

Computer Literacy

Knowledge and Skill
Development Continuum

May 2022



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Computer Literacy Knowledge and Skill Development Continuum

The following resource is intended to support districts to ensure students receive developmentally appropriate opportunities to gain computer literacy skills at each grade level. The continuum of computer literacy skills for K-12 was created by a working group convened by ISBE.

Beginning with the 2022-23 school year, all school districts shall ensure that students receive developmentally appropriate opportunities to gain computer literacy skills at each grade level K-12. Additionally, students entering ninth grade in the 2022-23 school year and each school year thereafter must participate in one year of a course that includes intensive instruction in computer literacy, which may be English, social studies, or any other subject and that may be counted toward the fulfillment of other graduation requirements.

Basic Operations, Concepts, and Keyboarding

Students understand the fundamental concepts of operations and the various technology devices. They also leverage technology to set and demonstrate competency in their learning goals.

Students will be able to build their fine motor skills, along with increasing hand-eye coordination, as they begin to demonstrate the ability to use basic keyboard functions and touchscreen devices.

Beginning – Concept or skill is introduced by the teacher. With guidance and support, the student will practice or apply the skill or concept.

Developing – With minimal support, the student can apply the skill or concept.

Secured – Without support, the student can independently apply the skill or concept.

B=Beginning D=Developing S=Secured

Basic Operations, Concepts, and Keyboarding (BOCK)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.BOCK.1 Identify the basic components of the computing device, whether a computer, laptop, or hand-held device (e.g., monitor/screen, keyboard, mouse/trackpad, ports, power source).	B	D							S				
CL.BOCK.2 Turn on/off a computing device and follow appropriate procedures to access the device.	B	D							S				
CL.BOCK.3 Use a mouse or trackpad to manipulate shapes and icons; navigate within applications (e.g., click on hyperlinks, radio buttons, check boxes, use scroll bars).	B	D							S				
CL.BOCK.4 Use desktop icons, windows, and menus to open, minimize, and close applications or files.			B			D				S			
CL.BOCK.5 Use shortcuts and command functions to operate the computer or applications (e.g., Command-P, Command-C, Command-V, Command-Z, Ctrl-Alt-Delete, etc.).		B		D						S			
CL.BOCK.6 Use gestures to navigate hand-held devices (e.g., swipe-left, swipe-right, pinch, etc.).	B		D							S			
CL.BOCK.7 Locate and utilize accessibility features.		B		D							S		
CL.BOCK.8 Use application help functions and online resources to solve basic operational issues (e.g., connecting to Bluetooth devices, finding a printer, internet connectivity) independently.			B		D					S			
CL.BOCK.9 Use proper posture and ergonomics while using a computing device, including hand-held devices.	B	D							S				
CL.BOCK.10 Locate and use the correct finger/hand for the space bar, return/enter, and shift key.	B	D							S				
CL.BOCK.11 Locate and use letter and number keys with correct left and right hand placement (home row).	B	D							S				
CL.BOCK.12. Learn to use special characters as needed (e.g., accents, tilde).		B	D							S			

Basic Operations, Concepts, and Keyboarding (BOCK)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.BOCK.13 Use a calendar, task manager, or other tools to organize oneself as well as manage projects.			B			D				S			
CL.BOCK.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, online slides).	B			D						S			
CL.BOCK.15 Understand all rules and guidelines in the school's Acceptable Use Policy.	B					D					S		
CL.BOCK.16 Understand Fair Use guidelines and their application to all forms of work.			B				D				S		
CL.BOCK.17 Demonstrate understanding of the difference between cloud computing vs. software applications for file storage/management.			B			D				S			
CL.BOCK.18 Use login credentials to access network devices, accounts, file servers, and cloud services.		B				D				S			
CL.BOCK.19 Name files with appropriate file names and understand where files are being saved.			B				D				S		
CL.BOCK.20 Create, save, edit, copy, and rename files and folders to organize files and materials.				B				D			S		
CL.BOCK.21 Delete and recover deleted files and folders and permanently delete files.				B				D			S		
CL.BOCK.22 Retrieve previous file versions/access revision history for files located in cloud services.					B				D			S	
CL.BOCK.23 Download, upload, attach files/folders via the web, email, or cloud services.					B				D			S	
CL.BOCK.24 Compress files and folders via the web, email, or cloud services.						B			D			S	
CL.BOCK.25 Use search tools to locate files and applications.		B				D					S		
CL.BOCK.26 Associate document extensions with appropriate file types.				B			D					S	

Data Management and Security

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.

Students will be able to plan, implement, and monitor cyber security measures to ensure system and account protection.

