

This document is intended to provide guidance as to what computer skills students should know and be able to do *independently* at various levels (basic, intermediate, proficient) with specific types of software applications to enable them to access, manage, integrate, evaluate, create and communicate information. These skills should not be taught in isolation but should be applied when meeting learning outcomes in the content areas.

- Basic – Foundational computer literacy skills
- Intermediate – Computer literacy and competency beyond the foundational level
- Proficient – Computer literacy and competency beyond the intermediate level applied in educational and work settings.

It is not the intent of this document to identify the grade level that the skill should be taught, but rather to define a skill set that a student would have at the various levels. These levels may change depending on the software application. A student could be intermediate in word processing but basic in visual organizers. Throughout the standards, reference will be made to the level or skill set a student would need to complete that standard. The coding can be found at the end of each category or in the Legend document. When reference is made to a level, it means that the skills the student will need would be found in that level, not that a student will necessarily need every skill in that level. For example, if a task were identified as SI or Spreadsheet Intermediate, it means that the task will require a skill found in the intermediate skill set. The student wouldn't need to know every skill in the intermediate skill set, but at least one of those skills would be necessary to complete the task. It also means that students wouldn't need any of the skills listed in a higher level, in this case the Proficient level or SP. The coding always indicates the highest level a student would need to meet the objective.

Because this document is specific to types of software applications, it does not address some concepts important to educational technology such as universal design and keyboarding. While not specifically addressing these concepts, they are important enough that some statement should be made about them. In some cases the concepts are addressed in greater detail in the standards.

The concepts of Universal Design for Learning should be incorporated when planning for the use of technology in instruction. UDL concepts, when applied to technology, include technology specifically designed to meet a specific learning accommodation (such as text readers and board makers) as well as common features of technology tools (such as the ability to increase font size) that help all students learn. There is no specific category for assistive technology tools because the need of an individual student will determine the need for the technology.

Keyboarding is a foundational skill largely related to motor skills. Students should be able to keyboard effectively in order to take full advantage of computer technology, however, it is up to the individual school systems to determine the appropriate age to begin keyboarding instruction. Issues around keyboarding, such as proper posture when using a computer, are included in Standards 1 and 2.

Students are expected to use technology in an ethical manner including following their school systems ethical use policies. Ethical use of technology is further explained in Standard 2.

Design principles need to be taken into consideration when creating products. Design principles are included in Standard 4 and 5.



Computer Literacy Skills

A Companion to the Maryland Technology Literacy Standards for Students

Computer Use

Basic	Intermediate	Proficient
<ul style="list-style-type: none">• Log on and off the computer• Power on and off the computer• Open and close applications• Open, save and close files• Print documents• Identify parts of a computer<ul style="list-style-type: none">○ Computer (CPU)○ Monitor○ Mouse/trackpad○ Keyboard○ CD/DVD drive○ Printer○ Headphones○ Microphone○ Speakers• Use input device (e.g., mouse)<ul style="list-style-type: none">○ Point○ Select/click or double click○ Click/select and hold○ Drag and drop• Move cursor• Type/enter letters and numbers• Recognize and use icons to perform computer and software functions• Use special function keys<ul style="list-style-type: none">○ Delete○ Shift○ Arrow keys○ Space○ Return/enter	<ul style="list-style-type: none">• Locate and retrieve files in various directories• Save the same file in multiple locations (flash drive, My Documents, network folders)• Recognize and save files in various formats (.bmp, .jpg, .pdf, .html, etc.)• Create folders to organize files• Rename files• Delete files• Select appropriate printer and print• Choose appropriate page setup features• Use multiple ways to accomplish the same task including keyboard shortcuts, icons and menus• Use input device (e.g., mouse)<ul style="list-style-type: none">○ Select/right click• Use peripheral devices such as scanners, digital cameras, and projection devices• Multitask by using Task Bar and or minimize/maximize command or icon• Use special function keys<ul style="list-style-type: none">○ Page up/down○ Home/end• Troubleshoot common technology problems<ul style="list-style-type: none">○ Printer queue○ Not connected to the network	<ul style="list-style-type: none">• Attach and use peripheral devices such as scanners, digital cameras, media storage (e.g., flash drive), and projection devices• View file properties to determine memory size• Locate and use accessibility features, as needed<ul style="list-style-type: none">○ Magnifier○ Sticky keys• Multitask in a variety of ways• Save a compressed file (.zip)



Computer Literacy Skills

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<ul style="list-style-type: none">○ Escape○ Backspace○ Multi-key functions (CTRL/Alt/Del)○ Caps Lock● Use/Adjust volume controls● Insert and eject media input devices (CD/DVD)● Troubleshoot common technology problems<ul style="list-style-type: none">○ Printer<ul style="list-style-type: none">○ Out of paper or toner○ Computer<ul style="list-style-type: none">○ Power cords○ Network connections○ Peripheral connections		
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CUB = Computer Use Basic, CUI = Computer Use Intermediate, CUP = Computer Use Proficient

