First & Second Grade Technology Standards

KNOX COUNTY SCHOOLS

Tennessee Dept. of Ed. Digital Readiness Standards

- **Tennessee DOE Digital Readiness Standards Skill Levels:**
  Introduced (I): students in this range are building foundational skills and first-time exposure to the standard
  Reinforced (R): students in this range are receiving scaffolded supports to review introduced standards and develop a deeper understanding that will lead to proficiency.
  Mastered (M): students in this range have thoroughly reviewed and practiced the standard and can apply it independently to complete mastery.

- **Digital Readiness Strands**: excerpted from **TN K-8 Digital Readiness Standards**
  - ***Foundational Concepts and Operations*** - Demonstrate proficiency in the use of computers and applications as well as an understanding of the concepts underlying hardware, software, and connectivity.
  - ***Analytical and Innovative Thinking*** - Use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
  - ***Information Storage and Access*** - Apply digital tools to store, access, and use information in a variety of capacities to enhance learning.
  - ***Communication and Collaboration*** – Use digital media and environments to communicate and work collaboratively to support individual learning and contribute to the learning of others.
  - ***Digital Citizenship*** - Demonstrate the appropriate use of technology and an understanding of ethical behavior and safety issues in an interconnected digital society.
  - ***Coding and Computer Programming*** – Use analytical and innovative problem-solving skills to decompose, identify patterns, generalize information, and formulate algorithmic processes to solve a problem or related set of problems with a variety of tools.

Strand: Foundational Concepts and Operations (FCO)		
Standards	**Skill Level**	**TN Academic Standards Connections**
FCO.1 Demonstrate fundamental technology skills (e.g., turn on and login to device).	I	• Mathematics: MP1, MP5 • Science Crosscutting Concepts: Pattern; Cause and effect
FCO.2 Interact with a device using a pointing tool such as a mouse, tactile sensor, or other input. *-Differentiate using click, point, scroll, & select*	R	• Mathematics: MP1, MP5 • Science Crosscutting Concept: Structure and function
FCO.3 Navigate to applications and documents by using desktop icons, windows, and menus. *-Model exiting applications and documents* *-Model on multiple devices - Ex: tablets, desktop, laptop*	I	• Mathematics: MP1, MP5 • Science & Engineering Practice: Using mathematics and computational thinking
FCO.4 Use age-appropriate online tools and resources (e.g., tutorial, assessment, web browser).	I	• Mathematics: MP1, MP5 • Science & Engineering Practice: Obtaining, evaluating and communicating information
FCO.5 Demonstrate fundamental keyboarding skills. • *Use the correct hand and body position while applying the proper touch method of keying for the home row keys (A, S, D, F, J,K, L, ;); row above (Q,W,E,R,T,Y,U,I,O,P,[,], \); and row below (Z,X,C,V,B,N,M,”,”, “.”, /).* • *Operate special purpose keys (return/enter, spacebar, esc, delete, arrows, shift, backspace).* • *Know the relative position of alpha-numeric keys.* • *Keywords consisting of letters utilizing the home row keys, the row below and the row above using the proper touch keying technique for the development of speed.*	I	• ELA: FL.PC.1 • Mathematics: MP1, MP5

• *Use appropriate hand pressure on mouse and keyboard.*		
FCO.6 Select and use appropriate word processing, spreadsheets, and multimedia applications.	I	• Mathematics: MP1, MP4, MP5, MP8 • Science & Engineering Practice: Using mathematics and computational thinking
FCO.7 Use menu, toolbar, and editing functions (e.g., font/size/style/line spacing,margins, spell check) to format, edit, save, and print a document.	I	• ELA: FL.WC.4 • Mathematics: MP5, MP6
FCO.8 Identify and solve routine hardware and software problems that occur during routine usage. *-Examples: printer not printing, battery not charged, screen freezes, computer/Internet is slow, keyboard/mouse not working, sound* *-Provide opportunities to discuss proper care of devices.* *-Articulate how to solve these problems in addition to the troubleshooting aspects.*	I	• Mathematics: MP1, MP4 • Science & Engineering Practices: Planning and carrying out controlled investigations; Constructing explanations and designing solutions • Science Crosscutting Concepts: Pattern; Cause and effect

