Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Major Parts of the Computer**

Time Allotment: 4 classes **Unit Sequence: 1**

Major Concepts to be learned:

- Students will learn to identify the major parts of the computer (Monitor, Keyboard, Mouse, Hard Drive (CPU), Headphones(speakers), Printer)

Expected Skills to be demonstrated:

- Identify the mointor, keybaord, ,mouse, harddrive, printer, and headphones
- How to use the mouse (left clicking) and clicking and dragging to move items.

PA Standards/Anchors:

CSTA Standards -
1A-CS-01
1A-CS-02
1A-CS-03

Eligible Content:

- Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.
- Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).
- Describe basic hardware and software problems using accurate terminology.

Instructional Strategies:

Introduce each part of the computer using the following methods:

- Website
- SMARTboard presentation
- Hands-on manipulation with each part of the computer

Assessments:

- Indentifying Worksheet
- SMARTBOARD Interactive Lesson Observation
- Observing Classroom Computer Use

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Internet Skills**

Time Allotment: 4 classes **Unit Sequence: 2**

Major Concepts to be learned:

- The students will learn how to open the Internet Browser a variety of ways
- Choose a "bookmarked" Website
- Navigate through age-appropriate websites
- Close out of an internet window

Expected Skills to be demonstrated:

- Opening the Internet using one of the three methods (Shortcut, Start Menu, or Icon)
- Choosing the appropriate website from the list of favorite websites
- Using the mouse appropriatly to navigate through a website by clicking on links
- Close out of internet window

PA Standards/Anchors:

CSTA Standards -
1A-CS-01
1A-CS-02
1A-CS-03

Eligible Content:

- Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.
- Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).
- Describe basic hardware and software problems using accurate terminology.

Instructional Strategies:

Teacher Demonstration on the Smartboard
Student Interaction Using Smartboard
Teacher Discussion
Guided Student Practice on Computers
Independent Student Practice on Computers

Assessments:

- Teacher Observation
- Teacher Assessment with Rubric

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Paint 3D**

Time Allotment: 8 classes **Unit Sequence: 3**

Major Concepts to be learned:

- How to open an Application from a shortcut (double click)
- Understand how each tool in Paint works
- Use all the tools in Paint together to create a piece of computerized artwork

Expected Skills to be demonstrated:

- Opening the application (double click the shortcut)
- Understanding how each tool works and can be utilized in a picture
- Creating a picture utilizing all of the tools in appropriate sections of their picture

PA Standards/Anchors:

CSTA Standards -
1A-CS-01
1A-DA-05
1A-DA-06

Eligible Content:

- Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.
- Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
- Collect and present the same data in various visual formats.

Instructional Strategies:

Teacher Demonstration on the Smartboard
Student Interaction Using Smartboard
Teacher Discussion
Independent Student Practice on Computers

Assessments:

- Computer Based Project (rubric)
- Teacher Observation

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Google Classrom (Class Stream)**

Time Allotment: 2 classes **Unit Sequence: 4**

Major Concepts to be learned:

- The students will review how to open the Internet Browser a variety of ways
- Log into their private Google Account
- Navigate the class stream
- Post, comment, and delete on the class stream

Expected Skills to be demonstrated:

- Opening the Internet using one of the three methods (Shortcut, Start Menu, or Icon)
- Log in to Google Classroom with the assistance of a log in card
- Using the mouse and keyboard appropriately to navigate and post on the class stream
- Close out of internet window

PA Standards/Anchors:

CSTA Standards -
1A-NI-014
1A-DA-05
1A-IC-17
1A-IC-18

Eligible Content:

- Work respectfully and responsibly with others online.
- Keep login information private, and log off of devices appropriately.
- Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access.
- Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.

Instructional Strategies:

Teacher Demonstration on the Smartboard
Student Interaction Using Smartboard
Teacher Discussion
Guided Student Practice on Computers
Independent Student Practice on Computers

Assessments:

- Teacher Observation
- Teacher Assessment with Rubric

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Keyboard Practice**

Time Allotment: 1 class **Unit Sequence: 5**

Major Concepts to be learned:

- The students will locate the letter keys on the keyboard using an internet application

Expected Skills to be demonstrated:

- Where each letter key can be found on the standard keyboard

PA Standards/Anchors:	Eligible Content:
CSTA Standards - 1A-CS-01 1A-CS-02 1A-CS-03	• Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. • Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). • Describe basic hardware and software problems using accurate terminology.