Using and Creating Databases

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Open an existing database file • Enter data in a content related database using a database template or form • Search for specific data/information by field • Preview and print a datasheet 	<ul style="list-style-type: none"> • Edit data in existing database records • Modify database fields • Add and delete records • Create a new database from design view, data view, or using a wizard • Define database fields in a record • Set field attributes • Manage headers and footers • Use the find and sort functions 	<ul style="list-style-type: none"> • Insert graphics/digital files, etc. into field type • Use the show and hide functions • Create a query • Filter data • Generate a report of data gathered from database sources

DB = Database Basic, DI = Database Intermediate, DP = Database Proficient

Using Digital Imaging Tools

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Use tools to create original images • Change image colors and patterns • Add text to describe an image • Save or download digital images to a computer • Change the size or shape of an object • Change the pattern or color of an object • Rotate and flip objects 	<ul style="list-style-type: none"> • Create original or edit existing images • Use the crop tool to cut or trim an image • Use the attributes/properties options to modify an image • Import a digital image into a document or presentation • Insert, move, and resize an image in a document or presentation • Use a scanner or digital camera to generate an image • Recognize and save image files in various formats (.bmp, .gif, .tif, .jpg, .pdf, .html, etc.) 	<ul style="list-style-type: none"> • Adjust pixels and resolution of an image to adjust quality and file size • Edit photos and images • Create and edit movies and animations



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DIB = Digital Imaging Basic, DII = Digital Imaging Intermediate, DIP = Digital Imaging Proficient

Using Email

Basic	Intermediate	Proficient
<ul style="list-style-type: none">• Apply communication skills and netiquette• Read an email• Compose and send an email• Reply to a message• Delete an email	<ul style="list-style-type: none">• Apply communication skills and netiquette• Use "reply all"• Add an attachment• Save an attachment• Use carbon copy	<ul style="list-style-type: none">• Apply communication skills and netiquette• Create an address/distribution list• Use blind carbon copy• Organize emails into folders

EB = Email Basic, EI = Email Intermediate, EP = Email Proficient

Creating Multimedia Presentations

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Apply pre-production organizational concepts (such as storyboarding and visual organizers) • Open and close a presentation or presentation template • Save a presentation file • Create an original presentation or use a template • Rearrange slides using slide sorter or a storyboard feature to organize a presentation • Choose a slide format • Use icons and menus • Type/enter text or create a text box • Change <ul style="list-style-type: none"> ○ Font size ○ Font type ○ Style or effects (bold, underline, etc.) ○ Color • Cut, copy, and paste text • Use undo and redo icons • Select and resize graphics, pictures, clip art • Select multimedia clips or sounds • Create a new file using Save As • Use page setup • Print • Use slide show tool 	<ul style="list-style-type: none"> • Select slide transitions and animations • Insert graphics, clip art, sounds, and multimedia files (including narration) • Format text <ul style="list-style-type: none"> ○ Double spacing ○ Bullets ○ Numbers ○ Alignment ○ Indentation ○ Outlining ○ Columns ○ Text direction ○ Text art • Modify the background and layout of presentation slides • Use the spell check, grammar check, and thesaurus • Use find, change, and replace tools • Apply principles and elements of graphic design • Use tools to rotate, edit, or highlight text • Insert objects such as graphs, charts, and spreadsheets • Insert hyperlinks • Use print preview • Print audience handouts to support a multimedia presentation • Insert page/slide numbers • Manage headers and footers 	<ul style="list-style-type: none"> • Edit master slide(s) • Adjust presentation timing, action buttons, and looping • Import animations, sounds, and multimedia from other files/applications (such as background music and visual organizers) • Create presentations using navigation buttons and non-linear design • Work in various modes/views (such as outline, notes, and presentation) • Save presentations in other formats (such as HTML) • Use function keys and keyboard shortcuts • Adjust page/slide views • Troubleshoot formatting problems -- use Help feature • Modify tool bars to reflect current use for tool(s) • Format text using <ul style="list-style-type: none"> ○ Spacing ○ Line spacing ○ Margins ○ Tabs

Using and Creating Spreadsheets

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Select a cell • Enter data into a cell • Format cells and data <ul style="list-style-type: none"> ○ font size ○ style ○ color ○ alignment ○ decimal places ○ Currency ○ date/time ○ percent • Create a basic chart or graph 	<ul style="list-style-type: none"> • Select multiple cells • Insert, delete, and format cells, rows, or columns • Format, move, and copy cells, rows, or columns <ul style="list-style-type: none"> ○ Width ○ height ○ color • Manage headers and footers • Select appropriate graph and elements to display data • Use sort option (ascending and descending) • Use simple formulas such as sum and average/mean • Use editing tools such as fill down and fill across • Set print area and print spreadsheets and graphs • Insert charts and graphs into other documents • Apply principles and elements of data analysis 	<ul style="list-style-type: none"> • Create and use spreadsheets for assessment, productivity, and problem solving • Create complex formulas such as median, mode, and percentage • Use advanced graph features and elements to display data • Import or insert other digital elements into the spreadsheet (graphics, movies, objects, etc.) • Use filter option • Use the hide and show options • Save in other formats such as .html, .pdf, etc.