Foundational Concepts and Operations (FCO) Resources

Resources	Vocabulary
www.abcmouse.com www.abcya.com www.brainpopjr.com (if school has a subscription) www.starfall.com www.tickettoread.com (if school has a subscription) http://www.toytheater.com https://login.i-ready.com/ (if school has a subscription) Have students point out icons and explain to a partner what they do.	Special keys Click/Double Click Cursor Device Drag Dock Edit Enter/return Hardware Icon Internet

Students can use drawing software such as Paintbrush or ABCYa Paint to draw a picture and add text. Discuss how commonly used programs differ in what they can do and how to use them. Understand how to login/logoff of a device using their own username and password. Utilize cards with logins to assist in learning usernames. Parts of Computer Mouse Practice Game	Keyboard Menu Monitor Mouse Print Scroll Software Spacebar Touchpad

Strand: Communication and Collaboration (CC)		
Standards	**Skill Level**	**TN Academic Standards Connections**
CC.1 Interact with peers, experts, and others using a variety of digital tools and devices.	I	• ELA: W.PDW.6 • Mathematics: MP3, MP6, Literacy Skills for Mathematical Proficiency • Science & Engineering Practices: Obtaining, evaluating and communicating information; Engaging in argument from evidence; Constructing explanations and designing solutions • Social Studies: SSP.01
CC.2 Communicate information and ideas effectively to multiple audiences using a variety of media and formats. (e.g., reports, research papers, presentations, newsletters, Web sites, podcasts, blogs), citing sources.	I	• ELA: SL.PKI.4, SL.PKI.5, R.RI.IKI.7 • Mathematics: MP3, MP6, Literacy Skills for Mathematical Proficiency • Science & Engineering Practice: Obtaining, evaluating and communicating information • Social Studies: SSP.01, SSP.04
CC.3 Contribute, individually or as part of a team, to work to identify and solve authentic problems or produce original works using a variety of digital tools and devices.	I	• ELA: SL.CC.1 • Mathematics: MP2, MP3, MP4, MP5, MP6, MP7, Literacy Skills for Mathematical Proficiency • Science & Engineering Practices: Asking questions and defining problems; Developing and using models; Analyzing and interpreting data; Using mathematics and computational thinking; Constructing explanations and designing solutions

Communication and Collaboration (CC) Resources	
Resources	**Vocabulary**

What types of technology allow us to communicate? (Cell phone, telephone, radio, TV, Skype, FaceTime, etc.) Students can practice communication etiquette on whisper phones and online with supervision. Common Sense Media Communication	Communicate Problem-solve Podcast Blog Audience Website Presentation Experts

Strand: Analytical and Innovative Thinking (AIT)		
Standards	**Skill Level**	**TN Academic Standards Connections**
AIT.1 Identify and define problems and form significant questions for investigation.	R	• ELA: RL.KID.1 • Mathematics: MP1, MP2, MP4, MP7, MP8 • Science & Engineering Practice: Asking questions and defining problems • Social Studies: SSP.03
AIT.2 Develop a plan to use technology to find a solution and create projects.	I	• ELA: SL.CC.2, W.PDW.6 • Mathematics: MP1, MP2, MP8 • Science & Engineering Practice: Planning and carrying out controlled investigations, constructing explanations and designing solutions
AIT.3 Determine the best technology and appropriate tool to address a variety of tasks and problems.	I	• ELA: SL.CC.2, W.PDW.6 • Mathematics: MP5, MP6 • Science & Engineering Practice: Using mathematics and computational thinking
AIT.4 Use multiple processes and diverse perspectives to explore alternative solutions. *-Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.*	R	• ELA: SL.CC.2, SL.CC.3, R.RI.CS.6 • Mathematics: MP1,MP4,MP8 • Science & Engineering Practices: Using mathematics and computational thinking; Engaging in argument from evidence; Obtaining, evaluating, and communicating information • Social Studies: SSP.1, SSP.02, SSP.04

AIT.5 Evaluate the accuracy, relevance, appropriateness, and bias of electronic information sources.	I	• ELA: SL.CC.2, W.TTP.1, W.TTP.2, W.PDW.6, R.RI.IKI.8 • Mathematics: MP1,MP8 • Science & Engineering Practices: Engaging in argument from evidence; Obtaining, evaluating, and communicating information • Social Studies: SSP.02, SSP.03
AIT.6 Collect, organize, analyze, and interpret data to identify solutions and/or make informed decisions.	I	• ELA: SL.CC.2, W.TTP.1, W.TTP.2, W.PDW.6 • Mathematics: MP6, MP7, MP8 • Science & Engineering Practices: Analyzing and interpreting data; Constructing explanations and designing solutions • Social Studies: SSP.1, SSP.02, SSP.03, SSP.04
AIT.7 Infer and predict or propose relationships with data.	I	• ELA: SL.CC.2, R.RI.IKI.8 • Mathematics: MP1, MP6 • Science & Engineering Practices: Analyzing and interpreting data; • Constructing explanations and designing solutions; Engaging in argument from evidence
AIT.8 Identify that various algorithms can achieve the same result and determine the most efficient sequence.	I	• Mathematics: MP1, MP2, MP4, MP7, MP8 • Science & Engineering Practice: Using mathematics and computational thinking

