**Arkansas Computer Science and Computing Standards for**

**Grades K-8**

5-8 Standards Document

2020

**Arkansas Computer Science and Computing Standards for Grades K-8**

**Introduction**

The Arkansas Computer Science and Computing Standards for Grades K-8 provide an introduction to computing concepts which are to be embedded across content areas and are intended to support existing classroom learning activities. The standards support critical thinking through the essential skills of computational thinking and algorithmic problem solving. The course strands, content clusters, and content standards are to be taught in an integrated manner, not in isolation. Integration of basic computer science skills and knowledge through practical classroom experiences promote connections to all subject areas and to the real world. When appropriate, educators should determine and implement the most beneficial student collaboration strategies (e.g., pairs, small group, whole group) for optimal learning. Formal assessment of these standards is not required.

Implementation of the Arkansas Computer Science and Computing Standards for Grades K-8 begins during the 2021-2022 school year.

**Computer Science and Computing Practices**

**Students exhibit proficiency in computer science and computing through:**

**Communication -** Students effectively communicate, using accurate and appropriate terminology, when explaining the task completion or problem solving strategies used. They recognize that creating good documentation is an ongoing and important part of the communication process.

**Collaboration -** Students productively work with others while ensuring multiple voices are heard and considered. They understand that diverse thoughts may lead to creative solutions and that some problems may be best solved collaboratively.

**Storytelling -** Students creatively combine multimedia tools, such as graphics, animations, and videos with research, writing, and oral presentations to create ethical, data-driven stories.

**Professionalism -** Students embrace professionalism by demonstrating skills and behaviors necessary for success in technical careers.

**Ethics and Impact -** Students comprehend the ramifications of actions prior to taking them. They are aware of their own digital and cyber presence and its impact on other individuals and society.

**Inclusion -** Students encourage diversity in the field of computer science and computing regardless of race, ethnicity, gender, or other differences.

**Learning by Failure -** Students reflect upon and critique their work while embracing a willingness to seek feedback and constructive instruction from teachers and peers. They utilize the feedback to continually improve current projects, educational experiences, knowledge, and confidence.

**Perseverance -** Students expect difficulties and persist in overcoming challenges that occur when completing tasks. They recognize making and correcting mistakes is necessary for the learning process while problem solving.

**Understanding -** Students recognize patterns, utilize tools, and apply problem solving strategies to build understanding, find solutions, and successfully deliver high-quality work.

**Patterns -** Students understand and utilize the logical structure of information through identifying patterns and creating conceptual models. They decompose complex problems into simpler modules and patterns.

**Problem Solving -** Students exhibit proficiency through the process of identifying and systematically solving problems. They recognize problem solving is an ongoing process.

**Research -** Students purposefully gather information and seek to expand their knowledge through various methods and mediums. They embrace the practice of gaining knowledge to develop novel approaches for solving problems and addressing issues they have not previously encountered, in addition to merely searching for answers.

**Tools -** Students evaluate and select tools to be used when completing tasks and solving problems. They understand that appropriate tools may include, but are not limited to, their mind, pencil and paper, manipulatives, software applications, programming languages, or appropriate computing devices.

**Arkansas Computer Science and Computing Standards for Grades K-8**

Strand Content Cluster

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| Computational Thinking and Problem Solving |
|  | 1. Students will analyze and utilize problem-solving strategies. |
|  | 2. Students will analyze and utilize connections between concepts of mathematics and computer science. |
| Data, Information, and Security |
|  | 3. Students will analyze and utilize data through the use of computing devices. |
|  | 4. Students will analyze and utilize concepts of cybersecurity. |
| Algorithms and Programs |
|  | 5. Students will create, evaluate, and modify algorithms. |
|  | 6. Students will create programs to solve problems. |
| Computers and Communications |
|  |  7. Students will analyze the utilization of computers within industry. |
|  |  8. Students will analyze communication methods and systems used to transmit information among computing devices. |
|  |  9. Students will utilize appropriate hardware and software. |
| Professionalism and Impacts of Computing |
|  | 10. Students will analyze the impacts of technology and professionalism within the computing community. |
|  | 11. Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information. |

