Florida Computer Science

Grade 8

Communication and Collaboration Strand

1 **Create a collaborative communication process.** SC.8.CC.1

- 1 Design a digital product. SC.8.CC.1.1
- 2 Evaluate the benefits of collaboration compared to individual product creation. SC.8.CC.1.2

2 **Create artifacts using the collaborative process.** SC.8.CC.2

- 1 Publish a digital product individually and collaboratively. SC.8.CC.2.1

Personal Health and Safety Strand

1 **Implement safe and healthy Internet practices.** SC.8.HS.1

- 1 Describe the impacts of the presence of technology and the lack of technology on everyday life. SC.8.HS.1.1
- 2 Develop procedures to protect personal information while accessing the Internet. SC.8.HS.1.2
- 3 Model a procedure to mitigate risks to personal safety while accessing the Internet. Example: Jennifer is playing a game online competing against other players. Her opponent has messaged within the game to ask her where she is from and how old she is. Develop procedures that would mitigate risks for Jennifer's personal safety. SC.8.HS.1.3

2 **Analyze the mental and physiological effects of digital device use.** SC.8.HS.2

- 1 Determine the association between hand-eye coordination and the use of digital devices. SC.8.HS.2.1
- 2 Investigate the causes of headaches associated with digital device usage. SC.8.HS.2.2
- 3 Investigate the causes of physical body changes due to device usage. SC.8.HS.2.3
- 4 Identify the effects on cognitive function as a result of technology use. SC.8.HS.2.4

3 **Analyze the impact of digital footprints.** SC.8.HS.3

- 1 Discuss how regulating the use of digital media and communication is important for mental and physical well-being. SC.8.HS.3.1
- 2 Analyze how digital media and communication influence behavior. SC.8.HS.3.2

Computing Components Strand

1. **Demonstrate foundational computer literacy fluency.** SC.8.CO.1
   1. Integrate information from multiple file formats into a single artifact. SC.8.CO.1.1
   2. Create a collaborative project utilizing an online digital application. SC.8.CO.1.2
2. **Explore hardware compatibility requirements.** SC.8.CO.2
   1. Explain how to disassemble or reassemble a desktop computer. SC.8.CO.2.1
   2. Explore different hardware specifications and their impact on the performance of the computer. SC.8.CO.2.2
   3. Identify the major components of a network. SC.8.CO.2.3
3. **Explore software compatibility requirements.** SC.8.CO.3
   1. Compare the benefits and limitations of desktop applications and their complimentary online subscription version. SC.8.CO.3.1

Programming and Software Engineering Strand

1. **Utilize coding segments for a purpose.** SC.8.PE.1
   1. Use an expression for a specified purpose. Example: Simon has been asked to develop a rock/paper/scissors game. He assigns rock as the number 1, paper as the number 2 and scissors as the number 3. Develop expressions that will allow the game to output a winner based off the combination of user and computer selections. SC.8.PE.1.1
   2. Create a programming process for decomposing a problem. SC.8.PE.1.2
   3. Create a function with parameters. SC.8.PE.1.3
   4. Explain the use of iterative and non-iterative structures and their uses as a code segment. SC.8.PE.1.4
   5. Create an algorithm to solve one or more parts of a decomposed problem. SC.8.PE.1.5
   6. Create an algorithm that can collect data. SC.8.PE.1.6
   7. Design an application for a specified purpose. Example: A marine biologist conducting research at the FSU Coastal and Marine Laboratory is trying to determine why periwinkle snails climb to the top of marsh seagrass. Design a program to determine the time of day that the majority of snails climb the seagrass. Analyze the data to determine what events cause the snails to climb at that certain time. SC.8.PE.1.7
   8. Recognize different numerical data types. SC.8.PE.1.8
   9. Design a program that will assist a user with equations using standard mathematical operators. SC.8.PE.1.9
   10. Create a code segment using iteration. SC.8.PE.1.10
   11. Identify the limitations that need to be recognized when creating an algorithm. SC.8.PE.1.11
   12. Select an efficient algorithm for a given task based on certain criteria. SC.8.PE.1.12