Analytical and Innovative Thinking (AIT) Resources

Resources	Vocabulary
Discuss problem-solving strategies with students. Define the problem, choose and order steps in solving the problem, and try the	Troubleshooting Homepage Navigate Problem solve Search Engine

solution. Problem-solving games... abcYa Tangrams Eduplace's Robopacker https://code.org/curriculum/unplugged Design Process BrainPopJr.	Solution Accurate Data Algorithm Sequence

Strand: Digital Citizenship (DC)		
Standards	**Skill Level**	**TN Academic Standards Connections**
DC.1 Advocate, demonstrate and routinely practice safe, legal, and responsible use of information and technology. ● *Model responsible use of hardware and software.*	I	● ELA: W.TTP.1 ● Mathematics: MP5 ● Science & Engineering Practice: Obtaining, evaluating, and communicating information
DC.2 Exhibit a positive mindset toward using technology that supports collaboration, learning, and productivity.	R	● ELA: SL.CC.1, W.PDW.6 ● Science & Engineering Practices: Engaging in argument from evidence; Obtaining, evaluating, and communicating information
DC.3 Exhibit leadership for digital citizenship.	R	
DC.4 Recognize and describe the potential risks and dangers associated with various forms of online communications (e.g., cell phones, social media, digital photos). *Students will...* ● *Notify the teacher immediately if inappropriate content appears on their device.* ● *Recognize the importance of supervised use of technology.*	R	● ELA: R.KID.2, R.KID.3, R.RI.IKI.8, ● W.TTP.2 Mathematics: MP2 ● Science & Engineering Practices: Engaging in argument from evidence; Obtaining, evaluating, and communicating information
DC.5 Explain responsible uses of technology and digital information; describe possible consequences of inappropriate use such as copyright infringement and piracy.	R	● ELA: R.KID.2, R.KID.3, R.RI.IKI.8, W.TTP.2, W.PDW.6 ● Mathematics: MP3 ● Science & Engineering Practice: Obtaining, evaluating, and communicating information
Digital Citizenship (DC) Resources		

Resources	Vocabulary
KCS Digital Citizenship Resources Brain Pop Jr.'s Internet Safety NetSmartz Kids CommonSenseMedia.org -My Online Neighborhood ABCYa 's Cyber 5 NearPod-search common sense media lessons	Block Computer virus Copyright Laws Cyberbully Digital citizenship Digital etiquette (netiquette) Download Internet Internet Safety Login/Logout Pop-up window Privacy Responsible use Social media Website

Strand: Information Storage and Access (ISA)		
Standards	**Skill Level**	**TN Academic Standards Connections**
ISA.1 Enter, organize, and synthesize information in a variety of platforms. (e.g., saving, organizing, and storing word documents and spreadsheets)	R	• ELA: R.CS.5, R.IKI.9 • Mathematics: MP5, 1.MD.C.5 • Science & Engineering Practices: Developing and using models; Analyzing and interpreting data; constructing explanations and designing solutions; Obtaining, evaluating, and communicating information • Social Studies: SSP.3
ISA.2 Identify and use a variety of storage media and demonstrate an understanding of the rationale for using a certain medium for a specific purpose.	I	• ELA: R.CS.6 • Mathematics: MP5 • Science & Engineering Practice: Using mathematics and computational thinking
ISA.3 Plan and use strategies to access information and guide inquiry.	I	• ELA: RL.KID.1 • Mathematics: MP1 • Science & Engineering Practice: Obtaining, evaluating, and communicating information
ISA.4 Locate information from a variety of sources.	I	• ELA: R.KID.1, R.IKI.7 • Mathematics: MP5 • Science & Engineering Practice: Obtaining, evaluating, and communicating information • Social Studies: SSP.1
ISA.5 Perform basic searches on databases to locate information.	I	• ELA: R.KID.2, R.KID.3 • Mathematics: MP1 • Science & Engineering Practice: Obtaining, evaluating, and communicating information