**Understanding the Arkansas Computer Science and Computing Standards Documents:**

* This Arkansas Department of Education curriculum standards document is intended to assist in district curriculum development, unit design, and to provide a uniform, comprehensive guide for instruction.
* The goal for each student is proficiency in all academic standards for the course/year in which the student is enrolled.
* The Practice Standards are intended to be habits of mind for all students and were written broadly in order to apply to all grades/levels. The Practice Standards are not content standards and are not intended to be formally assessed.
* Notes (NOTE:) and examples given (e.g.,) found within the document are not mandated by the Arkansas State Board of Education, but are provided for clarification of the standards by the Arkansas Department of Education and/or the standards drafting committee. The notes and examples given are subject to change as understandings of the standards evolve.
* Within the high school documents, the numbering for standards is read as: Course Abbreviation - Year - Content Cluster - Standard. Example: “CSPG.Y1.2.3” would be Computer Science Programming - Year 1 - Content Cluster 2 - Standard 3.
* Within the Coding Block document, the numbering for standards is read as: Course Abbreviation - Content Cluster - Standard. Example: “CSCB.1.2” would be Coding Block, Content Cluster 1, Standard 2.
* Within the K-8 Computer Science Standards documents, the numbering for standards is read as: Course Abbreviation - Grade - Content Cluster - Standard. Example: “CSK8.G1.2.3” would be K-8, Grade 1, Content Cluster 2, Standard 3.
* Ancillary documents and supporting information may be released to assist in further understanding of the standards with possible classroom implementation strategies included.

**“Research” and Learning**

The Arkansas Department of Education Office of Computer Science recognizes that the use of the term “research” as an action verb within academic standards is not mainstream, though not unheard of, and exists as a measurable objective within other Arkansas K-12 academic standards. The members of the internal team, composed of the State Director of Computer Science and nine state-wide Computer Science Specialists, discussed this at length amongst ourselves and with many committee members. While there existed varying opinions for various reasons, the internal team opted to keep “research” as an action verb within the standards for the following reasons:

1. The internal team believes that this use of “research” and the skill-building activities students will undertake while performing said research will produce students that have a skillset which industry representatives have identified as missing from workers entering technical job fields.
2. As the field of Computer Science and Computing is ever changing and growing, professionals and students within this field must conduct informal research on an almost daily basis to maintain relevant knowledge and skills.
3. The use of “research” within this document does not determine classroom implementation; however, it is used to indicate that the student should take individual and active efforts to seek out knowledge to develop novel approaches for solving problems and addressing issues they have not previously encountered, in addition to merely searching for answers.
4. The use of “research” should not infer that a student should be required to do an extensive qualitative or quantitative research project from the use of “research” anywhere in this document; however, a more formal research project is not prohibited if the teacher feels it is appropriate.

**Strand:** Computational Thinking and Problem Solving

**Content Cluster 1:** Students will analyze and utilize problem-solving strategies.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.1.1Identify and utilize level-appropriate, algorithmic problem-solving strategies | CSK8.G6.1.1Identify and utilize level-appropriate, algorithmic problem-solving strategies | CSK8.G7.1.1Identify and utilize level-appropriate, algorithmic problem-solving strategies | CSK8.G8.1.1Identify and utilize level-appropriate, algorithmic problem-solving strategies |
| NOTE: Problem solving steps may include, but are not limited to, identifying, stating, and exploring a problem; decomposing a problem into subproblems; examination of sample instances; and solution design, implementation, and testing. |
| CSK8.G5.1.2Examine visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity | CSK8.G6.1.2Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity | CSK8.G7.1.2Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity | CSK8.G8.1.2Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity |
| CSK8.G5.1.3Evaluate effective ways that collaboration can support problem solving and innovation | CSK8.G6.1.3Analyze appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems | CSK8.G7.1.3Demonstrate appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems | CSK8.G8.1.3Demonstrate appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems |
| NOTE: Utilization of a computer-based program is not a requirement for this standard.  |
| CSK8.G5.1.4Apply strategies for solving simple hardware and software problems that may occur during use  | CSK8.G6.1.4Apply strategies for solving simple hardware and software problems that may occur during use  | CSK8.G7.1.4Apply strategies for identifying and solving routine hardware and software problems that occur during everyday computer use | CSK8.G8.1.4Apply strategies for identifying and solving routine hardware and software problems that occur in everyday computer use |
| NOTE: Strategies for solving simple hardware/software problems may include, but are not limited to, checking cable connections, refreshing a webpage, and restarting a device.  |

