Alabama Digital Literacy and Computer Science

Grade 6

Computational Thinker

Abstraction

1 Remove background details from an everyday process to highlight essential properties. Examples: When making a sandwich, the type of bread, condiments, meats, and/or vegetables do not affect the fact that one is making a sandwich. 6.1

2 Define a process as a function. Example: Functions or sets of steps combined to produce a process: turning off your alarm + getting out of bed + brushing your teeth + getting dressed = morning routine. 6.2

Algorithms

3 Create pseudocode that uses conditionals. Examples: Using if/then/else (If it is raining then bring an umbrella else get wet). 6.3

4 Differentiate between flowcharts and pseudocode. Example: Flowcharts use shapes to indicate what to do at each step while pseudocode uses text. 6.4

5 Identify algorithms that make use of sequencing, selection or iteration. Examples: Sequencing is doing steps in order (put on socks, put on shoes, tie laces); selection uses a Boolean condition to determine which of two parts of an algorithm are used (hair is dirty? True, wash hair; false, do not); iteration is the repetition of part of an algorithm until a condition is met (if you're happy and you know it clap your hands, when you're no longer happy you stop clapping). 6.5

Programming and Development

6 Identify steps in developing solutions to complex problems using computational thinking. 6.6

7 Describe how automation works to increase efficiency. Example: Compare the amount of time/work to hand wash a car vs. using an automated car wash. 6.7

8 Create a program that initializes a variable. Example: Create a flowchart in which the variable or object returns to a starting position upon completion of a task. 6.8

Citizen of a Digital Culture

Safety, Privacy, and Security

9 Differentiate between a secure and a non-secure website including how they affect personal data. Example: HTTP vs. HTTPS. 6.9

Legal and Ethical Behavior

10 Describe the causes and effects of illegal use of intellectual property as it relates to print and digital media, considering copyright, fair use, licensing, sharing, and attribution. 6.10

11 Differentiate between appropriate and inappropriate digital content and the use of that content. 6.11

Digital Identity

12 Define digital permanence. 6.12

13 Define personal privacy, digital footprint, and open communication. 6.13

Impact of Computing

14 Discuss digital globalization and Internet censorship. Examples: Software that scans a website for posts about potential threats; a person's ability to order a product directly from a manufacturer in another part of the world; a student in Africa can take an online math course created in the United States; web-hosting company prevents posting of content. 6.14

15 Identify emerging technologies in computing. 6.15

Global Collaborator

Creative Communications

16 Communicate and/or publish collaboratively to inform others from a variety of backgrounds and cultures about issues and problems. 6.16

Digital Tools

17 Type 30 words per minute with 95% accuracy using appropriate keyboarding techniques. 6.17

Social Interactions

18 Define censorship. 6.18

Computing Analyst

Data

19 Track data change from a variety of sources. Example: Use editing or versioning tools to track changes to data. 6.19

20 Identify data transferring protocols, visualization, and the purpose of data and methods of storage. Examples: Using an online collection tool or form to collect data that is then stored in a spreadsheet or database. 6.20

21 Identify varying data structures/systems and methods of classification, including decimal and binary. Examples: Difference between a bit and a byte, bit representation, pixels. 6.21

22 Summarize the purpose of the American Standard Code for Information Interchange (ASCII). 6.22

Systems

23 Discuss how digital devices may be used to collect, analyze, and present information. 6.23

24 Compare and contrast types of networks. Examples: Wired, wireless (WiFi), local, wide area, mobile, Internet, and intranet. 6.24

25 Differentiate between secure and non-secure systems. 6.25

Modeling and Simulation

26 Explain why professionals may use models as logical representations of physical, mathematical, or logical systems or processes. Example: Students will discuss why an engineer may build a model of a building before actually constructing the building. 6.26

27 Explain how simulations serve to implement models. 6.27

Innovative Designer

Human/Computer Partnerships

28 Define assistive technologies and state reasons they may be needed. 6.28

29 Define artificial intelligence and identify examples of artificial intelligence in the community. Examples: Image recognition, voice assistants. 6.29

Design Thinking

30 Discuss and apply the components of the problem-solving process. Example: Students will devise a plan to alleviate traffic congestion around the school during drop-off and pick-up. 6.30