Data Management and Security (DMS)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.DMS.1 Protect accounts by logging out of applications on shared computing devices.		B				D					S		
CL.DMS.2 Use passwords/passphrases to secure individual devices.		B				D					S		
CL.DMS.3 Create robust passwords/passphrases and effectively manage password privacy.			B			D					S		
CL.DMS.4 Keep passwords confidential and follow appropriate procedures if a password is compromised.		B				D					S		
CL.DMS.5 Adjust privacy settings on all social media accounts, online services, devices, and browsers.						B			D			S	
CL.DMS.6 Apply appropriate login credential security and privacy principles to demonstrate effective and safe use of online and mobile applications to make payments.			B				D					S	

Data Management and Security (DMS)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.DMS.7 Identify when sensitive personal data that may include email, phone, and online banking/credit or debit card information has been compromised and follow appropriate procedures to secure.					B	D			S				
CL.DMS.8 Effectively apply and use multi-factor authentication services and applications to secure sensitive information and files.								B		D	S		
CL.DMS.9 Understand the difference between public and private data and the considerations when determining privacy settings to apply for specific applications.				B	D			S					
CL.DMS.10 Use digital tools to follow appropriate procedures for identifying one's own digital footprint and demonstrate an understanding of managing the digital footprint.		B	D					S					
CL.DMS.11 Distinguish between safe and unsafe practices when using online applications (e.g., gaming platforms, social media, virtual discussion platforms).		B	D							S			

Internet Searching and Online Databases

Students will use media literacy skills, civic-developed skills, and strategies to evaluate digital tools and resources to research a topic, organize information, and share their findings with others.

Internet Searching and Online Databases (ISOD)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.ISOD.1 Use refresh, forward, and back buttons to navigate a web browser.		B	D	S									
CL.ISOD.2 Use tab browsing to navigate multiple pages.		B	D	S									
CL.ISOD.3 Create favorites/bookmarks and add frequently used sites to the favorites/bookmark bar.			B	D			S						
CL.ISOD.4 Locate the URL of a website and identify the characteristics of different domains (e.g., .org, .com, .edu, .net, .gov, international domains).		B	D			S							
CL.ISOD.5 Use browser search tools and advanced search features to find information (e.g., search terms, compound operators, quotation marks around search query).		B	D			S							
CL.ISOD.6 Use a browser's History feature to locate previously visited sites.			B	D			S						
CL.ISOD.7 Exercise click restraint (scan results before clicking on first or early search results).			B	D			S						
CL.ISOD.8 Use digital tools or platforms to organize, display, annotate, and/or share a curated collection.					B	D			S				
CL.ISOD.9 Conduct an image search. (e.g., the Google Reverse Image tool, TinEye, geolocating, Google Street view).							B		D	S			
CL.ISOD.10 Use digital tools, search engines, and video sites [e.g., YouTube] to determine how to perform an unfamiliar or unknown task.		B	D			S							

Multimedia, Software Applications, and Collaboration Tools

Students demonstrate creative thinking and problem-solving within a design process to create original works as a means of personal or group expression.

Students use digital tools to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

Multimedia, Software Applications, and Collaboration Tools (MSACT)	K	1	2	3	4	5	6	7	8	9	10	11	12
CL.MSACT.1 Use digital devices to capture multimedia (e.g., audio, video, and photo).	B		D							S			
CL.MSACT.2 Use multimedia-editing tools to edit multimedia files (e.g., add effects, trim, splice).		B				D				S			
CL.MSACT.3 Identify the differences among multimedia file types and save multimedia files (e.g., video, audio, photo) in multiple formats.					B		D			S			
CL.MSACT.4 Use application features to copy/paste or insert/import and format text and graphics within documents and multimedia presentation files.		B			D					S			
CL.MSACT.5 Copy/paste, import, and embed songs, videos, hyperlinks, or other media on a multimedia presentation or document.			B			D				S			
CL.MSACT.6 Use basic drawing tools, including pencil, paint brush, shape, line, undo, redo, and eraser.	B		D							S			
CL.MSACT.7 Use color palette/color wheel to change tool color.	B	D								S			
CL.MSACT.8 Use advanced color editing tools, such as RGB, HEX codes, and eyedropper, to change to a color.					B		D			S			
CL.MSACT.9 Use selection tools to copy, paste, move, and modify work.			B			D				S			
CL.MSACT.10 Use text tools to add text features to artwork.	B	D								S			
CL.MSACT.11 Use email, messaging, and other interactive tools and apps to share information through text and communicate in writing.			B			D				S			
CL.MSACT.12 Set up, share, and utilize collaborative workspaces, files, or other digital tools for asynchronous and synchronous collaboration.			B			D				S			
CL.MSACT.13 Use synchronous audio and visual collaboration tools, such as virtual/video conferencing, interactive television, and Voice over Internet Protocol, to connect with others.	B					D				S			
CL.MSACT.14 Create and maintain a digital portfolio or collection of works related to one's learning.	B						D				S		

Examples of Content Standards and Computer Literacy Integration

Social Studies

Grades K-5

- **SS Content Standard:** SS.3.H.1. Create and use a chronological sequence of related events to compare developments that happened at the same time.
- **SS Inquiry Standard:** SS.3-5.IS.4. Gather relevant information and distinguish between fact and opinion to determine credibility of multiple sources.
 - **Learning Activity Example:** Students will use library resources and media and an online timeline generator to develop a chronological timeline of events related to the development of the U.S. Constitution.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCC.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, PowerPoint, and Google Slides, etc.).
 - CL.MSAC.5 Create, edit, and format text, visuals, and audio within a multimedia presentation.