**Strand:** Computational Thinking and Problem Solving

**Content Cluster 2:** Students will analyze and utilize connections between elements of mathematics and computer science.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.2.1Begins in Grade 6 | CSK8.G6.2.1Describe subsets of a sample set identifying unions, intersections, and complements (e.g., describing information sorted with a Venn diagram) | CSK8.G7.2.1Create compound statements that represent unions, intersections, and complements using OR, AND, and NOT (e.g., writing statements from information sorted with a Venn diagram) | CSK8.G8.2.1Create subsets of a sample set by using logic (e.g., OR, AND, NOT, XOR) |
| CSK8.G5.2.2Begins in Grade 6 | CSK8.G6.2.2Explore how variables are used to represent data | CSK8.G7.2.2Utilize variables to construct expressions and equations | CSK8.G8.2.2Utilize variables in the creation of functions, methods, or similar constructs |
| CSK8.G5.2.3Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps) | CSK8.G6.2.3Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps) | CSK8.G7.2.3Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps) | CSK8.G8.2.3Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, text-based programming, treasure maps) |
| NOTE: Programming language editors may include, but are not limited to, Code.org, Pencil Code, and Scratch.  |
| CSK8.G5.2.4Begins in Grade 6 | CSK8.G6.2.4Discuss binary numbers, logic, sets, and functions and their application to computer science | CSK8.G7.2.4Examine binary numbers, logic, sets, and functions and their application to computer science | CSK8.G8.2.4Evaluate the relationship between binary and hexadecimal representations  |

**Strand:** Data, Information, and Security

**Content Cluster 3:** Students will analyze and utilize data through the use of computing devices.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.3.1Illustrate how different kinds of data can be represented  | CSK8.G6.3.1Represent a variety of data in multiple formats | CSK8.G7.3.1Evaluate the effectiveness of visual representations of data | CSK8.G8.3.1Create and analyze data representations of various artifacts |
| NOTE: Data representations may include, but are not limited to, numbers, pictures, sounds, and text.  |
| CSK8.G5.3.2Recognize that binary can represent data using only two options (e.g., on/off) | CSK8.G6.3.2Discuss how and why binary can represent data in a computer | CSK8.G7.3.2Discuss how American Standard Code for Information Interchange (ASCII) codes represent data in a computer | CSK8.G8.3.2Discuss how and why hexadecimal codes are used to represent data in a computer |
| CSK8.G5.3.3Explore various models and simulations (e.g., ecosystems, epidemics) to support research and data analysis | CSK8.G6.3.3Compare problems that can be solved using models and simulations that utilize data analysis  | CSK8.G7.3.3Evaluate the effectiveness of models and simulations for problem solving and analyze data | CSK8.G8.3.3Analyze the degree to which a computer model accurately represents an actual situation |
| CSK8.G5.3.4Identify the characteristics (e.g., collection environment, input method, units of measure) of the collected data  | CSK8.G6.3.4Describe the characteristics (e.g., collection environment, input method, units of measure) of the collected data | CSK8.G7.3.4Analyze the quality of collected data based on its characteristics (e.g., temperatures gathered at different scale) to determine the value provided to the user | CSK8.G8.3.4Collect data to be used for quality analysis |
| CSK8.G5.3.5Evaluate, select, and use level-appropriate tools to collect data | CSK8.G6.3.5Collect and analyze data using a variety of level-appropriate tools (e.g., analog, digital) | CSK8.G7.3.5Collect and analyze data from multiple sources using a variety of level-appropriate tools (e.g., analog, digital) | CSK8.G8.3.5Collect, analyze, and present data from multiple sources using a variety of level-appropriate tools (e.g., analog, digital) |
| NOTE: Data collection tools may include, but are not limited to, computer-generated graphs, paper, pencil, and sticky notes. |
| CSK8.G5.3.6Evaluate the most effective ways to arrange, collect, and visually represent data | CSK8.G6.3.6Evaluate the most effective ways to arrange, collect, and visually represent data | CSK8.G7.3.6Evaluate the most effective ways to arrange, collect, and visually represent data | CSK8.G8.3.6Evaluate the most effective ways to arrange, collect, and visually represent data |

