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
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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.1.1 Identify and utilize level-appropriate, algorithmic problem-solving strategies	CSK8.G6.1.1 Identify and utilize level-appropriate, algorithmic problem-solving strategies	CSK8.G7.1.1 Identify and utilize level-appropriate, algorithmic problem-solving strategies	CSK8.G8.1.1 Identify 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.G5.1.2 Examine visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity	CSK8.G6.1.2 Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity	CSK8.G7.1.2 Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity	CSK8.G8.1.2 Utilize visual representations of problem-solving logic (e.g., flowcharts) to solve problems of level-appropriate complexity
CSK8.G5.1.3 Evaluate effective ways that collaboration can support problem solving and innovation	CSK8.G6.1.3 Analyze appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems	CSK8.G7.1.3 Demonstrate appropriate collaborative behaviors (e.g., accepting multiple perspectives, integrating feedback, providing useful feedback, understanding and using socialization) to solve problems	CSK8.G8.1.3 Demonstrate 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.G5.1.4 Apply strategies for solving simple hardware and software problems that may occur during use	CSK8.G6.1.4 Apply strategies for solving simple hardware and software problems that may occur during use	CSK8.G7.1.4 Apply strategies for identifying and solving routine hardware and software problems that occur during everyday computer use	CSK8.G8.1.4 Apply 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.2.1 Begins in Grade 6	CSK8.G6.2.1 Describe subsets of a sample set identifying unions, intersections, and complements (e.g., describing information sorted with a Venn diagram)	CSK8.G7.2.1 Create 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.G8.2.1 Create subsets of a sample set by using logic (e.g., OR, AND, NOT, XOR)
CSK8.G5.2.2 Begins in Grade 6	CSK8.G6.2.2 Explore how variables are used to represent data	CSK8.G7.2.2 Utilize variables to construct expressions and equations	CSK8.G8.2.2 Utilize variables in the creation of functions, methods, or similar constructs
CSK8.G5.2.3 Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps)	CSK8.G6.2.3 Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps)	CSK8.G7.2.3 Compare and contrast the relative positions of objects using ordered pairs within a program (e.g., battleships, block-based programming, treasure maps)	CSK8.G8.2.3 Compare 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.G5.2.4 Begins in Grade 6	CSK8.G6.2.4 Discuss binary numbers, logic, sets, and functions and their application to computer science	CSK8.G7.2.4 Examine binary numbers, logic, sets, and functions and their application to computer science	CSK8.G8.2.4 Evaluate 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.

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

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.4.1 Identify real-world cybersecurity problems (e.g., malicious hacking) and apply strategies for protecting and securing personal digital information	CSK8.G6.4.1 Identify 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.G7.4.1 Research 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.G8.4.1 Research 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.G5.4.2 Discuss issues related to the use of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use	CSK8.G6.4.2 Discuss the difference between appropriate, legal, and ethical uses of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use	CSK8.G7.4.2 Demonstrate an understanding between appropriate, legal, and ethical uses of technology, acceptable use policies, and codes of conduct and the consequences of inappropriate use	CSK8.G8.4.2 Analyze 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.G5.4.3 Identify 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.G6.4.3 Apply 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.G7.4.3 Apply 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.G8.4.3 Apply 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.5.1 Create algorithms to solve problems and evaluate effectiveness	CSK8.G6.5.1 Create algorithms to solve problems and evaluate effectiveness	CSK8.G7.5.1 Create algorithms using constraints to solve problems and evaluate effectiveness	CSK8.G8.5.1 Create algorithms using constraints to solve problems and evaluate effectiveness
CSK8.G5.5.2 Design and test algorithms collaboratively using technology	CSK8.G6.5.2 Design and test algorithms collaboratively using technology	CSK8.G7.5.2 Design and test algorithms using technology	CSK8.G8.5.2 Design and test algorithms using technology
CSK8.G5.5.3 Compare and refine algorithms	CSK8.G6.5.3 Compare and refine algorithms	CSK8.G7.5.3 Compare and refine algorithms	CSK8.G8.5.3 Compare and refine algorithms
CSK8.G5.5.4 Identify and correct multiple errors within a level-appropriate algorithm	CSK8.G6.5.4 Identify and correct errors within multiple level-appropriate algorithms	CSK8.G7.5.4 Identify and correct multiple errors within a level-appropriate program	CSK8.G8.5.4 Identify 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.6.1 Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems	CSK8.G6.6.1 Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems	CSK8.G7.6.1 Use a visual block-based or text-based programming language individually and collaboratively to solve level-appropriate problems	CSK8.G8.6.1 Create 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.G5.6.2 Discuss and apply best practices of documentation (e.g., comments, descriptive variable names, program headers)	CSK8.G6.6.2 Discuss and apply best practices of documentation (e.g., comments, descriptive variable names, program headers)	CSK8.G7.6.2 Utilize best practices of documentation (e.g., comments, descriptive variable names, program headers)	CSK8.G8.6.2 Utilize best practices of documentation (e.g., comments, descriptive variable names, program headers)
CSK8.G5.6.3 Improve or remix existing block-based and/or text-based programs	CSK8.G6.6.3 Improve or remix existing block-based and/or text-based programs	CSK8.G7.6.3 Improve or remix existing block-based and/or text-based programs	CSK8.G8.6.3 Improve or remix existing text-based programs

