Lesson 2: The client–server model

In this lesson, students will learn about the client-server model and the different types of area networks. They will understand the roles of clients and servers in a client-server network and the advantages and disadvantages of this model. Students will also explore the purpose of Personal Area Networks (PANs), Local Area Networks (LANs), and Wide Area Networks (WANs). Through guided practice and independent activities, students will have the opportunity to apply their knowledge and demonstrate their understanding of the concepts. The lesson will conclude with a review of the key points and a preview of the next lesson on network protocols and communication.

## **Objectives:**

By the end of this lesson, students will be able to:

1. Describe the role of a computer in a client-server network.

2. Explain the purpose of a Personal Area Network (PAN), Local Area Network (LAN), and Wide Area Network (WAN).

## **Materials:**

- Whiteboard or chalkboard

- Markers or chalk

- Handouts with definitions of key terms (PAN, LAN, WAN)

- Mini quiz handouts

## **Bell-Ringer Activity (5 minutes):**

1. Display the following question on the board: "What is the difference between a peer-to-peer network and a client-server network?"

2. Give students 2 minutes to write down their answers individually.

3. After 2 minutes, ask a few students to share their responses with the class.

## **Introduction (10 minutes):**

1. Begin by reviewing the concept of a peer-to-peer network from the previous lesson.

2. Explain that in this lesson, we will be learning about a different type of network called the client-server model.

3. Tell students that the client-server model is commonly used in many computer networks, including the internet.

4. Briefly explain that in a client-server model, computers are connected in a way that allows some computers (clients) to request services or resources from other computers (servers).

5. Emphasize that the client-server model is different from a peer-to-peer network, where all computers have equal status and can act as both clients and servers.

## **Direct Instruction (20 minutes):**

1. Define the client and server roles in a client-server network:

- Client: A computer or device that requests services or resources from a server.

- Server: A computer or device that provides services or resources to clients.

2. Discuss the advantages of the client-server model:

- Centralized control and management.

- Enhanced security and data protection.

- Scalability and ability to handle large numbers of clients.

3. Discuss the disadvantages of the client-server model:

- Dependence on the server for services.

- Cost of setting up and maintaining servers.

- Potential single point of failure.

4. Introduce the three types of area networks:

- Personal Area Network (PAN): A network that connects devices within a person's immediate vicinity (e.g., Bluetooth devices).

- Local Area Network (LAN): A network that connects devices within a limited geographical area (e.g., home or office network).

- Wide Area Network (WAN): A network that connects devices over a large geographical area (e.g., the internet).

5. Provide examples and discuss the purpose of each type of area network.

## **Guided Practice (25 minutes):**

1. Divide the class into small groups.

2. Distribute handouts with definitions of key terms (PAN, LAN, WAN).

3. In their groups, students should discuss and provide examples of devices or situations that fall under each type of area network.

4. Circulate the classroom to provide guidance and answer any questions.

5. After 15 minutes, bring the class back together and ask each group to share their examples and explanations.

## **Independent Practice (25 minutes):**

1. Distribute mini quiz handouts to each student.

2. Instruct students to complete the quiz individually.

3. The quiz should include questions related to the client-server model and the types of area networks.

4. Collect the quizzes at the end of the allotted time.

## **Exit Ticket (5 minutes):**

1. Ask students to write a brief summary of the client-server model and the purpose of each type of area network.

2. Collect the exit tickets before students leave the classroom.

## **Closure (5 minutes):**

1. Review the main points of the lesson, emphasizing the key terms and concepts.

2. Encourage students to continue exploring computer networks and their applications.

3. Preview the next lesson, which will focus on network protocols and communication.

**Common Core Standards:**

- CCSS.ELA-LITERACY.RST.9-10.2 - Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

- CCSS.ELA-LITERACY.RST.9-10.4 - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context.