Alabama Digital Literacy and Computer Science

Grade 4

Computational Thinker

Abstraction

1 Construct a basic system of numbers, letters, or symbols to represent information as a cipher. Examples: Combine data from multiple sources, sorting multi-level. 4.1

2 Formulate a list of sub-problems to consider while addressing a larger problem. Examples: Problem - a multi-step math problem; sub-problem - steps to solve. Problem - light bulb does not light; sub-problem - steps to resolve why. 4.2

Algorithms

3 Show that different solutions exist for the same problem or sub-problem. 4.3

4 Detect and debug logical errors in various basic algorithms. Example: Trace the path of a set of directions to determine success or failure. 4.4

5 Use flowcharts to create a plan or algorithm. 4.5

6 Define a simple pseudocode. 4.6

Programming and Development

7 Create a working program in a block-based visual programming environment using arithmetic operators, conditionals, and repetition in programs, in collaboration with others. 4.7

Citizen of a Digital Culture

Safety, Privacy, and Security

8 Demonstrate the proper use and operation of security technologies. Examples: Passwords, virus protection software, spam filters, pop-up blockers. 4.8

Legal and Ethical Behavior

9 Identify laws and tools which help ensure that users of varying abilities can access electronic and information technology. Examples: ADA Laws 4.9

Digital Identity

10 Identify the different forms of web advertising and why websites, digital resources, and artifacts may include advertisements and collect personal information. Examples: Search ads, pay-per-click ads, banner ads, targeted ads, in-game ads, email ads. 4.10

Impact of Computing

11 Discuss the digital divide as unequal access to technology based on differences such as income, education, age, or geographic location and locate resources in the community that can give people access to technology. 4.11

Global Collaborator

Communication

12 Use basic features of digital tools to communicate key ideas and details in a way that informs and/or persuades. 4.12

13 Synthesize complex information from multiple sources in different ways to make it more useful and/or relevant. 4.13

Digital Tools

14 Type 20 words per minute with 95% accuracy using appropriate keyboarding techniques. 4.14

Collaborative Research

15 Conduct complex keyword searches to produce valid, appropriate results and evaluate results for accuracy, relevance, and appropriateness. Examples: Search techniques, check for credibility and validity. 4.15

Computing Analyst

Data

16 Gather and organize data to answer a question using a variety of computing and data visualization methods. Examples: Sorting, totaling, averaging, charts, and graphs. 4.16

Systems

17 Demonstrate an appropriate level of proficiency in performing tasks using a range of digital devices. Examples: Collect and record data, print, use send command, connect to Internet, or search; use probes, sensors, printers, robots, or computers. 4.17

Modeling and Simulation

18 Create a simple digital model of a system, individually and collaboratively, and explain what the model shows and does not show. Examples: Create a model of the water cycle and indicate that it shows how precipitation forms but does not indicate how pesticides get into rivers. 4.18

19 Use data from a simulation to answer a question collaboratively. 4.19

Innovative Designer

Human/Computer Partnerships

20 Explain how hardware and applications can enable everyone, including people with disabilities, to do things they could not do otherwise. Examples: Global Positioning System [GPS] to navigate, text-to-speech feature to read aloud from a digital resource, translate a digital resource to a different language. 4.20

Design Thinking

21 Develop, test, and refine prototypes as part of a cyclical design process to solve a simple problem. 4.21