



# K-8 Technology Standards

## Draft 2 – Public Feedback

### Grades K-2 Computational Thinking (CT)

#### Computing Systems

Code	Standard
K-2.CT.1.1	Recognize that software is required to control all computing devices (e.g. programs, browsers, websites, apps).
K-2.CT.1.2	Follow step-by-step instructions that models intelligent behavior on computing devices.
K-2.CT.1.3	Use digital tools to create original artifacts.

#### Data and Analysis

Code	Standard
K-2.CT.2.1	Classify and sort information into useful order without using a computer (e.g. sorting objects by various attributes).
K-2.CT.2.2	Demonstrate that computing devices save information as data that can be stored, searched, retrieved, modified, and deleted.
K-2.CT.2.3	Recognize performance feedback from digital tools, make adjustments based on that feedback and use age-appropriate technology to share learning.
K-2.CT.2.4	Analyze age-appropriate data and look for similarities in order to identify patterns and categories.
K-2.CT.2.5	Identify a problem and select appropriate technology tools to explore and find solutions.

## Impacts of Computing

Code	Standard
K-2.CT.3.1	Share ideas in multiple ways using digital tools.
K-2.CT.3.2	Select technology to share ideas with different people.
K-2.CT.3.3	Select tools to broaden perspectives and enrich learning by collaborating with others and working effectively in teams locally and globally.

## Algorithms and Programming

Code	Standard
K-2.CT.4.1	Construct and test problem solutions using a block-based visual programming.
K-2.CT.4.2	Construct an algorithm to accomplish a task.
K-2.CT.4.3	Follow the sequencing in an algorithm.
K-2.CT.4.4	Break a problem into parts and identify ways to solve the problem.
K-2.CT.4.5	Use a design process to ask questions, suggest solutions, test ideas to solve problems and redesign as needed.
K-2.CT.4.6	Use age-appropriate digital and nondigital tools to design something and are aware of the step-by-step process of designing.
K-2.CT.4.7	Understand how technology is used to make a task easier or repeatable and can identify real-world examples.

## Grades K-2 Digital Literacy (DL)

### Empowered Learner

Code	Standard
K-2.DL.1.1	Navigate a variety of technologies that will help them in their learning and begin to demonstrate an understanding of how knowledge can be transferred between tools.

Code	Standard
K-2.DL.1.2	Understand that a wide range of jobs require knowledge or use of computing.
K-2.DL.1.3	Demonstrate an understanding that technology is all around them and the importance of keeping their information private.

### Digital Citizen

Code	Standard
K-2.DL.2.1	Practice responsible digital citizenship and decision making using positive, safe, legal and honest behaviors in the use of technology systems and software.

### Knowledge Constructor

Code	Standard
K-2.DL.3.1	Locate and identify computing, input, and output devices in a variety of environments.
K-2.DL.3.2	Demonstrate how to operate a variety of computing devices by turning on, navigating, opening/closing programs or apps as appropriate.
K-2.DL.3.3	Identify, using accurate terminology, simple hardware and software problems.
K-2.DL.3.4	Understand and apply resources to construct knowledge, produce creative artifacts and make connections to their learning.

### Creative Communicator

Code	Standard
K-2.DL.4.1	Create a design document to illustrate thoughts, ideas, and stories in a sequential manner (e.g., storyboard, mind map).
K-2.DL.4.2	Choose different tools for creating something new for communicating with others.

Code	Standard
K-2.DL.4.3	Use technology to communicate with others and to look at problems from different perspectives.

### Global Collaborator

Code	Standard
K-2.DL.5.1	Explain that networks link people using computers and other computing devices allowing them to communicate, access, and share information.

## Grades 3-4 Computational Thinking (CT)

### Computing Systems

Code	Standard
3-5.CT.1.1	Identify, using accurate terminology, simple hardware and software problems and apply strategies for solving these problems.
3-5.CT.1.2	Create step-by-step instructions that models intelligent behavior on computing devices.
3-5.CT.1.3	Recognize and utilize the features and functions of a variety of creation or communication tools.
3-5.CT.1.4	Create original works and learn strategies for remixing or repurposing to create new artifacts.