Instructional Strategies:	Assessments:
Teacher Demonstration on the Smartboard Independent Student Practice on Computers	• Teacher Observation

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Keyboard**

Time Allotment: 4 classes **Unit Sequence: 6**

Major Concepts to be learned:

- Recognize the functions of the letter and number keys on the keyboard
- The function of the enter, backspace, shift (capital letters and symbols), space bar, and caps lock key
- Use these keys in various (Word Processings, Internet Applications, etc)

Expected Skills to be demonstrated:

- Knowledge of each key and it's function
- Proper use of "special" keys in various Word Processing (Google Docs) activities
- Knowledge of where each key is located on the keyboard

PA Standards/Anchors:	Eligible Content:
CSTA Standards - 1A-CS-01 1A-CS-02 1A-CS-03	• Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. • Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). • Describe basic hardware and software problems using accurate terminology.

Instructional Strategies:	Assessments:
Teacher Demonstration on the Smartboard Teacher Discussion Guided Student Practice on Computers	• Computer Based Project • Teacher Observation

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Google Docs**

Time Allotment: 5 classes **Unit Sequence: 7**

Major Concepts to be learned:

- How to use a Word Processing Program to type words and sentences.
- How to adjust the font by changing the font, size, and color of their type
- How to add new fonts to customize your font list.

Expected Skills to be demonstrated:

- Ability to type in Google Docs
- Knowledge of how the following keys alter what is typed (shift, caps lock, enter, backspace, and space)
- Ability to adjust the font color, style, and size in Google Docs
- Independent printing and quitting from Google Docs

PA Standards/Anchors:

CSTA Standards -
1A-CS-01
1A-DA-05
1A-DA-06

Eligible Content:

- Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use.
- Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data.
- Collect and present the same data in various visual formats.

Instructional Strategies:

Teacher Demonstration on the Smartboard
Student Interaction Using Smartboard
Guided Student Practice on Computers

Assessments:

- Computer Based Project
- Teacher Observation

Grade level: Kindergarten | **Course Title: STEM** | **Topic/Concept: PLTW Animal Animations**

Time Allotment: 10 classes | **Unit Sequence: 8**

Major Concepts to be learned:

- Follow a step-by-step method to solve a problem.
- Use scientific reasoning to ask questions, make observations, and investigate ideas to acquire knowledge and solve problem
- Apply computational thinking to solve problems.

Expected Skills to be demonstrated:

- Create a simple program that moves and animal to its food, makes the food disappear, and then moves the animal to its shelter.
- Brainstorm possible solutions to the problem
- Make and use a model to test a design or aspects of a design, and to compare the effectiveness of different design solutions.
- Evaluate a model solution through observations and/or measurements and consider what revisions to the initial model are needed.
- Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.

- Ask and identify questions to gain knowledge or solve problems
- Model daily processes by creating and following algorithms (sets of step by-step instructions) to complete tasks.
- Develop programs with sequences and simple loops, to express ideas or address a problem
- Decompose (break down) the steps to solve a problem into a precise sequence of instructions.
- Demonstrate persistence in the cycle of testing, finding, and fixing.

PA Standards/Anchors:

CSTA Standards -
1A-AP-08
1A-AP-10
1A-AP-11
1A-AP-12
1A-AP-14
1A-AP-15

Eligible Content

- Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks.
- Develop programs with sequences and simple loops, to express ideas or address a problem.
- Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.
- Develop plans that describe a program's sequence of events, goals, and expected outcomes.
- Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.
- Using correct terminology, describe steps taken and choices made during the iterative process of program development.

Instructional Strategies:

Teacher Demonstration on the Smartboard
Student Interaction Using Smartboard
Guided Student Practice on Tablets
Independent Student Practice on Tablets

Assessments:

- Tablet Based Projects
- Final Project (Animal Maze)
- Teacher Observation

Grade level: Kindergarten **Course Title: STEM** **Topic/Concept: Coding (Code.org)**

Time Allotment: 10 classes **Unit Sequence: 9**

Major Concepts to be learned:

- Students will develop sequential algorithms
- Students will stack code blocks together in a linear sequence.
- Students will practice loops in programming puzzles
- Students will find and fix errors in algorthms using the design process

Expected Skills to be demonstrated:

- Demonstrate the ability to create algoritms to achieve a predetermined goal
- Demonstrate the ability to use loops in the programming pattern
- Demonstrate the ability to "debug" a program when the goal is not met.

PA Standards/Anchors:	Eligible Content:
CSTA Standards - 1A-AP-08 1A-AP-10 1A-AP-11 1A-AP-12 1A-AP-14 1A-AP-15	• Model daily processes by creating and following algorithms (sets of step-by-step instructions) to complete tasks. • Develop programs with sequences and simple loops, to express ideas or address a problem. • Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. • Develop plans that describe a program's sequence of events, goals, and expected outcomes. • Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. • Using correct terminology, describe steps taken and choices made during the iterative process of program development.

Instructional Strategies:	Assessments:
Teacher Demonstration on the Smartboard Student Interaction Using Smartboard Guided Student Practice on Computers	• Computer Based Project • Teacher Observation