South Carolina Computer Science and Digital Literacy Standards

Grade 7

Adopted 2017

Process Standards

1. **Foster an inclusive computing culture.**
   a. Recognize that equitable access to computing benefits society as a whole. 1.A
   b. Consider others' perspectives as well as one's own perspective when developing computational solutions. 1.B
   c. Consider the needs of a variety of end users regarding accessibility and usability. 1.C

2. **Collaborate around computing.**
   a. Select appropriate technological tools that can be used to collaborate on a project. 2.A
   b. Collaborate productively with individuals of varying perspectives, skills, and backgrounds. 2.B
   c. Set and implement equitable expectations and workloads when working in teams. 2.C
   d. Integrate constructive feedback while working in teams. 2.D

3. **Recognize, define, and analyze computational problems.**
   a. Recognize when it is appropriate to solve a problem computationally. 3.A
   b. Make sense of computational problems and persevere in solving them. 3.B
   c. Relate computational problems to prior knowledge. 3.C
   d. Recognize that there may be multiple approaches to solving a problem. 3.D
   e. Approach problem solving iteratively, using a cyclical process. 3.E

4. **Create, test, and refine computational artifacts.**
   a. Consider the purpose of computational artifacts for practical use, personal expression, and/or societal impact. 4.A
   b. Recognize when to use the same solution for multiple problems. 4.B
   c. Test computational artifacts systematically by considering multiple scenarios and using test cases. 4.C
   d. Approach troubleshooting systematically. 4.D
   e. Consider performance, reliability, usability, and accessibility when evaluating and refining computational artifacts. 4.E

5. **Communicate about computing.**
    a. Select and use appropriate technological tools to convey solutions to computing problems. 5.A
    b. Communicate about computational processes and solutions using appropriate terminology consistent with the intended audience and purpose. 5.B
    c. Articulate ideas responsibly by observing intellectual property rights and giving appropriate attribution. 5.C

Content Standards

DL. Digital Literacy 7.DL

1. Use software applications to collaborate and create authentic products. 7.DL.1
    1. Collaborate in small groups to create and edit online documents in real time (e.g., multiple users editing one document in a shared online space). 7.DL.1.1
    2. Identify and use appropriate file sharing strategies (e.g., copy and paste, links, email attachments). 7.DL.1.2
    3. Apply appropriate design principles to presentations (e.g., themes, contrast, animations). 7.DL.1.3
2. Understand risks and responsibilities of being a digital citizen. 7.DL.2
    1. Discuss consequences of improper internet use. 7.DL.2.1
    2. Discuss consequences of improper use of social media (e.g., cyberbullying). 7.DL.2.2
3. Understand issues associated with appropriate use of personal digital information. 7.DL.3
    1. Identify appropriate methods for protecting personal digital information. 7.DL.3.1
4. Demonstrate keyboarding speed and accuracy on a computing device. 7.DL.4
    1. Demonstrate proper keyboarding technique when keying letters, numbers, and symbols at a rate of 25 words per minute. 7.DL.4.1

CS. Computing Systems 7.CS

1. Analyze the use of computing to solve relevant problems. 7.CS.1
    1. Explore an expanded definition of computing devices (e.g., "Internet of Things," wearable technology, robotics). 7.CS.1.1
    2. Analyze relevant problems and how they are solved using computer science and various types of computing devices (e.g., Global Positioning System (GPS) and online maps provide guided step-by-step directions to locations). 7.CS.1.2
2. Examine how computing devices function. 7.CS.2
    1. Describe processing speed and storage capacity using standard units of measure (e.g., 3 TB hard drive, 256 GB cell phone, 3.8 GHz processor). 7.CS.2.1
3. Evaluate various solutions to common hardware and software problems. 7.CS.3
    1. Understand and communicate solutions to various computing problems (e.g., computing device is frozen; webpage does not load; application does not launch; keyboard does not work). 7.CS.3.1
    2. Understand how rebooting a computing device can solve problems. 7.CS.3.2

