

# **Arkansas Computer Science Standards for Grades K-8**

**(K-4 Document)**

**2016**

## **Arkansas Computer Science Standards for Grades K-8**

### **Introduction**

The Arkansas Computer Science Standards for Grades K-8 provide an introduction to computing concepts that are to be embedded across other content areas and are intended to support what is already being done in the classroom. 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. Formal assessment of these standards is not required; teachers may monitor and measure student learning through normal classroom activities and interactions.

Implementation of the Arkansas Computer Science Standards for Grades K-8 begins during the 2017-2018 school year.

## Computer Science Practices

### Students will exhibit proficiency in computer science through:

**Perseverance** - Students expect and persist in overcoming the challenges that occur when completing tasks. They recognize that making and correcting mistakes will take place during the learning process and problem solving.

**Collaboration** - Students effectively work and communicate with others 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.

**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.

**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 application programs, programming languages, or appropriate computing devices.

**Communication** - Students effectively communicate, using accurate and appropriate terminology, when explaining the task completion or problem solving strategies that were used. They recognize that good documentation is an ongoing part of the process, and when appropriate, provide accurate documentation of their work in a manner that is understandable to others.

**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.

**Problem Solving** - Students exhibit proficiency in Computer Science through identifying and systematically solving problems (e.g., engineering design process). They recognize problem solving as an ongoing process.

**Arkansas Computer Science Standards for Grades K-8  
(K-4 Document)**

Strand	Content Cluster
Computational Thinking and Problem Solving	
	1. Students will analyze problem-solving strategies.
	2. Students will analyze connections between elements of mathematics and computer science.
	3. Students will solve problems cooperatively and collaboratively.
Data and Information	
	4. Students will analyze various ways in which data is represented.
	5. Students will collect, arrange, and represent data.
	6. Students will interpret and analyze data and information.
Algorithms and Programs	
	7. Students will create, evaluate, and modify algorithms.
	8. Students will create programs to solve problems.
Computers and Communications	
	9. Students will analyze the utilization of computers.
	10. Students will utilize appropriate digital tools for various applications.
	11. Students will analyze various components and functions of computers.
Community, Global, and Ethical Impacts	
	12. Students will analyze appropriate uses of technology.

Notes for the K-4 Computer Science Standards document:

1. The examples given (e.g.,) are suggestions to guide the instructor.
2. The course strands, content clusters, and the content standards are to be taught in an integrated manner, not in isolation.
3. The Practices are intended to be habits of mind for all students and were written broadly in order to apply to all grades. The Practices are not content standards and are not intended to be formally assessed but may be assessed formatively.
4. 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.
5. Notes found within the document are not approved 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 are subject to change as understandings of the standards evolve.

Strand: Computational Thinking and Problem Solving  
 Content Cluster 1: Students will analyze problem-solving strategies.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CT.1.K.1 Discuss the following basic steps when problem solving: <ul style="list-style-type: none"> <li>• understanding the problem</li> <li>• considering various strategies</li> </ul>	CT.1.1.1 Demonstrate the following basic steps when problem solving: <ul style="list-style-type: none"> <li>• understanding the problem</li> <li>• considering various strategies</li> </ul>	CT.1.2.1 Demonstrate the following basic steps when problem solving: <ul style="list-style-type: none"> <li>• understanding the problem</li> <li>• considering and examining the efficiency of various strategies</li> </ul>	CT.1.3.1 Solve problems using a defined process	CT.1.4.1 Examine the process of problem solving and how it applies to algorithmic problem solving
NOTE for CT.1.K.1 through CT.1.4.1 Problems within these standards can be, but are not limited to, real world problems or problems encountered in the student's daily-life. Examples include, but are not limited to, tying shoes and how to get from a classroom to the cafeteria.				
CT.1.K.2 Begins in Grade 7	CT.1.1.2 Begins in Grade 7	CT.1.2.2 Begins in Grade 7	CT.1.3.2 Begins in Grade 7	CT.1.4.2 Begins in Grade 7