**Strand:** Data, Information, and Security

**Content Cluster 4:** Students will analyze and utilize concepts of cybersecurity.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.4.1Identify real-world cybersecurity problems (e.g., malicious hacking) and apply strategies for protecting and securing personal digital information | CSK8.G6.4.1Identify real-world cybersecurity problems (e.g., malicious hacking) as they relate to personal cybersecurity, and how to apply strategies for protecting and securing personal digital information | CSK8.G7.4.1Research and describe real-world cybersecurity problems (e.g., identity theft) as they relate to personal cybersecurity and how to apply digital and physical methods for protecting and securing personal information | CSK8.G8.4.1Research and describe real-world cybersecurity problems (e.g., identity theft) as they relate to personal cybersecurity and how to apply digital and physical methods for protecting and securing personal information  |
| NOTE: Methods used to maintain digital privacy and security may include, but are not limited to, awareness of data collection through website tracking, consequences of identity theft, and personal cybersecurity threats. Strategies for securing personal information may include, but not are not limited to, reducing information shared on social media, resetting passwords, restricting access to online profiles, and setting permissions. |
| CSK8.G5.4.2Discuss issues related to the use of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use | CSK8.G6.4.2Discuss the difference between appropriate, legal, and ethical uses of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use | CSK8.G7.4.2Demonstrate an understanding between appropriate, legal, and ethical uses of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use | CSK8.G8.4.2Analyze the difference between appropriate, legal, and ethical uses of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use |
| NOTE: Issues may include, but are not limited to, cyber bullying, cyber presence, netiquette, online safety, protecting personal information, and the purpose of acceptable use policies and codes of conduct. |
| CSK8.G5.4.3Identify individual digital footprint (e.g., game profiles, other online accounts, and shares on social media) and the responsibilities and opportunities of living, learning, and working in a digitally connected world | CSK8.G6.4.3Apply strategies to protect personal digital footprints (e.g., game profiles, other online accounts, and shares on social media) and the responsibilities and opportunities of living, learning, and working in a digitally connected world | CSK8.G7.4.3Apply strategies to protect personal digital footprints (e.g., game profiles, other online accounts, and shares on social media) and the responsibilities and opportunities of living, learning, and working in a digitally connected world | CSK8.G8.4.3Apply strategies to protect personal digital footprints (e.g., game profiles, other online accounts, and shares on social media) and the responsibilities and opportunities of living, learning, and working in a digitally connected world |