ISA.6 Select appropriate information sources and digital tools.	R	• ELA: R.RI.IKI.8 • Mathematics: MP5 • Science & Engineering Practices: Engaging in Argument from evidence; Obtaining, evaluating, and communicating information
ISA.7 Use age-appropriate technologies to locate, collect, organize content from media collection(s) for specific purposes, such as citing sources.	R	• ELA: R.CS.5, R.RI.IKI.8 • Mathematics: MP5 • Science & Engineering Practice: Obtaining, evaluating, and communicating information • Social Studies: SSP.1, SSP.03
ISA.8 Describe the rationale for various security measures when using technology.	I	• ELA: R.KID.2, R.RI.IKI.8, W.TTP.2 • Mathematics: MP3

Information Storage and Access (ISA) Resources

Resources	Vocabulary
Library Research Resources Common Sense Media Search Tools	Database Search Security Citing Saving Storage source

Strand: Coding and Computer Programming (CCP) – Grade 1

Standards

1.CCP.1
Recognize and utilize common physical components of computing systems (hardware) and software concepts using correct terminology. For example, but not limited to, laptop computers, tablets, monitors, keyboards, printers and software concepts such as, sign-in requirements input-output, debug and program.

1.CCP.2
Use simple trial and error strategies to identify hardware and software problems that occur using appropriate terminology. For example, but not limited to, an app or program is not working as expected, no sound is coming from a device, or a device will not turn on.

1.CCP.3
Construct an algorithm by arranging sequential events step-by-step in a logical order.

1.CCP.4
Determine that data (e.g., numbers, words, colors, and images) can be stored in computer programs.

1.CCP.5
Collaboratively or individually, students use programming to create simple animated stories or solve pre-existing problems using a precise sequence of instructions and simple loops. For example, but not limited to, if a dialogue is not sequenced correctly, the animated story will not make sense or using loops in a program to show the life cycle of a butterfly, a loop could be combined with move commands to allow continual but controlled movement of the character.

1.CCP.6
Decompose larger problems or tasks into smaller sub-problems independently.

1.CCP.7
Collaboratively, students can build independence and sophistication using a simple design process (e.g., Ask, Plan, Do, Reflect) to illustrate a program's sequence and outcomes.

1.CCP.8
Compare positive and negative effects computer technology has in the lives of people. Identify ways that

programs and/or hardware is used by groups within society. For example, touchscreens are used by children differently than they are used by artists.

Coding and Computer Programming (CCP) – Grade 1 Resources

Resources	Vocabulary
https://code.org/ https://scratch.mit.edu/ https://www.tynker.com/ https://edu.sphero.com/ https://www.makewonder.com/ https://edu.bloxelsbuilder.com/ https://www.modrobotics.com/ App - Think and Learn Codeapillar	Coding Computer science Algorithm Series Decompose

Strand: Coding and Computer Programming (CCP) – Grade 2

Standards

2.CCP.1
Identify and describe how hardware and software components make up a computing system.
2.CCP.2
Identify, using accurate terminology and debugging strategies, simple hardware and software problems that may occur during use. For example, but not limited to, if an app or program is not working as expected, no sound or device won't turn on.
2.CCP.3
Analyze and improve an algorithm that includes sequencing and simple patterns with or without a computing device.
2.CCP.4

Evaluate how computer programs can manipulate stored data (words, numbers, colors, and images) with support or independently.

2.CCP.5

Create or revise a computational artifact (a visualization, a graphic, a video, a program, or an audio recording), using appropriate attributions for revisions.

2.CCP.6

Define a problem or task, decompose it into smaller sub-problems.

2.CCP.7

Collaboratively, students can build independence and sophistication using a simple design process (e.g., Ask, Plan, Do, Reflect) to construct a program's sequence and revise outcomes.

2.CCP.8

Compare positive and negative impacts effects computer technology has in the lives of people.

Coding and Computer Programming (CCP) – Grade 2 Resources

Resources	Vocabulary
https://code.org/ https://scratch.mit.edu/ https://www.tynker.com/ https://edu.sphero.com/ https://www.makewonder.com/ https://edu.bloxelsbuilder.com/ https://www.modrobotics.com/ App - Think and Learn Codeapillar	Coding Computer science Algorithm Series Decompose