Grades 6-8

- **SS Content Standard:** SS.6-8.H.1.LC. Identify and describe the contexts of a series of historical events and developments as examples of change and/or continuity based on the perspectives of multiple diverse groups.
- **SS Inquiry Standard:** SS.6-8.IS.4.LC. Determine the value of sources by evaluating their relevance and intended use.
 - **Learning Activity Example:** Students will use various primary and secondary sources to reconstruct a timeline of a sequence of events representing the importance of the American Revolutionary War.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCC.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, PowerPoint, and Google Slides, etc.).
 - CL.MSAC.5 Create, edit, and format text, visuals, and audio within a multimedia presentation.

Grades 9-12

- **SS Content Standard:** SS.9-12.H.1. Evaluate the context of time and place as well as structural factors that influence historical developments.
- **SS Inquiry Standard:** SS.9-12.S.4. Determine the kinds of sources that will be helpful in answering compelling and supporting questions, taking into consideration multiple points of view represented in the sources, the types of sources available, and the potential uses of the sources.
 - **Learning Activity Example:** Students will use various primary and secondary resources to create a digital media campaign to highlight the contributions of multiple civic actors during the civil rights movement.
 - **CL Knowledge and Skill Alignment:**
 - CL.ISOD.8 Use digital tools or platforms to organize, display, annotate and/or share a curated collection. (e.g., a Jamboard, online drawing tool, PowerPoint, and Google Slides, etc.)
 - CL.MSAC.14 Create and maintain a digital portfolio or collection of works related to one's learning.

Science

Grades K-5

- **Building Towards** 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
- **Building Towards** 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms survive well, some survive less well, and some cannot survive at all.
 - **Learning Performance:** Students will obtain, evaluate, and communicate information from family stories about how squirrels and prehistoric organisms interact with their environment (through the lenses of cause and effect and systems and system models).
 - **Learning Activity Example:** Students will create a multimedia presentation (e.g. Google Slides, PowerPoint, etc.) based off family interviews they conducted. Interviews will be about family members experiences with squirrels, prehistoric organisms, or fossils. After each student shares their presentation, the class will create a notice and wondering statement based around the information shared. The notice and wondering statements will be used to create class questions for the Driving Question Board (DQB).
 - **CL Knowledge and Skill Alignment:**
 - CL.ISOD.8 Use digital tools or platforms to organize, display, annotate and/or share a curated collection.

- CL.MSAC.1 Use digital devices to capture multimedia (audio, video, and photo).
- CL.MSAC.2 Use multimedia-editing tools to edit multimedia files (e.g., add effects, trim, splice).
- CL.MSAC.15 Use digital tools to engage with other individuals from a variety of backgrounds and cultures.

This lesson is the first of a unit and was adopted from [Next Generation](#).

Grades 6-8

- **Building Towards** MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **Building Towards** MS-LS2-2 Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **Building Towards** MS-LS2-3 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- **Building Towards** MS-LS2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
 - **Learning Activity Example:** Through a short video and reading, introduce students to the issue of wolf reintroduction to Yellowstone National Park. Students discuss the effects that the reintroduction might have on the environment and people. Students will work to create digital food webs of the organisms found in Yellowstone National Park. They will use their digital models to speculate the influence of humans on food webs and show how the reintroduction of wolves in Yellowstone might impact the food web.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCC.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, online slides).
 - CL.MSAC.1 Use digital devices to capture multimedia (audio, video, and photo).
 - CL.MSAC.4 Use application features to copy/paste or insert/import and format text and graphics within documents and multimedia presentation files.
 - CL.MSAC.6 Use basic drawing tools including pencil, paint brush, shape, line, undo, redo, and eraser.
 - CL.MSAC.7 Use color palette/color wheel to change tool color.
 - CL.MSAC.9 Use selection tools to copy, paste, move, and modify work.
 - CL.MSAC.11 Use email, messaging, and other interactive tools and apps to share information through text and communicate in writing.
 - CL.MSAC.14 Create and maintain a digital portfolio or collection of works related to one's learning.

This lesson is the first of a unit and was adopted from [Next Generation](#).

