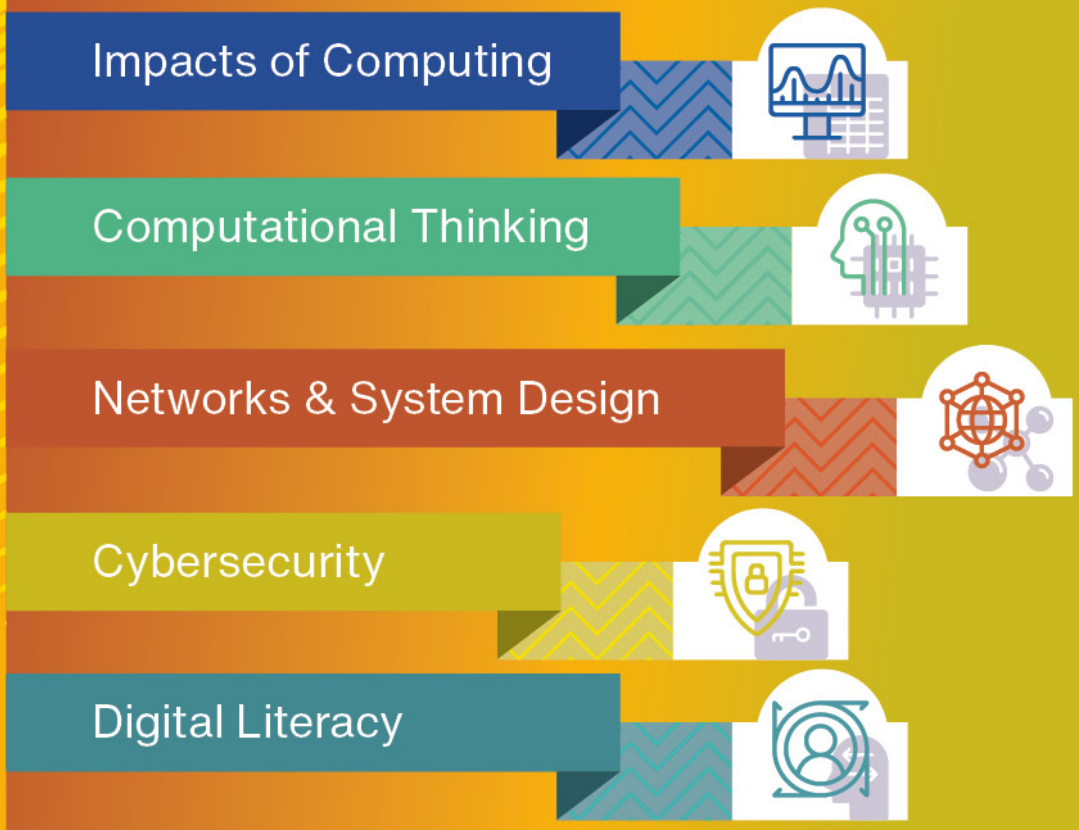
# K-12 Computer Science and Digital Fluency Learning Standards

## Grades K-1




New York State Education Department

K-12 Computer Science and Digital Fluency Learning Standards

# Contents

## Concept Areas


Impacts of Computing 3

Computational Thinking 4

Networks & System Design 5

Cybersecurity 6

Digital Literacy 7

| IMPACTS OF COMPUTING | | |
|---|---|---|
| *Society* | **K-1.IC.1**<br>Identify and discuss how tasks are accomplished with and without computing technology. | **Clarifying Statement**<br>Common tasks include sending a letter by email vs. post, taking a picture with a smart phone vs. camera, buying something with an app vs. with cash at a store. |
| | **K-1.IC.2**<br>Identify and explain classroom and home rules related to computing technologies and digital information. | **Clarifying Statement**<br>Rules could include when it's okay to use a device, what programs or apps are okay to use, how to treat the equipment, etc. |
| *Ethics* | **K-1.IC.3**<br>Identify computing technologies in the classroom, home and community. | **Clarifying Statement**<br>The focus should be on recognizing familiar computing technologies that we use in our lives. |
| | **K-1.IC.4**<br>Identify public and private spaces in our daily lives. | **Clarifying Statement**<br>The focus is on recognizing the difference between a public shared space versus a private space. |
| | **K-1.IC.5**<br>**Standard begins in grade band 2-3* | |
| *Accessibility* | **K-1.IC.6**<br>With teacher support, identify different ways people interact with computers and computing devices. | **Clarifying Statement**<br>The focus is on the features of computers and other devices, and the things that make them easier to use (i.e. drop-down menus, buttons, areas to type). |
| *Career Paths* | **K-1.IC.7**<br>Identify multiple jobs that use computing technologies. | **Clarifying Statement**<br>The focus is on identifying jobs that utilize computing technology and how technology impacts a range of industries. Doctors, business owners, police officers, auto repair technicians, farmers, architects, and pilots use computing technology in their jobs. |