Strand: Computational Thinking and Problem Solving

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

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<p>CT.2.K.1 Discuss the relative positions of objects within a program (e.g., up, down, left, right, over, under, on top of, behind, in front of, to the left, to the right)</p>	<p>CT.2.1.1 Demonstrate understanding of the relative positions of objects within a program (e.g., up, down, left, right, over, under, on top of, behind, in front of, to the left, to the right)</p>	<p>CT.2.2.1 Demonstrate understanding of the relative positions of objects within a program (e.g., up, down, left, right, diagonal)</p>	<p>CT.2.3.1 Apply fractional rotations within a program (e.g., quarter turns and half turns)</p>	<p>CT.2.4.1 Examine the relative position of objects using angles within a program (e.g., 30 degree turn)</p>
<p>Note for CT.2.K.1 through CT.2.4.1 These standards require the use of a computer program or mobile device application (e.g., Blockly, Scratch, Code.org). However, students may be taught the standards in a group with the teacher manipulating the computer program while students direct the teacher's movements, or individually as district technology permits. This Content Cluster may also be taught in conjunction with Content Cluster 8, at the teacher's and district's discretion.</p>				
<p>CT.2.K.2 Begins in Grade 6</p>	<p>CT.2.1.2 Begins in Grade 6</p>	<p>CT.2.2.2 Begins in Grade 6</p>	<p>CT.2.3.2 Begins in Grade 6</p>	<p>CT.2.4.2 Begins in Grade 6</p>
<p>CT.2.K.3 Begins in Grade 6</p>	<p>CT.2.1.3 Begins in Grade 6</p>	<p>CT.2.2.3 Begins in Grade 6</p>	<p>CT.2.3.3 Begins in Grade 6</p>	<p>CT.2.4.3 Begins in Grade 6</p>
<p>CT.2.K.4 Begins in Grade 6</p>	<p>CT.2.1.4 Begins in Grade 6</p>	<p>CT.2.2.4 Begins in Grade 6</p>	<p>CT.2.3.4 Begins in Grade 6</p>	<p>CT.2.4.4 Begins in Grade 6</p>

Strand: Computational Thinking and Problem Solving  
 Content Cluster 3: Students will solve problems cooperatively and collaboratively.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CT.3.K.1 Solve problems cooperatively	CT.3.1.1 Solve problems of increasing complexity cooperatively	CT.3.2.1 Solve problems of increasing complexity collaboratively	CT.3.3.1 Construct innovative solutions to problems collaboratively	CT.3.4.1 Construct innovative solutions to problems of increasing complexity collaboratively

Note for CT.3.K.1 through CT.3.4.1

This standard does not require the use of a computer-based program. Students will problem solve cooperatively. The educator will determine the preferred student grouping (e.g., whole group, small group, pairs). The problems students are expected to solve may be related to real-life, age appropriate situations.

Here are some grade specific problems that a teacher may use; however, these are provided only as examples. Students should face a much wider variety of problems at each grade level and in various subject areas.

- Kindergarten - Teacher read-aloud an appropriate book about proper characteristics (e.g., kindness, helping others, not bullying others) and have the class discuss solutions or recommendations for appropriate actions that the characters in the book should take to overcome their problem(s).
- First Grade - Have each small group “plant” a seed in a re-sealable zipper storage bag or container, utilizing different amounts/types of light, water, seeds, planting material, to discover and document the patterns of what plants need to survive. (Arkansas K-12 Science Standard K-LS1-1)
- Second Grade - Have each small group measure the length of various objects using different measuring tools (e.g., rulers, yardsticks, measuring tapes) and then discuss and report to the class the benefits and obstacles of each tool. (AR.Math.2.MD.A.1)
- Third Grade - Work as a group to properly fold the United States Flag (D2.Civ.7.K-2)
- Fourth Grade – As a group, develop strategies to defend space, display readiness, and cover areas utilizing motor skills. (Arkansas Physical Education and Health Standard PEL.2.4.3)