Grades 9-12

- **Building Towards** HS-LS1-1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.
- **Building Towards** HS-LS3-1 Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
- **Building Towards** HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.
 - **Learning Activity Example:** Start by playing the [Duchenne Awareness Day Video](#). During the video, the students will write down their notice and wonderings in the classroom Jam Board. Review student wonderings. Allow students time to research Duchenne Muscular Dystrophy (DMD) and have them compile their research questions and answers through the preferred digital platform as they go. Students will then create initial models of what they think is happening to people with DMD. Students will collaborate to compare models and generate more questions.
 - **CL Knowledge and Skill Alignment:**
 - CL.ISOD.8 Use digital tools or platforms to organize, display, annotate and/or share a curated collection.
 - CL.MSAC.14 Create and maintain a digital portfolio or collection of works related to one's learning.

This lesson is the first of a unit and was adopted from [Next Generation](#).

ELA

Grades K-5

- **ELA Standard:** W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book (e.g., *My favorite book is ...*).
- **ELA Standard:** W.K.6 With guidance and support from adults, explore a variety of digital tools to produce and publish writing, including in collaboration with peers.
 - **Learning Activity Example:** As a class, create a “Our Favorites” book (e.g., favorite foods, hobbies, animals, books, etc.). Have students draw a picture of their favorite item and then work with assist students in writing/dictating information about that item. Working collaboratively with technology, help students take pictures of their pages. Consider allowing students to edit the multimedia file of their page with text, graphics, color. Share the finished document of all the student’s pages with the class.
 - **CL Knowledge and Skill Alignment:**
 - CL.MSAC.1 Use digital devices to capture multimedia (audio, video, and photo).
 - CL.MSAC.2 Use multimedia-editing tools to edit multimedia files (e.g., add effects, trim, splice).

Grades 6-8

- **ELA Standard:** W.6.6 Use technology, including the internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting.
- **ELA Standard:** W.6.7 Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
 - **Learning Activity Example:** Have students complete short research activities where they use credible online sources to answer biographical questions regarding an author. Tailor the questions to specific topics of interest to your students (e.g., have students research the birthplace of the author and an interesting fact about that location). Allow students time to search for credible online sources and share their findings and sources to the class. (This can be done in a shared document online, presenting to the class, etc.). This activity can be easily scaffolded through the depth of questions, the time allotted, and the requirements for presenting the research.
 - **CL Knowledge and Skill Alignment:**
 - CL.ISOD.4 Locate the URL of a website and identify the characteristics of different domains (e.g., .org, .com, .edu, .net, .gov, international domains).
 - CL.ISOD.5 Use browser search tools and advanced search features to find information (e.g., search terms, compound operators, quotation marks around search query).

Grades 9-12

- **ELA Standard:** RL.9-10.7 Analyze the representation of a subject or a key scene in two different artistic mediums, including what is emphasized or absent in each treatment (e.g., Auden’s “Musée des Beaux Arts” and Breughel’s Landscape with the Fall of Icarus).
- **ELA Standard:** SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on Grades 9-10 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.
- **ELA Standard:** SL.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
 - **Learning Activity Example:** Utilize a backchannel approach to class discussion when having students engage with a film version of a text. Identify an online space for the conversation. (A shared document or the chat feature of a learning platform work well.) Provide guiding questions for the discussion and further prompt discussion within the backchannel by asking follow up questions.
 - **CL Knowledge and Skill Alignment:**
 - CL.MSAC.11 Use email, messaging, and other interactive tools and apps to share information through text and communicate in writing.

Mathematics

5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels can identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They can use technological tools to explore and deepen their understanding of concepts.

Grades K-5

- **1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks.
- **2.MD.7** Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
 - **Learning Activity Example:** Students will read analog and digital clocks in appropriate environments such as while utilizing a computer or electronic device.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCK.4 Use desktop icons, windows, and menus to open, minimize, and close applications or files.

Grades 6-8

- **7.EE.3** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*
 - **Learning Activity Example:** Students will utilize graphic organizers (e.g., Jamboard, MURAL, Lumio, Cacao, [IAR Digital Item Library](#) etc.) to make sense of the multi-step real-life problem by collaborating in real time. Students can collaborate on estimations and then list the steps necessary to figure out the exact computation.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCK.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, online slides)

Grades 9-12

- **S-ID.4** Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
 - **Learning Activity Example:** Students will determine the mean, median, mode, and standard deviation of collected data. They will make a frequency histogram of the group data, both on graph paper and on appropriate computer program or TI-83 Plus calculator.
 - **CL Knowledge and Skill Alignment:**
 - CL.BOCK.14 Use graphic organizers, brainstorming applications, or other digital tools to gather and organize information (e.g., a Jamboard, online drawing tool, online slides).
 - CL.DMS.1 Understand the difference between public and private data and the considerations when determining privacy settings to apply for specific applications.