Learning Target: I can investigate how computers work

Success Criteria/Objectives:

☐ explore the inside of a computer.

☐ explain the function of each part of a computer

☐ Determine the meaning of unfamiliar computer terms (input, output, processing, storage)

Standards: 7-8.NSD.2 Design a project that combines hardware and software components.

Key Ideas: The main part is the central processing unit, which is sometimes abbreviated as CPU. It's the main part of the computer that uses a processor to follow directions. Information is put into the CPU, and this is called input. A processor is a device that helps the computer read the input and determines what it needs to do. It's very small, and sometimes it's referred to as a chip. This chip might be tiny, but it is powerful. Processors perform many complicated calculations (Arithmetic Logic Unit performs the arithmetic and logical functions (addition, subtraction, multiplication, division, equals, not equal, equal to or greater than, equal to or less than, greater than, less than, etc.). A computer is composed of many different circuits. Inside of each computer is the main circuit board called a motherboard. This is where important circuits are located. The actual motherboard is made of many different materials. The board itself is composed of fiberglass, which is an insulator. This helps control the flow of electricity to other parts of the computer. The actual circuits are usually made from copper, which is a conductor. This allows the electricity to flow within the motherboard. A chipset is a group of microchips designed to work as a unit in performing one or more related functions. BIOS (Basic Input/Output System) is the program a computer's microprocessor uses to get the computer system started after it is turned on. An operating system (sometimes abbreviated as "OS") is the program that manages all the other programs in a computer. Memory is the name for the electronic holding place for instructions and data that a computer's microprocessor can reach quickly.

1. **Introduction**
   a. Complete the Computer Basics Quiz preassessment and note what topics you need to practice
      https://edu.gcfglobal.org/en/computerbasics/computer-basics-quiz/1/
2. **Mini Lesson:**
   a. Video Inside your computer - Bettina Bair
      i. Watch, think, write:
         1. Jot the gist: big ideas, key points, important details, new vocabulary terms, models, diagrams, concept maps
         2. Jot any questions you have about the topic
      ii. Discuss-Talk about your notes using the sentence starters
      iii. Write-Summarize the big ideas using the key points, new vocabulary, etc.

3. **Activity**
    a. Complete the self paced lessons with your thought partners
       Mild - [Goodwill Community Foundation](#) [computer basic tutorials](#)
       Medium - [Khan Academy computer basic tutorials](#)
       Spicy - [Bradley Kjell Hardware & Software Part 1 Introduction to Computer Science using Java](#)

4. **Summary**
    a. Complete the [9 multiple choice and open-ended questions](#) at TedTed
    b. Complete the [4 Kjell quizzes](#) in part 1 of hardware - software

5. **Out of class practice/homework**
    a. Readings -
       [How computers work 1](#)
       [How computers work 2](#)
    b. [Build a computer simulation](#)
    c. Additional practice at [computer science discoveries chapter 2 code.org](#)
    d. Computer [images and videos](#)

6. **Resources**
    a. https://chortle.ccsu.edu/Java5/index.html#03
    b. https://homepage.cs.uri.edu/faculty/wolfe/book/Readings/Reading04.htm
    c. https://www.khanacademy.org/computing/code-org/computers-and-the-internet#how-computers-work
    d. https://www.codeforfun.com/grade-5-unit-1
    e. https://www.edutopia.org/article/teaching-students-code-using-free-simulators
    f. http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/computer-science-digital-fluency-standards-k-12.pdf
    g. https://www.windham-schools.org/docs/DOK%20Wheel%20Slide%20for%20Teachers-0.pdf