NI. Networks and the Internet 7.NI

1. Analyze various network structures and how data is transmitted. 7.NI.1
    1. Identify and compare types of networks (i.e., Local Area Networks (LANs) and Wide Area Networks (WANs)). 7.NI.1.1
    2. Define and understand how the internet is a network of Wide Area Networks (WANs). 7.NI.1.2
    3. Compare and contrast network topologies (e.g., ring, star, mesh). 7.NI.1.3
2. Identify methods to protect data, information, and computing devices across networks. 7.NI.2
    1. Identify software methods for protecting data transmitted across networks (e.g. anti-virus software). 7.NI.2.1
    2. Identify physical methods for securing computing devices (e.g., biometric-thumb reader, computer lock, restricted access rooms, hardware firewall). 7.NI.2.2

DA. Data and Analysis 7.DA

1. Evaluate the storage and representation of data. 7.DA.1
    1. Describe how a picture, audio, and video are stored digitally (e.g., Red, Green, and Blue (RGB), pixels, .wav). 7.DA.1.1
2. Analyze how data is collected with both computational and non-computational tools and processes. 7.DA.2
    1. Identify computing devices that assist with data collection (i.e., thermometers, barcode scanners, biometrics, sensors, radio-frequency identification (RFID), wearable technology). 7.DA.2.1
3. Analyze various ways to visually represent data. 7.DA.3
    1. Create various graphical representations of large data sets (e.g., frequency plots, bar graphs, presentation software). 7.DA.3.1
    2. Represent two sets of numerical data (e.g., histograms, box plots, dot plots). 7.DA.3.2

AP. Algorithms and Programming 7.AP

1. Design, evaluate, and modify simple algorithms (e.g., steps to make a sandwich; steps to a popular dance; steps for sending an email). 7.AP.1
    1. Write sequences of instructions for others to perform tasks. 7.AP.1.1
    2. Suggest changes to the sequence of instructions that can lead to the same result (e.g., explore different ways to tying shoes). 7.AP.1.2
    3. Write clear instructions using pseudocode. 7.AP.1.3
2. Use and compare simple coding control structures (e.g., if-then, loops). 7.AP.2
    1. Write code using control structures to skip or repeat instructions. 7.AP.2.1
3. Decompose problems into subproblems and write code to solve the subproblems (i.e., break down a problem into smaller parts). 7.AP.3
    1. Decompose a problem into smaller parts. 7.AP.3.1
    2. Identify the parts of a program (e.g., components of creating a video game include keeping score, determining winners/losers, moving characters, designing game art, and advancing level). 7.AP.3.2
4. Design and code programs to solve problems. 7.AP.4
    1. Use a beginner coding language (e.g., drag-and-drop, block-based) to design and code a moderately complex program that solves a problem. 7.AP.4.1
5. Identify variables and compare the types of data stored as variables. 7.AP.5
    1. Identify variables as a representation for information. 7.AP.5.1
    2. Discuss the differences between the types of data (e.g., characters, integers, decimals). 7.AP.5.2

IC. Impact of Computing 7.IC

1. Evaluate the tradeoffs of computing in everyday activities. 7.IC.1
    1. Understand how computer science is and can be used to solve problems in students' daily lives (e.g., voter identification website, online tax filing). 7.IC.1.1
    2. Compare positive and negative impacts of computing on society (e.g., personal, health, workforce, economy, education, culture, environment). 7.IC.1.2
2. Analyze various computing platforms used for communication. 7.IC.2
    1. Describe current communication methods and computing devices. 7.IC.2.1
3. Evaluate the tradeoffs in what and how information is shared digitally. 7.IC.3
    1. Understand precautions to protect personal information (i.e., password strength, anti-virus software). 7.IC.3.1
4. Evaluate how legal and ethical issues shape computing practices. 7.IC.4
    1. Understand the consequences of unethical and illegal behavior online (e.g., social media, gaming, cyberbullying). 7.IC.4.1
5. Understand the importance of access and equity in computing. 7.IC.5
    1. Discuss and understand factors that affect access to computing resources locally, nationally, and globally (e.g., geographical location, socioeconomic status, government structure). 7.IC.5.1
6. Explore computer science and computing-intensive careers. 7.IC.6
    1. Explain how computer science plays a role in every industry. 7.IC.6.1
7. Evaluate the history of computers and computing. 7.IC.7
    1. Understand and communicate the changes in computing and computer science over time. 7.IC.7.1
    2. Understand and communicate the history and development of the internet. 7.IC.7.2