South Carolina Computer Science and Digital Literacy Standards

Grade 4

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

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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 4.DL

1. Use software applications to create an authentic product. 4.DL.1
    1. Create various documents (e.g., essays, posters) using a word processing program and including graphics (e.g., images, headlines). 4.DL.1.1
    2. Edit and format a document using a word processing program to insert, delete and move material within the document. 4.DL.1.2
    3. Format a presentation using presentation software to resize an image, change fonts, and change style. 4.DL.1.3
    4. Insert and modify a bulleted list in a word processor and presentation software. 4.DL.1.4
2. Demonstrate an awareness of fundamentals of digital citizenship. 4.DL.2
    1. Discuss methods for digital communication (e.g., email, instant messaging) and determine the best method for specific needs (e.g., quickly sending large amounts of information). 4.DL.2.1
    2. Recognize and describe the potential risks and benefits associated with various forms of digital communication. 4.DL.2.2
3. Demonstrate responsibility when using connected computing devices. 4.DL.3
    1. Identify cyberbullying and describe potential strategies to manage and eliminate cyberbullying. 4.DL.3.1
    2. Distinguish legal from illegal processes for downloading, sharing, and modifying online content. 4.DL.3.2
4. Demonstrate effective keyboarding skills on a computing device. 4.DL.4
    1. Demonstrate proper keyboarding technique when keying letters, numbers, and symbols at a rate of 10 words per minute. 4.DL.4.1
    2. Use software capabilities to correct errors. 4.DL.4.2

CS. Computing Systems 4.CS

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1. Identify and analyze various components and functions of computing devices (e.g., tablets, laptops, smartphones). 4.CS.1
    1. Describe what distinguishes humans from machines. 4.CS.1.1
    2. Identify a variety of computing devices and their functionality (e.g., mobility; available applications such as word processing; communication). 4.CS.1.2
    3. Describe the major hardware components (e.g., memory, processor) of a computing device (e.g., tablets, laptops, smartphones). 4.CS.1.3
2. Analyze the various types and functions of software. 4.CS.2
    1. Explore the limitations of and advantages of various computing devices for particular uses. 4.CS.2.1
    2. Explore application software (e.g., word processor, spreadsheet, presentation software, web browser). 4.CS.2.2
3. Apply troubleshooting strategies for identifying simple hardware and software problems that may occur during use. 4.CS.3
    1. Reboot a computing device correctly. 4.CS.3.1
    2. Identify whether the operating system or an application is the source of an error message. 4.CS.3.2
    3. Identify and describe the causes of hardware (e.g., wiring), connectivity (e.g., no internet connection), and software (e.g., frozen screen) problems. 4.CS.3.3

NI. Networks and the Internet 4.NI

1. Explore different ways a computer connects to the internet and other computing devices. 4.NI.1
    1. Identify types of wireless and wired connections (e.g., Wi-Fi, cellular). 4.NI.1.1
2. Discover the advantages of internet applications. 4.NI.2
    1. Identify the appropriate use of email as a communication avenue. 4.NI.2.1
    2. Effectively use search engines to find information. 4.NI.2.2
    3. Identify websites that are appropriate sources of research. 4.NI.2.3

DA. Data and Analysis 4.DA

1. Identify various ways in which data is stored and represented. 4.DA.1
    1. Understand what it means to save a file in well-protected storage (e.g., hard drive, flash drive, cloud). 4.DA.1.1
    2. Understand that computing devices have their own language (i.e., binary). 4.DA.1.2
2. Collect, arrange, and represent data. 4.DA.2
    1. Select and use appropriate non-digital and digital tools for collecting data. 4.DA.2.1
    2. Represent data with bar graphs and line plots. 4.DA.2.2

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3. Interpret and analyze data and information. 4.DA.3
    1. Interpret and analyze given graphs (i.e., bar graphs, line plots). 4.DA.3.1
4. Understand the accuracy of conclusions and how they are influenced by the amount of data collected. 4.DA.4
    1. Apply factors that impact the accuracy of a conclusion. 4.DA.4.1

AP. Algorithms and Programming 4.AP

1. Recognize that many daily tasks can be described as step-by-step instructions (i.e., algorithms). 4.AP.1
    1. Use step-by-step instructions to perform tasks (i.e., sequential execution). 4.AP.1.1
2. Use an ordered list of steps (i.e., sequential execution) and simple control structures. 4.AP.2
    1. Use a combination of picture models to reorder a sequence of steps. 4.AP.2.1
    2. Recognize that the same steps can be ordered in different ways to perform the same task (i.e., simple control structures). 4.AP.2.2
3. Explore how tasks can be decomposed into simple tasks and simple tasks can be composed to form complex tasks. 4.AP.3
    1. Compose simple tasks (e.g., eating breakfast; brushing your teeth; walking to the bus stop) into a complex task (e.g., getting ready for school). 4.AP.3.1
    2. Decompose a complex task (e.g., getting ready for school) into simple tasks (e.g., eating breakfast; brushing your teeth; walking to the bus stop). 4.AP.3.2
4. Develop a program to express an idea or address a problem. 4.AP.4
    1. Use picture directions to design a series of steps to complete a complex task. 4.AP.4.1
    2. Test a series of directions to successfully complete a complex task. 4.AP.4.2

IC. Impact of Computing 4.IC

1. Discuss how computing has impacted society. 4.IC.1
    1. Compare and contrast how computing has changed society from the past to the present. 4.IC.1.1
2. Evaluate the relevance and appropriateness of electronic information sources. 4.IC.2
    1. Compare the relevance and appropriateness of various electronic information sources (e.g., online databases such as Discus; web search engines). 4.IC.2.1