2 **Create and analyze data to solve problems.** SC.8.PE.2

1 Select and use applicable data-collection technology. SC.8.PE.2.1

2 Utilize data-collection technology to report results for content-related problems. SC.8.PE.2.2

3 Utilize data from simulations to test hypotheses. SC.8.PE.2.3

4 Perform a variety of operations such as sorting, filtering and searching in a database. SC.8.PE.2.4

5 Utilize organized data within a database to solve a problem. SC.8.PE.2.5

3 **Apply computational thinking to scenario-based problems.** SC.8.PE.3

1 Represent natural phenomena using a model. SC.8.PE.3.1

2 Explore the purpose of a class. SC.8.PE.3.2

3 Evaluate the benefits and limitations of the use of models. Example: Mrs. Hooper's class is studying the effects of erosion on the Florida Gulf coastline. Her class is located in Duval County and is not adjacent to the Gulf coast. Evaluate the benefits and limitations of developing a model to simulate the effects of erosion on the Gulf Coast of Florida. SC.8.PE.3.3

4 **Analyze the software development life cycle.** SC.8.PE.4

1 Explore the purpose of the software development life cycle. SC.8.PE.4.1

2 Explain the phases of a simple software development life cycle. SC.8.PE.4.2

3 Discuss the role of maintenance in the software development cycle. SC.8.PE.4.3

Technological Impact Strand

1 **Examine the causes, course and consequences of technological advancements.** SC.8.TI.1

1 Examine the historical progression and impact of digital media and communication. SC.8.TI.1.1

2 Describe the influence of access-to-information technologies over time. SC.8.TI.1.2

2 **Investigate tools and methods used for regulatory compliance.** SC.8.TI.2

1 Describe legal and ethical behaviors when using technology. SC.8.TI.2.1

2 Use a local or federal government website to engage with a public official. SC.8.TI.2.2

3 Compare various technology-related career paths. SC.8.TI.2.3

Emerging Technology Strand

1. **Identify emerging technologies that impact daily life.** SC.8.ET.1
   1. Identify the emerging features of mobile devices, smart devices and vehicles. SC.8.ET.1.1
   2. Identify challenges faced by users when learning to use computer interfaces. SC.8.ET.1.2
   3. Identify the impact of natural resources on the manufacturing of computer hardware components. SC.8.ET.1.3
   4. Analyze the increasing impact of access to the Internet on daily life. SC.8.ET.1.4
2. **Investigate Artificial Intelligence (AI) and its applications.** SC.8.ET.2
   1. Explore the use of an artificial intelligence (AI) device to accomplish a task. SC.8.ET.2.1
   2. Discuss the utilization of intelligent behavior in technology. Example: Discuss the autonomous robotic vacuum cleaner's ability to map and analyze structures to avoid obstacles. Example: Analyze the advantages of implementing drones to spray crops or detect predators in an agricultural environment. SC.8.ET.2.2
3. **Investigate characteristics of robotics.** SC.8.ET.3
   1. Investigate the advancement of robotics. SC.8.ET.3.1

Cyber Security Strand

1. **Explain the physical security of devices.** SC.8.CS.1
   1. Analyze threats and vulnerabilities to information security for individuals and organizations. SC.8.CS.1.1
   2. Explain how authentication and authorization methods can protect users. SC.8.CS.1.2
   3. Describe defense in-depth strategies to protect simple networks. SC.8.CS.1.3
   4. Explain how malicious actions threaten network security. SC.8.CS.1.4
   5. Explain how malicious actions threaten physical security. SC.8.CS.1.5
   6. Describe defense in depth and how physical access controls work together. SC.8.CS.1.6
   7. Explore the process of protecting computer hardware from exploitation. SC.8.CS.1.7
2. **Evaluate network security.** SC.8.CS.2
   1. Evaluate security and privacy issues that relate to computer networks and Internet of Things (IoT) devices. SC.8.CS.2.1
   2. Describe security and privacy issues that relate to computer networks. SC.8.CS.2.2
   3. Describe the permanency of data on the Internet, online identity and personal privacy. SC.8.CS.2.3

3 Identify the consequences of social engineering. SC.8.CS.3

1 Discuss ransomware attacks. SC.8.CS.3.1

2 Discuss the necessity of immediate security updates of a program. SC.8.CS.3.2

3 Identify the steps of the social engineering attack cycle. SC.8.CS.3.3