| COMPUTATIONAL THINKING | | |
|---|---|---|
| *Modeling and Simulation* | **K-1.CT.1**<br>Identify and describe one or more patterns (found in nature or designed) and examine the patterns to find similarities and make predictions. | **Clarifying Statement**<br>The emphasis is on identifying patterns and then making predictions based on the pattern. |
| *Data Analysis and Visualization* | **K-1.CT.2**<br>Identify different kinds of data that can be collected from everyday life. | **Clarifying Statement**<br>The emphasis is on understanding what is data and identifying different types of data, while exploring how data can be collected and sorted. |
| | **K-1.CT.3**<br>Identify ways to visualize data, and collaboratively create a visualization of data. | **Clarifying Statement**<br>Ways to visualize data include tables, graphs, and charts. |
| *Abstraction and Decomposition* | **K-1.CT.4**<br>Identify a problem or task and discuss ways to break it into multiple smaller steps. | **Clarifying Statement**<br>The focus is on identifying a complex (for the age group) task or problem to break apart into smaller steps. The focus should be on understanding why this process is helpful. |
| | **K-1.CT.5**<br>Recognize that the same task can be described at different levels of detail. | **Clarifying Statement**<br>Instructions to perform a task can be given with more or less detail but still achieve the same result. |
| *Algorithms And Programming* | **K-1.CT.6**<br>Follow an algorithm to complete a task. | **Clarifying Statement**<br>The task can be a familiar, daily activity or more abstract. Algorithms at this stage may be short, containing at least three steps, and focus on sequencing. |
| | **K-1.CT.7**<br>Identify terms that refer to different concrete values over time. | **Clarifying Statement**<br>*The focus is on observing that people use certain terms/labels to refer to a concept (E.g., Today's Date, Today's Weather, Word of the Week, Today's Line Leader) whose specific value can change depending on the day or time.* |
| | **K-1.CT.8**<br>Identify a task consisting of steps that are repeated and recognize which steps are repeated. | **Clarifying Statement**<br>The focus should be on short tasks where there is repetition and having students identify and describe the repetition. |
| | **K-1.CT.9**<br>Identify and fix (debug) errors within a simple algorithm. | **Clarifying Statement**<br>The focus should be on identifying small errors within a simple algorithm and fixing the errors collaboratively. |
| | **K-1.CT.10**<br>Collaboratively create a plan that outlines the steps needed to complete a task. | **Clarifying Statement**<br>The focus should be on collaboratively identifying a planning process which can be written, drawn, or spoken. |

| NETWORKS & SYSTEM DESIGN | | |
|---|---|---|
| *Hardware and Software* | **K-1.NSD.1**<br>Identify ways people provide input and get output from computing devices. | **Clarifying Statement**<br>The emphasis is on understanding that humans and computers interact through inputs and outputs and identifying examples in their daily lives. |
| | **K-1.NSD.2**<br>Identify basic hardware components that are found in computing devices. | **Clarifying Statement**<br>Basic hardware components are the parts that students can see, such as monitor/screen, keyboard, mouse, etc. |
| | **K-1.NSD.3**<br>Identify basic hardware and/or software problems. | **Clarifying Statement**<br>The focus is on identifying the source of a common hardware/software problem (such as low battery, speakers not connected) with teacher guidance. |
| *Networks and the Internet* | **K-1.NSD.4**<br>Identify how protocols/rules help people share information over long distances. | **Clarifying Statement**<br>The focus is on how information is conveyed from one individual to another and the rules that allow for communication and data sharing, such as envelopes need addresses/emails need email addresses to reach the right person. – |
| | **K-1.NSD.5**<br>Identify physical devices that can store information. | **Clarifying Statement**<br>The focus is on recognizing that common computing devices can store information, including computers, tablets, phones, and calculators. |

| CYBERSECURITY | | |
|---|---|---|
| *Risks* | **K-1.CY.1**<br>Identify reasons for keeping information private. | **Clarifying Statement**<br>The focus should be on discussing the reasons to keep certain information public (information you share with others) or private (information you keep to yourself or only share with your family). |
| *Safeguards* | **K-1.CY.2**<br>Identify why it is important to keep your account secure. | **Clarifying Statement**<br>The emphasis is on having a basic understanding of ways keep accounts secure, such as having a passwords/pass codes. |
| | **K-1.CY.3**<br>**Standard begins in Grade Band 2-3* | |
| | **K-1.CY.4**<br>Decode a word or short message using a simple code. | **Clarifying Statement**<br>The focus is on having students look at a string of symbols and giving them a key to substitute letters for the symbols to spell a word. |
| *Response* | **K-1.CY.5**<br>Identify when it is appropriate to open and/or click on links or files. | **Clarifying Statement**<br>The emphasis is on recognizing when it is safe and appropriate for students to open links, with teacher guidance. |

| DIGITAL LITERACY | | |
|---|---|---|
| *Digital Use* | **K-1.DL.1**<br>Identify and explore the keys on a keyboard. | **Clarifying Statement**<br>The focus is on exploring physical and/or touchscreen keyboards, and for students to be able to identify specific keys such as arrow keys, enter, space bar, backspace. |
| | **K-1.DL.2**<br>Communicate and work with others using digital tools. | **Clarifying Statement**<br>The focus should be on teaching students that people use digital tools to share ideas and work together. Communication and collaboration should be with teacher guidance. |
| | **K-1.DL.3**<br>Conduct a basic search based on a provided keyword. | **Clarifying Statement**<br>The teacher will provide the keyword to help students conduct basic searches using appropriate tools. |
| | **K-1.DL.4**<br>Use a least one digital tool to create a digital artifact. | **Clarifying Statement**<br>The focus is on students using at least one digital tool to create a digital artifact, with teacher guidance. |
| | **K-1.DL.5**<br>**Standard begins in Grade Band 4-6.* | |
| *Digital Citizenship* | **K-1.DL.6**<br>**Standard begins in Grade Band 2-3.* | |
| | **K-1.DL.7**<br>Identify actions that promote good digital citizenship, and those that do not. | **Clarifying Statement**<br>Students are able to identify the basic concept of being a “good digital citizen”, and know what actions are and are not safe, responsible and ethical when using technologies. |