Lesson 1: Introduction to Computer Networks

In this lesson, students will be introduced to the concept of computer networks. They will learn that a computer network is a collection of interconnected devices that share resources and information. The advantages and disadvantages of computer networks will be discussed, including the ability to share resources, communicate and collaborate, and centralize data storage, as well as the risks of security vulnerabilities and network congestion. The peer-to-peer network model will be explained, and students will participate in an unplugged activity to experience its advantages and disadvantages. Real-world examples of peer-to-peer networks will be explored, and students will engage in a discussion about their advantages and disadvantages. Finally, students will complete a keyword matching exercise and an exit ticket to assess their understanding of the lesson.

## **Objectives:**

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

1. Define a computer network.

2. Discuss the advantages and disadvantages of computer networks.

3. Describe the role of a computer in a peer-to-peer network.

## **Materials:**

- Whiteboard or blackboard

- Markers or chalk

- Handouts with real-world examples of peer-to-peer networks

- Keyword matching exercise handouts

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

1. Display a picture of a spider web on the board.

2. Ask students to think about how a spider web is similar to a network.

3. Allow students to share their thoughts and ideas with the class.

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

1. Engage students in a class discussion about different types of networks they encounter in their daily lives (e.g., transportation networks, social networks, etc.).

2. Explain that today's lesson will focus on a specific type of network called a computer network.

3. Ask students if they have any prior knowledge or experience with computer networks.

4. Write the term "computer network" on the board and ask students to share their initial thoughts and definitions.

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

1. Provide a clear definition of a computer network: "A computer network is a collection of interconnected devices, such as computers, servers, printers, and routers, that are linked together to share resources and information."

2. Discuss the advantages of computer networks, such as:

- Sharing of resources (e.g., files, printers, etc.)

- Communication and collaboration among users

- Centralized data storage and backup

- Increased efficiency and productivity

3. Discuss the disadvantages of computer networks, such as:

- Security risks and vulnerabilities

- Dependence on network infrastructure

- Potential for network congestion and slow performance

4. Explain the concept of a peer-to-peer network, where computers are connected directly to each other without a central server.

5. Conduct an unplugged activity to demonstrate the peer-to-peer model:

- Divide students into pairs or small groups.

- Provide each group with a set of cards representing different devices (e.g., computers, printers, etc.).

- Instruct students to connect their devices directly to each other to form a peer-to-peer network.

- Discuss the advantages and disadvantages of the peer-to-peer model based on their experience.

## **Guided Practice (20 minutes):**

1. Show students real-world examples of peer-to-peer networks, such as:

- File sharing networks (e.g., BitTorrent)

- Online gaming networks

- Instant messaging applications

2. Facilitate a class discussion about the advantages and disadvantages of these peer-to-peer networks.

3. Address any questions or misconceptions that arise during the discussion.

## **Independent Practice (20 minutes):**

1. Distribute keyword matching exercise handouts to each student.

2. Instruct students to match the keywords related to computer networks with their corresponding definitions.

3. Allow students to work individually or in pairs to complete the exercise.

4. Collect the completed exercises for assessment purposes.

## **Exit Ticket (10 minutes):**

1. Ask students to write a brief summary of what they have learned about computer networks during the lesson.

2. Collect the exit tickets to assess students' understanding of the topic.

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

1. Review the main points covered in the lesson, including the definition of a computer network, advantages and disadvantages, and the peer-to-peer model.

2. Emphasize the importance of computer networks in today's interconnected world.

3. Encourage students to explore further resources and examples of computer networks outside of the classroom.

**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 relevant to grades 9-10 texts and topics.