Strand: Data and Information

Content Cluster 4: Students will analyze various ways in which data is represented.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
D.4.K.1 Define data and provide examples	D.4.1.1 Describe how and why data is used	D.4.2.1 Compare types of data and how it is used	D.4.3.1 Describe how representation of data can exist in multiple formats	D.4.4.1 Compare the representation of existing data in multiple formats
<p>Note for D.4.K.1 through D.4.4.1 Data within these standards may be very simple measuring points (e.g., number of students with a particular hair or eye color, number of male/female students, number of students that enjoy playing sports). These activities may be completed with guidance or within groups.</p>				
D.4.K.2 Recognize ways that people represent data differently (e.g., thumbs up for yes; thumbs down for no)	D.4.1.2 Describe how numbers can be used to represent data (e.g., color by number, secret codes)	D.4.2.2 Use numbers to represent data (e.g., encode and decode a word with numbers)	D.4.3.2 Describe how 0's and 1's can be used to represent data	D.4.4.2 Use 0's and 1's to represent data (e.g., encode and decode a word with 0's and 1's)
<p>Note for D.4.K.2 through D.4.4.2 These standards are intended to introduce students to the concept that data can be represented in a variety of ways.</p> <ul style="list-style-type: none"> <li>• Third Grade - Within a spreadsheet application, a student may label bus riders with a '1' and all other students with a '0'; the column containing the labels can be summed to determine the number of bus riders.</li> <li>• Fourth Grade - Each student can encode information in a series of 0's and 1's. For example, if '0' represents "no" and '1' represents "yes," and the students are asked to answer four yes or no questions about their personal life and code their answer using 1's and 0's, another student could then take their coded answer and decode that information about the original student.</li> </ul>				

Strand: Data and Information

Content Cluster 5: Students will collect, arrange, and represent data.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
D.5.K.1 Identify the purpose for data collection	D.5.1.1 Recognize various tools for data collection as a class	D.5.2.1 Select and use various tools to collect data as a class and in teams	D.5.3.1 Select and use appropriate tools to collect data in teams and individually	D.5.4.1 Compare and use appropriate tools to collect data
<p>Note for D.5.K.1 through D.5.4.1                      The progression of the standards may include transitioning from collecting data in teams to individual work. The tools may become more and more sophisticated every year (e.g., paper pencil, sticky notes, raise hands, computer generated graphs) By 3rd grade students should be choosing the appropriate tools for collecting data.</p>				
D.5.K.2 Collect and arrange data based on a characteristic (e.g., size, color, shape, alphabetic) as a class	D.5.1.2 Collect and arrange data based on a characteristic (e.g., size, color, shape, alphabetic) in teams	D.5.2.2 Collect and arrange data based on multiple characteristics (e.g., both size & color, alphabetic & phonemic patterns) as a class and in teams	D.5.3.2 Collect and arrange data logically based on multiple characteristics as a class and in teams	D.5.4.2 Collect and arrange data logically based on multiple characteristics in teams and individually
D.5.K.3 Represent data visually as a whole class	D.5.1.3 Organize and visually represent data as a whole class and in teams	D.5.2.3 Organize and visually represent data with pictographs and bar graphs	D.5.3.3 Organize and draw visual representations of data with pictographs and bar graphs	D.5.4.3 Compare different ways to visually represent data with pictographs, bar graphs, and line plots

Notes for Content Cluster 5

- Though it is suggested when appropriate, there is no requirement for any standards within Content Cluster 5 to be taught using a computing device.
- Efforts were made to align these standards with other subject areas including mathematics; however, they are cross-curricular standards and may not align perfectly with any other particular set of standards.

Strand: Data and Information

Content Cluster 6: Students will interpret and analyze data and information.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
D.6.K.1 Interpret and analyze concrete and pictorial graphs as a whole class	D.6.1.1 Interpret and analyze concrete and pictorial graphs as a class and in teams	D.6.2.1 Interpret and analyze graphs in teams and individually	D.6.3.1 Interpret and analyze graphs individually	D.6.4.1 Explore graphs as models for data analysis
D.6.K.2 Begins in Grade 7	D.6.1.2 Begins in Grade 7	D.6.2.2 Begins in Grade 7	D.6.3.2 Begins in Grade 7	D.6.4.2 Begins in Grade 7

Note for Content Cluster 6

These standards align closely with standards within other content areas; however, the ability to analyze data and information is essential to the field of computer science. At these grade levels, the foundation is being laid for more in-depth work in later grades.