**Strand:** Algorithms and Programs

**Content Cluster 5:** Students will create, evaluate, and modify algorithms.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.5.1Create algorithms to solve problems and evaluate effectiveness | CSK8.G6.5.1Create algorithms to solve problems and evaluate effectiveness | CSK8.G7.5.1Create algorithms using constraints to solve problems and evaluate effectiveness | CSK8.G8.5.1Create algorithms using constraints to solve problems and evaluate effectiveness |
| CSK8.G5.5.2Design and test algorithms collaboratively using technology  | CSK8.G6.5.2Design and test algorithms collaboratively using technology  | CSK8.G7.5.2Design and test algorithms using technology  | CSK8.G8.5.2Design and test algorithms using technology  |
| CSK8.G5.5.3Compare and refine algorithms | CSK8.G6.5.3Compare and refine algorithms | CSK8.G7.5.3Compare and refine algorithms | CSK8.G8.5.3Compare and refine algorithms |
| CSK8.G5.5.4Identify and correct multiple errors within a level-appropriate algorithm  | CSK8.G6.5.4Identify and correct errors within multiple level-appropriate algorithms | CSK8.G7.5.4Identify and correct multiple errors within a level-appropriate program | CSK8.G8.5.4Identify and correct multiple errors within a level-appropriate program |
| NOTE:“Algorithm” in this standard refers to a sequence of steps followed when completing a particular task. |

**Strand:** Algorithms and Programs

**Content Cluster 6:** Students will create programs to solve problems.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.6.1Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems  | CSK8.G6.6.1Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems  | CSK8.G7.6.1Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems  | CSK8.G8.6.1Create a level-appropriate program individually and collaboratively using a text-based programming language |
| NOTE: Block-based programming editors may include, but are not limited to, Blockly, Code.org, and Scratch Jr.Text-based programming editors may include, but are not limited to, App Lab, MakeCode, and Pencil Code.  |
| CSK8.G5.6.2Discuss and apply best practices of documentation (e.g., comments, descriptive variable names, program headers) | CSK8.G6.6.2Discuss and apply best practices of documentation (e.g., comments, descriptive variable names, program headers) | CSK8.G7.6.2Utilize best practices of documentation (e.g., comments, descriptive variable names, program headers) | CSK8.G8.6.2Utilize best practices of documentation (e.g., comments, descriptive variable names, program headers) |
| CSK8.G5.6.3Improve or remix existing block-based and/or text-based programs  | CSK8.G6.6.3Improve or remix existing block-based and/or text-based programs  | CSK8.G7.6.3Improve or remix existing block-based and/or text-based programs  | CSK8.G8.6.3Improve or remix existing text-based programs  |

**Strand:** Computers and Communications

**Content Cluster 7:** Students will analyze the utilization of computers within industry.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.7.1Discuss ways that humans create input for a desired output through a device (e.g., changing device settings, texting) | CSK8.G6.7.1Identify what distinguishes humans from machines, including focusing on human intelligence versus machine intelligence (e.g., computer vision, language understanding, robot motion, speech) | CSK8.G7.7.1Describe ways in which computers use models of intelligent behavior (e.g., computer vision, language understanding, robot motion, speech) | CSK8.G8.7.1Compare and contrast human intelligence and computer intelligence (e.g., common sense, emotional decisions, literal versus abstract) |
| CSK8.G5.7.2Recognize the expense of computer equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment | CSK8.G6.7.2Recognize the expense of computer equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment | CSK8.G7.7.2Recognize the expense of computer equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment | CSK8.G8.7.2Recognize the expense of computer equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment |
| NOTE: Proper care may include, but is not limited to, using clean hands and keeping food, drink, and magnets away from computers. |

