphs, charts, and other visual presentations to communicate data accurately and appropriately. 1.11 Students select appropriate technologies and applications to solve problems and to communicate with an audience. 5.15 Students design and create media products that successfully communicate.	➢ Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences. ➢ Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Advanced
Multi-media	**ITPK-K:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Not assessed at this level	**IT1-2:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Identifying components of multi-media presentations (e.g. title, transitions, sound effects, animation, text and graphics)	**IT3-4:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Creating a linear slide presentation including title slide, graphics, text, voice, sound related to topic and documentation of sources	**IT5-6:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Creating a non-linear presentation including title slide, graphics, text, voice, sound related to topic, scanned or digital photo, animation, bibliography and table of contents	**IT7-8:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Creating a non-linear presentation including title slide, graphics, text, voice, sound related to topic, scanned or digital photo, animation, bibliography and table of contents, video clip	**IT9-12:4 Students demonstrate the use a variety of media and formats to communicate information and ideas effectively to multiple audiences by…** Creating a non-linear presentation including title slide, graphics, text, voice, sound related to topic, scanned or digital photo, animation, bibliography and table of contents, video clip	Creating a video presentation that includes still images, original video footage, narration, titles, transitions, multiple audio tracks, slow motion, and pre/post production techniques, over-dubs

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Advanced
Web Publishing	**IT PK-K:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…** Not assessed at this level	**IT 1-2:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…**	**IT 3-4:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…** Comparing the Internet and the World Wide Web Describing a web page, home page and website Using hyperlinks to navigate on the internet Saving web addresses as bookmarks or favorites (or in another document) Using navigational tools of web browser (forward, back, home, search)	**IT 5-6:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…** Demonstrating understanding the components of a web address (e.g. ~, /, .edu, .com, .gov, etc.) Manipulating text, resizing graphics, formatting tables and creating links on a web page.	**IT 7-8:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…** Manipulating text, resizing graphics, formatting tables and creating relative and absolute links on a web page.	**IT 9-12:5 Students use telecommunication to collaborate, publish, and interact with peers, experts and other audiences by…** Incorporating tables, hyperlinks, sound elements, graph imported from a spreadsheet, original digital picture s Optimizing graphics for web pages for loading over slow Internet connections.	Original animations forms mouseovers Compressing files and publishing to their web page

Problem Solving, Research, Decision Making

Vermont Standards:	*National Educational Technology Standards (NETS)*
1.12 Students use organizational systems to obtain information from various sources (including libraries and the Internet). 1.13 Students select appropriate technologies and applications to solve problems and to communicate with an audience. 2.2 Students use reasoning strategies, knowledge, and common sense to solve complex problems related to all fields of knowledge. 2.3 Students solve problems of increasing complexity. 5.14 Students interpret and evaluate a variety of types of media, including audio, graphic images, film, television, video, and on-line resources.	➢ Students use technology to locate, evaluate, and collect information from a variety of sources. ➢ Students use technology tools to process data and report results. ➢ Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks. ➢ Students use technology resources for solving problems and making informed decisions. ➢ Students employ technology in the development of strategies for solving problems in the real world.

Organizer	PreK K	1-2	3-4	5-6	7-8	9-12	Advanced
Digital Resources -	**ITPK-K:6 Students demonstrate use of technology for research by…** Not assessed at this level	**IT1-2:6 Students demonstrate use of technology for research by…** Not assessed at this level	**IT3-4:6 Students demonstrate use of technology for research by…** Accessing information from a workstation, LAN or Internet-based electronic encyclopedia. Using multiple resources including: - Library catalog, - Electronic resources, & - Internet web pages	**IT5-6:6 Students demonstrate use of technology for research by…** Locating information that is accurate, relevant, appropriate, and free of bias (opinion vs. fact) using a variety of electronic resources including digital encyclopedias, specialized CDs and the Internet.	**IT7-8:6 Students demonstrate use of technology for research by…** Locating information that is accurate, relevant, appropriate and free of bias (opinion vs. fact) using a variety of electronic resources including digital encyclopedias, specialized CDs and the Internet.	**IT9-12:6 Students demonstrate use of technology for research by…** Locating information from specialized online databases (e.g. post-secondary resources, virtual libraries, periodical databases, and others).	Engage in on-line courses and other individualized learning opportunities
Searching & Search engines	Not assessed at this level	Not assessed at this level	Preparing a search off-line using a template provided by the teacher. Using a search engine determined by the teacher, implementing the search strategy developed and locating pertinent information.	Preparing a search off-line without using a teacher-prepared template Implementing a search strategy using Boolean logic. (e.g., and, or, not)	Comparing and contrasting; directory, search engine and meta-search engine Implementing a search strategy using Boolean logic (e.g., and, or, not, near)	Select an appropriate tool for locating information on the Internet. Implementing a search strategy using full Boolean logic with parentheses, e.g., *behavior and (cats or felines)*	

Organizer	PK-K	1-2	3-4	5-6	7-8	9-12	Extended
Browser	**ITPK-K:6 Students demonstrate use of technology for research by…** Not assessed at this level	**IT1-2:6 Students demonstrate use of technology for research by…** Not assessed at this level	**IT3-4:6 Students demonstrate use of technology for research by…** Navigating to various websites by typing a URL into a browser or using a list of links identified by the teacher Navigating using forward back, home and refresh Student understands the concept of HOME and can navigate to it using the button bar.	**IT5-6:6 Students demonstrate use of technology for research by…** Bookmarking sites relevant to their research and organizing sites into categories.	**IT7-8:6 Students demonstrate use of technology for research by…** Exporting and importing bookmarks/favorites and organizing sites into categories.	**IT9-12:6 Students demonstrate use of technology for research by…** Exporting and importing bookmarks/favorites and organizing sites into categories.	**IT:6 Students demonstrate use of technology for research by…**
Problem Solving and Decision Making	**ITPK-K:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Not assessed at this level	**IT1-2:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Not assessed at this level	**IT3-4:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Discussing and justifying decisions made, e.g. representing data, formatting, criteria for search, visual organizer	**IT5-6:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Discussing and justifying decisions made, e.g. representing data, formatting, setting up a formula, criteria for search, visual organizer	**IT7-8:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Discussing and justifying decisions made, e.g. representing data, formatting, setting up formula, criteria for search Creating and using simulations or models, e.g., spreadsheet to design what if scenarios	**IT9-12:7 Students demonstrate using technology to process data, solve problems, report results, and make decisions by…** Discussing and justifying decisions made, e.g. representing data, formatting, setting up formula, criteria for search Creating and using simulations or models, e.g., spreadsheet to design what if scenarios	Programming, electronic role playing, storyboarding