Strand: Algorithms and Programs

Content Cluster 7: Students will create, evaluate, and modify algorithms.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
A.7.K.1 Identify and follow an algorithm to accomplish a simple task	A.7.1.1 Choose an algorithm to accomplish a specific task	A.7.2.1 Determine which steps will complete an algorithm to accomplish a task	A.7.3.1 Create and follow algorithms to accomplish a simple task or solve a simple problem	A.7.4.1 Create and follow algorithms to accomplish a task or solve a problem
A.7.K.2 Compare and contrast algorithms of appropriate complexity as a class	A.7.1.2 Compare and contrast algorithms of appropriate complexity	A.7.2.2 Compare and contrast algorithms of appropriate complexity	A.7.3.2 Compare and contrast algorithms of appropriate complexity	A.7.4.2 Compare and contrast algorithms of appropriate complexity
A.7.K.3 Demonstrate how to correct errors within an algorithm that accomplishes a simple task	A.7.1.3 Identify and correct errors within an algorithm that accomplishes a specific task	A.7.2.3 Identify and correct errors within an algorithm that accomplishes a task	A.7.3.3 Identify and correct multiple errors within an algorithm that accomplishes a simple task or solves a simple problem	A.7.4.3 Identify and correct multiple errors within an algorithm that accomplishes a task or solves a problem
A.7.K.4 Design algorithms of appropriate complexity as a group to show a simple process	A.7.1.4 Design and test algorithms of appropriate complexity collaboratively	A.7.2.4 Design and test algorithms of appropriate complexity collaboratively	A.7.3.4 Design and test algorithms of appropriate complexity collaboratively using technology	A.7.4.4 Design and test algorithms of appropriate complexity collaboratively using technology

Note for Content Cluster 7

The use of the word algorithm within these standards is applicable to all content areas, not just mathematics. Algorithm within these standards implies a sequence of steps followed when completing a particular task. The steps followed to make a peanut butter and jelly sandwich form an algorithm. These standards may be completed using a computing device but do not require the use of one. Students should be encouraged to find their own solutions in many instances; notwithstanding, the standards do require students to demonstrate the ability to follow and/or correct a specified series of steps when necessary. For instance, students may be asked to indicate whether shoes should be put on before socks, or whether socks should be put on before shoes. For a video explanation of algorithm please visit <http://goo.gl/87ghV9>.

Strand: Algorithms and Programs

Content Cluster 8: Students will create programs to solve problems.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
A.8.K.1 Use a visual block-based programming language individually and collaboratively to solve problems	A.8.1.1 Use a visual block-based programming language individually and collaboratively to solve problems of increasing complexity	A.8.2.1 Use a visual block-based programming language individually and collaboratively to solve problems of increasing complexity	A.8.3.1 Use a visual block-based programming language individually and collaboratively to solve problems of increasing complexity	A.8.4.1 Use a visual block-based programming language individually and collaboratively to solve problems of increasing complexity

Note for Content Cluster 8

These standards can be met by using free online programming environments such as Blockly, Scratch Jr., or Code.org. While the expectation is that students will utilize computers to solve problems with increasing regularity, students may be able to meet these requirements through a program as simple as Code.org's *Hour of Code*.

Strand: Computers and Communications

Content Cluster 9: Students will analyze the utilization of computers.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CC.9.K.1 Explore uses of computing and technology	CC.9.1.1 Identify uses of computing and technology	CC.9.2.1 Examine uses of computing and technology	CC.9.3.1 Discuss a variety of careers that require computing and technology	CC.9.4.1 Identify a variety of careers that require computing and technology
CC.9.K.2 Begins in Grade 3	CC.9.1.2 Begins in Grade 3	CC.9.2.2 Begins in Grade 3	CC.9.3.2 Discuss as a class that computers perform actions or outputs based on inputs by humans (e.g., using a video game controller, typing and using a mouse)	CC.9.4.2 Recognize that computers perform actions or outputs based on input by humans (e.g., using a video game controller, typing and using a mouse)