**Strand:** Computers and Communications

**Content Cluster 8**: Students will analyze communication methods and systems used to transmit information among computing devices.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.8.1Describe how information can be transmitted using computing devices via a network | CSK8.G6.8.1Describe how information can be transmitted using computing devices via a network | CSK8.G7.8.1Identify major components and functions of computer systems and networks | CSK8.G8.8.1Describe major components and functions of computer systems and networks |
| NOTE: Networked computing devices may include, but are not limited to, cellular devices, Wi-Fi devices, and wired devices.Major networking components may include, but are not limited to, modems, network cards, routers, switches, and wireless access points. |
| CSK8.G5.8.2Demonstrate touch typing techniques while increasing speed and maintaining accuracy | CSK8.G6.8.2Demonstrate touch typing techniques while increasing speed and maintaining accuracy | CSK8.G7.8.2Demonstrate touch typing techniques while increasing speed and maintaining accuracy | CSK8.G8.8.2Demonstrate touch typing techniques while increasing speed and maintaining accuracy |
| CSK8.G5.8.3Practice proper keyboarding technique:* body centered in front of keyboard
* elbows down
* eyes focused on the screen
* proper posture
 | CSK8.G6.8.3Practice proper keyboarding technique* body centered in front of keyboard
* elbows down
* eyes focused on the screen
* proper posture
 | CSK8.G7.8.3Practice proper keyboarding technique* body centered in front of keyboard
* elbows down
* eyes focused on the screen
* proper posture
 | CSK8.G8.8.3Practice proper keyboarding technique* body centered in front of keyboard
* elbows down
* eyes focused on the screen
* proper posture
 |

**Strand:** Computers and Communications

**Content Cluster 9:** Students will utilize appropriate hardware and software.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.9.1Begins in Grade 7 | CSK8.G6.9.1Begins in Grade 7 | CSK8.G7.9.1Compare and contrast examples of high-level and low-level programming languages  | CSK8.G8.9.1Research the hierarchy in computing including high-level languages, instruction sets, logic circuits, and translations |
| NOTE: Low-level languages (e.g., assembly, machine code) are understood by a computing device with little or no translation, while high-level languages (e.g., C++, Java, Javascript, Python) are easier for humans to read and must be converted into machine code before execution. |
| CSK8.G5.9.2Demonstrate level-appropriate proficiency with keyboards and other input/output devices  | CSK8.G6.9.2Demonstrate level-appropriate proficiency with keyboards and other input/output devices.  | CSK8.G7.9.2Demonstrate level-appropriate proficiency with keyboards and other input/output devices.  | CSK8.G8.9.2Demonstrate level-appropriate proficiency with keyboards and other input/output devices.  |
| NOTE: Input/output devices may include, but are not limited to, interactive boards, mice, microphones, monitors, speakers, touchscreens, and touchpads. |
| CSK8.G5.9.3Use and evaluate productivity technology tools for effectiveness in writing, communication, and publishing activities | CSK8.G6.9.3Apply productivity/multimedia tools to support communication throughout the curriculum | CSK8.G7.9.3Apply productivity/multimedia tools to support communication throughout the curriculum | CSK8.G8.9.3Design, develop, and publish/present products (e.g., podcasts, videos, websites) using technology resources that demonstrate and communicate curriculum concepts |
| NOTE: Productivity technology tools include, but are not limited to, email systems, file sharing services, presentation software, short message service, spreadsheet applications, video conferencing systems, and word processing software. |