Strand: Computers and Communications

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

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.7.1 Discuss ways that humans create input for a desired output through a device (e.g., changing device settings, texting)	CSK8.G6.7.1 Identify what distinguishes humans from machines, including focusing on human intelligence versus machine intelligence (e.g., computer vision, language understanding, robot motion, speech)	CSK8.G7.7.1 Describe ways in which computers use models of intelligent behavior (e.g., computer vision, language understanding, robot motion, speech)	CSK8.G8.7.1 Compare and contrast human intelligence and computer intelligence (e.g., common sense, emotional decisions, literal versus abstract)
CSK8.G5.7.2 Recognize 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.G6.7.2 Recognize 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.G7.7.2 Recognize 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.G8.7.2 Recognize 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.8.1 Describe how information can be transmitted using computing devices via a network	CSK8.G6.8.1 Describe how information can be transmitted using computing devices via a network	CSK8.G7.8.1 Identify major components and functions of computer systems and networks	CSK8.G8.8.1 Describe 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.G5.8.2 Demonstrate touch typing techniques while increasing speed and maintaining accuracy	CSK8.G6.8.2 Demonstrate touch typing techniques while increasing speed and maintaining accuracy	CSK8.G7.8.2 Demonstrate touch typing techniques while increasing speed and maintaining accuracy	CSK8.G8.8.2 Demonstrate touch typing techniques while increasing speed and maintaining accuracy
CSK8.G5.8.3 Practice proper keyboarding technique: ● body centered in front of keyboard ● elbows down ● eyes focused on the screen ● proper posture	CSK8.G6.8.3 Practice proper keyboarding technique ● body centered in front of keyboard ● elbows down ● eyes focused on the screen ● proper posture	CSK8.G7.8.3 Practice proper keyboarding technique ● body centered in front of keyboard ● elbows down ● eyes focused on the screen ● proper posture	CSK8.G8.8.3 Practice 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.9.1 Begins in Grade 7	CSK8.G6.9.1 Begins in Grade 7	CSK8.G7.9.1 Compare and contrast examples of high-level and low-level programming languages	CSK8.G8.9.1 Research 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.G5.9.2 Demonstrate level-appropriate proficiency with keyboards and other input/output devices	CSK8.G6.9.2 Demonstrate level-appropriate proficiency with keyboards and other input/output devices.	CSK8.G7.9.2 Demonstrate level-appropriate proficiency with keyboards and other input/output devices.	CSK8.G8.9.2 Demonstrate 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.G5.9.3 Use and evaluate productivity technology tools for effectiveness in writing, communication, and publishing activities	CSK8.G6.9.3 Apply productivity/multimedia tools to support communication throughout the curriculum	CSK8.G7.9.3 Apply productivity/multimedia tools to support communication throughout the curriculum	CSK8.G8.9.3 Design, 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.10.1 Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers	CSK8.G6.10.1 Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers	CSK8.G7.10.1 Identify the dangers of social media and other online engagement platforms, and strategies to address these dangers	CSK8.G8.10.1 Identify 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.G5.10.2 Discuss the impact of access to computing resources	CSK8.G6.10.2 Demonstrate an understanding of the impact of access to computing resources	CSK8.G7.10.2 Demonstrate an understanding of the impact of access to computing resources on a global economy	CSK8.G8.10.2 Analyze the impact of the availability to computing resources on accessing critical information
CSK8.G5.10.3 Classify different types of relationships (e.g., parents, trusted adults, friends, strangers, anonymous users) and how they affect what information should be shared	CSK8.G6.10.3 Identify the potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects	CSK8.G7.10.3 Research and discuss potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects	CSK8.G8.10.3 Research and discuss potential outcomes of oversharing information with otherwise trusted parties and how to minimize the effects
CSK8.G5.10.4 Research the history of computers and technology	CSK8.G6.10.4 Research the history of computers and technology	CSK8.G7.10.4 Research the history of computers and technology	CSK8.G8.10.4 Research the history of computers and technology
CSK8.G5.10.5 Examine the range and types of careers that require computing and technology	CSK8.G6.10.5 Investigate a career that requires computing and technology	CSK8.G7.10.5 Describe how computer science enhances other career fields	CSK8.G8.10.5 Predict the role of computer science in future careers
CSK8.G5.10.6 Explain positive and negative impacts of technology on the daily life of individuals and society	CSK8.G6.10.6 Demonstrate an understanding of positive and negative impacts of technology on the daily life of individuals and society	CSK8.G7.10.6 Analyze changes in technology through time and the effects those changes have on the daily life of individuals and society	CSK8.G8.10.6 Analyze 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.G5.10.7 Demonstrate an understanding of ethical issues in copyright laws, fair use exemptions, and intellectual property rights in various media	CSK8.G6.10.7 Demonstrate ethical uses of copyright laws, fair use exemptions, and intellectual property in various media	CSK8.G7.10.7 Demonstrate ethical uses of copyright laws, fair use exemptions, and intellectual property in various media	CSK8.G8.10.7 Analyze 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.