SB = Spreadsheets Basic, SI = Spreadsheets Intermediate, SP = Spreadsheets Proficient

Using and Creating Visual Organizers

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Apply organizational and outlining principles to choose an organizer for a given task • Add information to an existing visual organizer (web, table, timeline, etc.) • Edit information on a visual organizer (Web, timeline, etc.) • Use tools to create original visual organizers • Select shapes or graphics to represent ideas • Use the available text boxes or insert text tool to label organizer components • Show relationships by adding or modifying <ul style="list-style-type: none"> ○ Color ○ Shapes ○ Links ○ Size ○ Sort ○ Arrows ○ Patterns 	<ul style="list-style-type: none"> • Apply organizational and outlining principles to choose an organizer for a given task • Create a visual organizer • Insert hyperlinks to Web sites or other files • Use various modes to organize ideas, such as picture-based, text-based, and outlines • Import an image into a visual organizer • Insert sounds and multimedia files (including narration) or use the text-to-speech feature 	<ul style="list-style-type: none"> • Apply organizational and outlining principles to choose an organizer for a given task • Save image files in various formats (.bmp, .gif, .tif, .jpg, .html, etc.)

VOB = Visual Organizers Basic, VOI = Visual Organizers Intermediate, VOP = Visual Organizers Proficient

Using and Creating Web pages

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Apply digital citizenship principles • Launch a Web browser • Point and click on a hyperlink • Locate and use bookmarks • Use basic navigation buttons <ul style="list-style-type: none"> ○ Back ○ Forward ○ Home ○ Refresh ○ Stop • Use scrollbar and sidebars to navigate a Web site • Create Web/hypertext links • Copy images or documents from a Web site 	<ul style="list-style-type: none"> • Apply digital citizenship principles • Access a Web page from bookmarks or by typing in the URL • Complete forms online including log in information to subscription sites • Create bookmarks to organize browsed pages • Understand the differences among the domain names <ul style="list-style-type: none"> ○ .com ○ .gov ○ .edu ○ .org • Save or copy images or documents from a Web site • Conduct a Web search • Create Web pages/documents 	<ul style="list-style-type: none"> • Apply digital citizenship principles • Refine Web searches using Boolean operators • Use discussion boards • Use the History feature to access recently visited sites • Create Web sites

WBB = Web Browser Basic, WBI = Web Browser Intermediate, WBP = Web Browser Proficient

Using Word Processing & Desktop Publishing

Basic	Intermediate	Proficient
<ul style="list-style-type: none"> • Start a new document • Save a document • Use icons and menus • Type or enter text • Complete a template or fill in a table • Select text and change <ul style="list-style-type: none"> ○ Font size ○ Font type ○ Style or effects (bold, underline, etc.) ○ Color • Cut, copy, and paste text • Use undo and redo icons • Select and resize graphics, pictures, clip art • Select multimedia clips • Create a new file using Save As • Use page setup and print preview • Print 	<ul style="list-style-type: none"> • Format text, lists, or paragraphs for <ul style="list-style-type: none"> ○ Double spacing ○ Bullets ○ Numbered lists ○ Alignment ○ Indention ○ Poetic forms ○ Outlining ○ Columns ○ Text direction ○ Text art ○ Word wrap • Use the spell check, grammar check, and thesaurus • Apply principles and elements of graphic design • Use find, change, and replace tools • Use tools to rotate, edit, or highlight text • Insert graphics and clip art • Insert text boxes • Create page borders • Insert hyperlinks to Web sites or other files • Create columns and tables • Use sort tool (ascending and descending) • Use number keys or number pad for mathematical functions 	<ul style="list-style-type: none"> • Insert and edit tables and table layout (borders, shading, column width, etc.) • Insert animation • Insert sound • Insert spreadsheets, graphs, and charts • Insert formulas • Save as another format such as RTF, PDF, or HTML • Use function keys and keyboard shortcuts • Adjust page views • Troubleshoot formatting problems -- use Help feature • Modify toolbars to reflect current use or purpose for tool(s) • Use track changes and comments tools • Customize options and preferences in specific software • Format text using <ul style="list-style-type: none"> ○ Spacing ○ Line spacing ○ Justification ○ Margins ○ Tabs



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	<ul style="list-style-type: none"> • Use print preview • Use word count tool • Insert page numbers • Manage headers and footers • Use program-specific templates and stationery 	
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WPB = Word Processing Basic, WPI = Word Processing Intermediate, WPP = Word Processing Proficient

Learning Management Systems/Online Learning Communities

	<ul style="list-style-type: none"> • Participate as part of an online learning community -- (Communication Standard?) • Use a Learning Management System (Communication Standard?) 	
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Advanced Computer Skills

	<ul style="list-style-type: none"> • Participate as part of an online learning community -- (Communication Standard?) • Use a Learning Management System (Communication Standard?) • Insert voice comments in word processing and desktop publishing documents 	
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The following is a suggested implementation of computer literacy skills. The chart is meant as a guide and is not intended to define in which grades skills must be taught.

		6 – 8
	3 – 5	
PreK – 2	This section identifies areas where students can extend their usage	
Basic	Intermediate	Proficient