### Data and Analysis

Code	Standard
3-5.CT.2.1	Use outcome data to solve a problem or answer a question.
3-5.CT.2.2	Understand how computers encode and store data.
3-5.CT.2.3	Collect feedback from both people and features embedded in digital tools and use age-appropriate technology to share learning.

Code	Standard
3-5.CT.2.4	Explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking.
3-5.CT.2.5	Select effective technology to represent data.
3-5.CT.2.6	Explore and practice how a design process works to generate ideas, consider solutions, plan to solve a problem or create innovative products that are shared with others.
3-5.CT.2.7	Navigate age-appropriate technologies and begin to transfer their learning to different tools or learning environments.

### Impacts of Computing

Code	Standard
3-5.CT.3.1	Demonstrate and encourage respect for intellectual property with both print and digital media when using and sharing the work of others.
3-5.CT.3.2	Demonstrate an understanding of what personal data is, how to keep it private and how it might be shared online.
3-5.CT.3.3	Communicate ideas textually-visually and graphically.
3-5.CT.3.4	Consider their expected audience when creating and sharing digital artifacts and presentations.
3-5.CT.3.5	Choose tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

### Networks and the Internet

Code	Standard
3-5.CT.4.1	Demonstrate how a device on a network sends and receives information.

## Algorithms and Programming

Code	Standard
3-5.CT.5.1	Identify and understand ways that teamwork and collaboration can support problem solving and the software design cycle.
3-5.CT.5.2	Construct and test problem solutions using block-based and or text-based programming.
3-5.CT.5.3	Generate a list of sub-problems to consider while addressing a larger problem.
3-5.CT.5.4	Explain that computer program design is an iterative process that includes the following steps: define the problem, generate ideas, build a program, test the program, improve the program.
3-5.CT.5.5	Explain and debug the sequencing in an algorithm
3-5.CT.5.6	Construct an algorithm to accomplish a task.
3-5.CT.5.7	Break down problems into smaller parts, identify key information, and propose solutions.
3-5.CT.5.8	Understand and explore basic concepts related to automation, patterns and algorithmic thinking.
3-5.CT.5.9	Use digital and nondigital tools to plan and manage a design process.

## Grades 3-5 Digital Literacy (DL)

### Empowered Learner

Code	Standard
3-5.DL.1.1	Analyze a variety of resources for accuracy, perspective, credibility, and relevance using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

## Digital Citizen

Code	Standard
3-5.DL.2.1	Practice responsible digital citizenship using positive, safe, legal and ethical behaviors in the use of technology systems and software.
3-5.DL.2.2	Explain ethical issues that relate to equity of access, accessibility, security, privacy, copyright, digital citizenship, digital footprint, and intellectual property with computers and networks.

## Knowledge Constructor

Code	Standard
3-5.DL.3.1	Identify how computational devices impact daily life.
3-5.DL.3.2	Gather, manipulate, and evaluate digital data to explore a real-world problem that is of interest to the student.
3-5.DL.3.3	Explore the connections between computer science and other fields.

## Global Collaborator

Code	Standard
3-5.DL.6.1	Generate examples of how the use of computing can affect society and how society can influence the use of computing.

## Grades 6-8 Computational Thinking (CT)

### Computing Systems

Code	Standard
6-8.CT.1.1	Apply troubleshooting strategies for solving hardware and software problems.

Code	Standard
6-8.CT.1.2	Compare and contrast the ways that humans and machines process instructions and sense the world.
6-8.CT.1.3	Navigate a variety of technologies and transfer their knowledge and skills to learn how to use new technologies.
6-8.CT.1.4	Select appropriate platforms and tools to create, share and communicate their work effectively.
6-8.CT.1.5	Create original works or responsibly repurpose or remix other digital resources into new creative artifacts.
6-8.CT.1.6	Communicate complex ideas clearly using various digital tools to convey the concepts textually, visually, graphically, etc.

**Data and Analysis**

Code	Standard
6-8.CT.2.1	Compare and contrast the factors that affect quality and file size of stored data.
6-8.CT.2.2	Justify the selection of the data, collection, and analysis needed to answer a question.
6-8.CT.2.3	Demonstrate that data collection is used to make recommendations to influence decisions as well as predict behavior.
6-8.CT.2.4	Encode and decode information using encryption/decryption schemes.
6-8.CT.2.5	Identify layers of abstraction in different contexts (e.g., objected oriented programming, video and animation, etc.)
6-8.CT.2.6	Apply problem solving techniques by computing for data analysis, modeling or algorithmic thinking.