Grade 5	Grade 6	Grade 7	Grade 8
CSK8.G5.11.1 Communicate (e.g., present, report, verbalize) technical information using correct terminology	CSK8.G6.11.1 Communicate (e.g., present, report, verbalize) technical information using correct terminology	CSK8.G7.11.1 Communicate (e.g., present, report, verbalize) technical information using correct terminology	CSK8.G8.11.1 Communicate (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.G5.11.2 Utilize storytelling to explain program design and collected data	CSK8.G6.11.2 Utilize storytelling to explain program design and collected data	CSK8.G7.11.2 Utilize storytelling to explain program design and collected data	CSK8.G8.11.2 Utilize 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.G5.11.3 Compare the accuracy, bias, credibility, and relevance of electronic information sources	CSK8.G6.11.3 Demonstrate an understanding of the accuracy, age appropriateness, bias, comprehensiveness, credibility, and relevance of electronic information sources	CSK8.G7.11.3 Evaluate and discuss the accuracy, age appropriateness, bias, comprehensiveness, credibility, and relevance of electronic information sources concerning real-world problems	CSK8.G8.11.3 Apply strategies for determining the reliability of information found on the internet
CSK8.G5.11.4 Identify the concepts of causation and correlation	CSK8.G6.11.4 Utilize data analysis to distinguish between causation and correlation	CSK8.G7.11.4 Utilize data analysis to distinguish between causation and correlation	CSK8.G8.11.4 Utilize data analysis to distinguish between causation and correlation
CSK8.G5.11.5 Create descriptions of, make connections between, and draw conclusions from collected data	CSK8.G6.11.5 Create descriptions of, make connections between, and draw conclusions from collected data	CSK8.G7.11.5 Create descriptions of, make connections between, and draw conclusions from collected data	CSK8.G8.11.5 Create descriptions of, make connections between, and draw conclusions from collected data

Contributors

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