**Strand:** Professionalism and Impacts of Computing

**Content Cluster 10:** Students will analyze the impacts of technology and professionalism within the computing community.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.10.1Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers | CSK8.G6.10.1Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers | CSK8.G7.10.1Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers | CSK8.G8.10.1Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers |
| NOTE: Dangers of social media include, but are not limited to, cyberbullying, echo chambers, impersonation, mood manipulation, population manipulation, and social media induced depression. |
| CSK8.G5.10.2Discuss the impact of access to computing resources  | CSK8.G6.10.2Demonstrate an understanding of the impact of access to computing resources  | CSK8.G7.10.2Demonstrate an understanding of the impact of access to computing resources on a global economy | CSK8.G8.10.2Analyze the impact of the availability to computing resources on accessing critical information |
| CSK8.G5.10.3Classify different types of relationships (e.g., parents, trusted adults, friends, strangers, anonymous users) and how they affect what information should be shared  | CSK8.G6.10.3Identify the potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects  | CSK8.G7.10.3Research and discuss potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects | CSK8.G8.10.3Research and discuss potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects |
| CSK8.G5.10.4Research the history of computers and technology | CSK8.G6.10.4Research the history of computers and technology | CSK8.G7.10.4Research the history of computers and technology | CSK8.G8.10.4Research the history of computers and technology |
| CSK8.G5.10.5Examine the range and types of careers that require computing and technology | CSK8.G6.10.5Investigate a career that requires computing and technology | CSK8.G7.10.5Describe how computer science enhances other career fields | CSK8.G8.10.5Predict the role of computer science in future careers |
| CSK8.G5.10.6Explain positive and negative impacts of technology on the daily life of individuals and society | CSK8.G6.10.6Demonstrate an understanding of positive and negative impacts of technology on the daily life of individuals and society | CSK8.G7.10.6Analyze changes in technology through time and the effects those changes have on the daily life of individuals and society | CSK8.G8.10.6Analyze positive and negative impacts of technology on aspects of the world (e.g., culture, economy, education, environment, workforce) |
| NOTE: Technology may include, but is not limited to, digital security, mobile computing and communication, virtualization, and web technologies.  |
| CSK8.G5.10.7Demonstrate an understanding of ethical issues in copyright laws, fair use exemptions, and intellectual property rights in various media | CSK8.G6.10.7Demonstrate ethical uses of copyright laws, fair use exemptions, and intellectual property in various media | CSK8.G7.10.7Demonstrate ethical uses of copyright laws, fair use exemptions, and intellectual property in various media  | CSK8.G8.10.7Analyze ethical issues that relate to copyright laws, fair use exemptions, and intellectual property in various media  |

**Strand:** Professionalism and Impacts of Computing

**Content Cluster 11:** Students will demonstrate understanding of storytelling with data and appropriately communicate about technical information.

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| **Grade 5** | **Grade 6** | **Grade 7** | **Grade 8** |
| CSK8.G5.11.1Communicate (e.g., present, report, verbalize) technical information using correct terminology | CSK8.G6.11.1Communicate (e.g., present, report, verbalize) technical information using correct terminology | CSK8.G7.11.1Communicate (e.g., present, report, verbalize) technical information using correct terminology | CSK8.G8.11.1Communicate (e.g., present, report, verbalize) technical information using correct terminology |
| NOTE: Technical information may include, but is not limited to, collecting or collected data, computing hardware, cyber hygiene, networking concepts, programming paradigms, and troubleshooting concepts. |
| CSK8.G5.11.2Utilize storytelling to explain program design and collected data | CSK8.G6.11.2Utilize storytelling to explain program design and collected data | CSK8.G7.11.2Utilize storytelling to explain program design and collected data | CSK8.G8.11.2Utilize storytelling to explain program design and collected data |
| NOTE: Storytelling concepts may include, but are not limited to, identifying the knowledge level of the intended audience; developing a compelling narrative; creating appealing visualizations appropriate for the intended audience and that enhance the narrative; remaining objective and avoiding biases; and avoiding the censoring of data. |
| CSK8.G5.11.3Compare the accuracy, bias, credibility, and relevance of electronic information sources | CSK8.G6.11.3Demonstrate an understanding of the accuracy, age appropriateness, bias, comprehensiveness, credibility, and relevance of electronic information sources | CSK8.G7.11.3Evaluate and discuss the accuracy, age appropriateness, bias, comprehensiveness, credibility, and relevance of electronic information sources concerning real-world problems | CSK8.G8.11.3Apply strategies for determining the reliability of information found on the internet |
| CSK8.G5.11.4Identify the concepts of causationand correlation | CSK8.G6.11.4Utilize data analysis to distinguish between causation and correlation | CSK8.G7.11.4Utilize data analysis to distinguish between causation and correlation | CSK8.G8.11.4Utilize data analysis to distinguish between causation and correlation  |
| CSK8.G5.11.5Create descriptions of, make connections between, and draw conclusions from collected data | CSK8.G6.11.5Create descriptions of, make connections between, and draw conclusions from collected data | CSK8.G7.11.5Create descriptions of, make connections between, and draw conclusions from collected data | CSK8.G8.11.5Create descriptions of, make connections between, and draw conclusions from collected data |

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