## Impacts of Computing

Code	Standard
6-8.CT.3.1	Design user interfaces to be more user-friendly, free of bias, and accessible.
6-8.CT.3.2	Find or organize data and use technology to analyze and represent it to solve problems, and make decisions about trade-offs and risks.
6-8.CT.3.3	Demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions.
6-8.CT.3.4	Explore how computer science fosters innovation and enhances other careers and disciplines.
6-8.CT.3.5	Articulate and set personal learning goals, develop strategies leveraging technology to achieve them and reflect on the learning process itself to improve learning outcomes.
6-8.CT.3.6	Manage their digital identities and reputations within school policy, including demonstrating an understanding of how digital actions are never fully erasable.
6-8.CT.3.7	Demonstrate an understanding of what personal data is and how to keep it private and secure, including the awareness of terms such as encryption, HTTPS, password, cookies, computer malware and social engineering; they also understand the limitations of data management and how data collection technologies work.
6-8.CT.3.8	Publish or present content designed for specific audiences and select platforms that will effectively convey their ideas to those audiences.
6-8.CT.3.9	Apply digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

## Networks and the Internet

Code	Standard
6-8.CT.4.1	Demonstrate (e.g., physically or digitally) the flow of information as packets on the Internet and networks.

Code	Standard
6-8.CT.4.2	Compare and contrast the trade-offs between wired, wireless, and mobile networks (e.g. speed, security, and cost).

### Algorithms and Programming

Code	Standard
6-8.CT.5.1	Compare different algorithms that may be used to solve the same problem.
6-8.CT.5.2	Interpret, modify, and analyze content-specific models used to run simulations.
6-8.CT.5.3	Apply an iterative design process (define the problem, generate ideas, build, test, and improve solutions) in problem solving.
6-8.CT.5.4	Create, analyze, and modify control structures (if-else statements, switch-case statements, looping, etc.) to create programming solutions.
6-8.CT.5.5	Predict the outcome of an algorithm and then step through it to verify your predictions.
6-8.CT.5.6	Decompose a problem into sub- problems and demonstrate how the parts can be incorporated to create a solution.
6-8.CT.5.7	Use debugging and testing to remove errors and improve program quality.
6-8.CT.5.8	Break problems into component parts, identify key pieces and use that information to problem solve.
6-8.CT.5.9	Select and use digital tools to support a design process; to identify constraints and trade-offs, and to weigh risks.

### Grades 6-8 Digital Literacy (DL)

#### Empowered Learner

Code	Standard
6-8.DL.1.1	Actively collect performance feedback from people, including teachers, and from functionalities embedded in digital tools to improve their learning

	process, and they select technology to demonstrate their learning in a variety of ways.
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### Digital Citizen

Code	Standard
6-8.DL.2.1	Explore security risks associated with using weak passwords, lack of encryption and/or insecure transactions.
6-8.DL.2.2	Describe the positive and negative impacts of computing devices in daily life.
6-8.DL.2.3	Explain ethical issues that relate to equity of access, security, privacy, ownership and information sharing, copyright, licensing with computers and networks.
6-8.DL.2.4	Understand and explain the elements of federal, state, and local regulations and policies including COPPA, CIPA, state laws, district policies that relate to digital citizenship.

### Knowledge Constructor

Code	Standard
6-8.DL.3.1	Identify different features of everyday objects that contain computing components.
6-8.DL.3.2	Predict positive and negative social impacts of existing or student created content and computational artifacts including economic, entertainment, education, or political.
6-8.DL.3.3	Compare and contrast the capabilities of different hardware and software in computer systems.

## Creative Communicator

Code	Standard
6-8.DL.5.1	Create and communicate computational artifacts that have a positive social impact.
6-8.DL.5.2	Evaluate a variety of resources for accuracy, perspective, credibility, and relevance using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

## Global Collaborator

Code	Standard
6-8.DL.6.1	Explain how the Internet impacts global communication and collaboration.
6-8.DL.6.2	Summarize current events and changes resulting from computing and their effects on education, the workplace, and society.

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