Strand: Computers and Communications

Content Cluster 10: Students will utilize appropriate digital tools for various applications.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
<p>CC.10.K.1 Use various input/output devices</p>	<p>CC.10.1.1 Demonstrate an appropriate level of proficiency with various input/output devices</p>	<p>CC.10.2.1 Demonstrate an appropriate level of proficiency with various input/output devices including keyboarding - can be a touchscreen keyboard.</p>	<p>CC.10.3.1 Demonstrate an appropriate level of proficiency with keyboards and other input/output devices.</p>	<p>CC.10.4.1 Demonstrate an appropriate level of proficiency with keyboards and other input/output devices</p>
<p>Note for CC.10.K.1 through CC.10.4.1 Examples for input/output devices include, but are not limited to, touch screens, mice, touchpads, trackballs, and interactive boards.</p>				
<p>CC.10.K.2 Demonstrate proper care of computer equipment</p>	<p>CC.10.1.2 Demonstrate proper care of computer equipment</p>	<p>CC.10.2.2 Recognize the expense of the equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment, therefore benefiting all students</p>	<p>CC.10.3.2 Recognize the expense of the equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment, therefore benefiting all students</p>	<p>CC.10.4.2 Recognize the expense of the equipment and how care and protection of the computers can prolong use and save the cost of purchasing new equipment, therefore benefiting all students</p>
<p>Note for CC.10.K.2 through CC.10.4.2 Examples include but are not limited to using clean hands and keeping food, drink, and magnets away from computers.</p>				
<p>CC.10.K.3 Practice locating:</p> <ul style="list-style-type: none"> <li>● letter and number keys</li> <li>● enter key</li> <li>● space bar with thumb</li> </ul> <p>Using visual representation of keyboard when physical keyboard is not available</p>	<p>CC.10.1.3 Practice locating:</p> <ul style="list-style-type: none"> <li>● letter and number keys</li> <li>● enter key</li> <li>● space bar with thumb</li> </ul> <p>Using visual representation of keyboard when physical keyboard is not available</p>	<p>CC.10.2.3 Introduce proper keyboard positions including:</p> <ul style="list-style-type: none"> <li>● fingers on home row keys</li> <li>● space bar with thumb</li> <li>● use enter key</li> </ul>	<p>CC.10.3.3 Use correctly on the keyboard:</p> <ul style="list-style-type: none"> <li>● fingers on home row keys</li> <li>● thumb on space bar</li> <li>● enter key</li> <li>● shift key for capital letters</li> <li>● punctuation appropriate to writing level</li> </ul>	<p>CC.10.4.3 Demonstrate touch typing techniques, not looking at fingers, while increasing speed and maintaining accuracy</p>

Strand: Computers and Communications

Content Cluster 10: Students will utilize appropriate digital tools for various applications.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CC.10.K.4 Learn proper seat posture	CC.10.1.4 Demonstrate proper seat posture	CC.10.2.4 Recognize proper keyboarding technique: <ul style="list-style-type: none"> <li>• posture</li> <li>• elbows down</li> <li>• body centered in front of keyboard</li> </ul>	CC.10.3.4 Demonstrate proper keyboarding technique: <ul style="list-style-type: none"> <li>• posture</li> <li>• elbows down</li> <li>• body centered in front of keyboard</li> </ul>	CC.10.4.4 Practice proper keyboarding technique: <ul style="list-style-type: none"> <li>• posture</li> <li>• elbows down</li> <li>• body centered in front of keyboard</li> </ul>

Note for Content Cluster 10

These standards are intended to support student familiarization with different input devices, and introduce students to correct techniques that will continue to be refined. Meeting these standards does not require a dedicated keyboarding program.



Strand: Computers and Communications

Content Cluster 11: Students will analyze various components and functions of computers.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.				
Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CC.11.K.1 Discuss as a class how information can be communicated electronically	CC.11.1.1 Discuss as a class how information can be communicated electronically	CC.11.2.1 Discuss as a class how information can be communicated electronically.	CC.11.3.1 Identify and use productivity technology tools for writing, communicating, and publishing activities	CC.11.4.1 Use productivity technology tools for writing, communicating, and publishing activities
Notes for CC.11.K.1 through CC.11.4.1 Examples could include but are not limited to email, texting, video conferencing, file sharing, word processing, spreadsheet, and presentation software.				
CC.11.K.2 Begins in Grade 3	CC.11.1.2 Begins in Grade 3	CC.11.2.2 Begins in Grade 3	CC.11.3.2 Identify as a class that information can be transmitted using computing devices via a network	CC.11.4.2 Identify that information can be transmitted using computing devices via a network
Note for CC. 11.3.2 and 11.4.2 Examples could include wired devices, wifi devices, and cellular devices.				
CC.11.K.3 Recognize that computing devices execute programs	CC.11.1.3 Identify a variety of computing devices	CC.11.2.3 Describe the unique features of a variety of computing devices (e.g., processors, displays, storage types, input formats)	CC.11.3.3 Recognize that computing devices execute programs using processors	CC.11.4.3 Identify a variety of computing devices that execute programs using processors (e.g., digital watch, home appliances, vehicles)
CC.11.K.4 Identify simple hardware and software problems that may occur during use	CC.11.1.4 Identify simple hardware and software problems that may occur during use	CC.11.2.4 Identify simple hardware and software problems that may occur during use	CC.11.3.4 Apply strategies for solving simple hardware and software problems that may occur during use	CC.11.4.4 Apply strategies for solving simple hardware and software problems that may occur during use
Notes for CC.11.K.4 through CC11.4.4 Examples of these may be simple problems, such as dead batteries that need to be replaced, the computer is locked up and needs to be reset, the monitor or CPU is not turned on, the website is not responding and needs to be refreshed, or the device is locked up and needs to be restarted.				

