Lesson 9: Network Protocols

In this lesson, students will learn about the importance of standards in network communication and the role of network protocols. They will understand that a network protocol is a set of rules and conventions that govern how devices communicate and exchange data on a network. Students will be introduced to common network protocols such as Ethernet, WiFi, HTTP, HTTPS, FTP, POP, SMTP, and IMAP, and will learn about their purpose and common use. Through a matching exercise, group activities, and independent practice, students will have the opportunity to apply their knowledge and create their own protocols for sending messages. The lesson will conclude with an exit ticket and a recap of the main points, emphasizing the need for standards in network communication and encouraging further exploration of network protocols.

## **Objectives:**

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

1. Determine the need for standards in network communication.

2. Define the term "network protocol".

3. Identify the purpose and common use of the network protocols: Ethernet, WiFi, HTTP, HTTPS, FTP, POP, SMTP, and IMAP.

## **Materials:**

- Whiteboard or projector

- Internet access

- Handout with matching exercise (printed or digital)

- Group activity materials (paper, pens, markers)

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

1. Ask students to think about the types of rules that exist for communication in the world we live in.

2. Have students share their ideas with a partner or in small groups.

3. After a few minutes, ask for volunteers to share their thoughts with the whole class.

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

1. Begin by discussing the importance of standards in network communication.

2. Explain that a network protocol is a set of rules and conventions that govern how devices communicate and exchange data on a network.

3. Remind students that they should already be familiar with the term "protocol" as it has been used throughout the unit.

4. Emphasize that protocols ensure that devices can understand and interpret each other's messages, just like rules ensure effective communication between people.

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

1. Present a list of some of the most common networking protocols, such as Ethernet, WiFi, HTTP, HTTPS, FTP, POP, SMTP, and IMAP.

2. Define each protocol briefly, explaining its purpose and common use.

3. Use visual aids or examples to help students understand the concepts.

4. Encourage students to ask questions and clarify any confusion.

## **Guided Practice (15 minutes):**

1. Distribute the handout with a matching exercise.

2. Instruct students to match each network protocol with its purpose or common use.

3. Monitor students' progress and provide assistance as needed.

4. Review the answers as a class, discussing the importance and significance of each protocol.

## **Independent Practice (30 minutes):**

1. Divide students into small groups.

2. Instruct each group to create their own protocol for sending a message.

3. Encourage creativity and problem-solving as they design their protocol.

4. Once the protocols are created, have each group attempt to send a message using their protocol.

5. Monitor the groups' progress and provide guidance if necessary.

6. After the activity, have each group share their experience and discuss the challenges they faced.

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

1. Ask students to write a brief paragraph explaining the importance of network protocols in ensuring effective communication.

2. Collect the exit tickets before the end of the class.

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

1. Recap the main points of the lesson, emphasizing the need for standards in network communication and the role of network protocols.

2. Connect the concepts learned in this lesson to the upcoming lesson on the TCP/IP model.

3. Encourage students to continue exploring and learning about network protocols outside of the classroom.

**Common Core Standards:**

- CCSS.ELA-LITERACY.RI.10.4: Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

- CCSS.ELA-LITERACY.RI.10.6: Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.

- CCSS.ELA-LITERACY.RI.10.7: Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.