Strand: Community, Global, and Ethical Impacts

Content Cluster 12: Students will analyze appropriate uses of technology.

THE GOAL FOR EACH STUDENT IS PROFICIENCY IN ALL REQUIREMENTS AT CURRENT AND PREVIOUS GRADES.

Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4
CGE.12.K.1 Begins in Grade 3	CGE.12.1.1 Begins in Grade 3	CGE.12.2.1 Begins in Grade 3	CGE.12.3.1 Identify and discuss positive and negative impacts of technology on the daily life of individuals and society	CGE.12.4.1 Identify and discuss positive and negative impacts of technology on the daily life of individuals and society
<p>Note for CGE.12.3.1 and 12.4.1 Examples include but not limited to mobile computing and communication, web technologies, digital security, and virtualization.</p>				
CGE.12.K.2 Recognize positive and negative behaviors for using computing devices	CGE.12.1.2 Recognize positive and negative behaviors for using computing devices	CGE.12.2.2 Identify positive and negative behaviors for using computing devices	CGE.12.3.2 Identify and discuss positive and negative uses of technology and information and their impact	CGE.12.4.2 Discuss basic issues related to the appropriate use of technology and information, and the consequences of inappropriate use
<p>Note for CGE.12.K.2 through 12.4.2 Examples include but are not limited to cyber bullying, protecting personal information, cyber presence, and Internet safety.</p>				
CGE.12.K.3 Recognize various electronic information sources	CGE.12.1.3 Recognize various electronic information sources	CGE.12.2.3 Recognize various electronic information sources	CGE.12.3.3 Identify attributes of credible electronic information sources	CGE.12.4.3 Identify and discuss attributes of credible, unbiased, electronic information sources
CGE.12.K.4 Recognize copyright, in various media	CGE.12.1.4 Discuss copyright, in various media	CGE.12.2.4 Identify and name resources used in the process of gathering information.	CGE.12.3.4 Identify and name resources used in the process of gathering information.	CGE.12.4.4 Demonstrate an understanding of ethical issues in copyright, fair use, and intellectual property in various media
CGE.12.K.5 Begins in Grade 5	CGE.12.1.5 Begins in Grade 5	CGE.12.2.5 Begins in Grade 5	CGE.12.3.5 Begins in Grade 5	CGE.12.4.5 Begins in Grade 5

### Contributors

The following people contributed to the development of this document:

Melinda Bailey – Alma School District	Tim Johnston – Arkansas Department of Career Education
Shena Ball – Mid-America Science Museum	Glenda Kennedy – University of Arkansas at Pine Bluff
Christina Bishop – Hot Springs Public School District	Lisa Kraus – Horatio Public School District
Marjo Burk – Fayetteville Public School District	Mickey McFetridge – Springdale Public School District
Tina Calhoon – Arkadelphia Public School District	Mike McMillan – Pulaski Technical College
Shari Cates – North Little Rock School District	Carolyn McNeely – Crowley’s Ridge Educational Service Cooperative
G.B. Cazes – Cyber Innovation Center	David Nance – Arkansas Department of Education
Krystal Corbett – Cyber Innovation Center	Heather Newsam – Arkansas Department of Education
Becky Cunningham – Arkansas Tech University	Anthony Owen – Arkansas Department of Education
Stacy DeFoor – Conway Public School District	Jerry Prince – EAST Initiative
Donna Dyson – Hamburg Public School District	Jake Qualls – Arkansas State University
Dan Eddy – Bentonville Public School District	Stacy Reynolds – Star City Public School District
Carl Frank – Arkansas School for Mathematics, Sciences and the Arts	Karl Romain – Little Rock School District
Marianne Hauser – Fayetteville Public School District	Deborah Seehorn – Computer Science Teachers Association
Haihong Hu – University of Central Arkansas	Nicholas Seward – Arkansas School for Mathematics, Sciences and the Arts
Ronda Hughes – Hot Springs Public School District	Joel Spencer – Little Rock School District