Lesson 2 - Basic Network Concepts

In this lesson, students will learn about the basic concepts of computer networking. They will differentiate between an IP address and a MAC address, understand the purpose of these addresses in a network, and explore common protocols such as HTTP, DNS, and POP3. Students will also learn how to retrieve the MAC and assigned IP addresses on different operating systems (Windows, Mac, and Linux). The lesson includes a bell-ringer activity, direct instruction, guided practice, independent practice, an exit ticket, and group discussions and activities to reinforce the concepts learned.

Objectives:

- Students will be able to differentiate between an IP address and MAC address.

- Students will be able to list examples of common protocols such as HTTP, DNS, or POP3.

- Students will be able to retrieve a computer's MAC and assigned IP address from a Windows, Mac, or Linux computer.

Materials:

- Computers with internet access

- Projector or smart board

- Handouts with examples of common protocols

Bell-Ringer Activity:

- Display a slide with the following question: "What is the difference between an IP address and a MAC address?" Give students a few minutes to write down their answers individually.

Introduction:

- Begin the lesson by discussing the importance of IP addresses and MAC addresses in computer networks.

- Explain that an IP address is a unique identifier assigned to each device connected to a network, while a MAC address is a unique identifier assigned to the network interface card (NIC) of a device.

- Show examples of IP addresses and MAC addresses on the projector or smart board.

Direct Instruction:

- Provide a detailed explanation of IP addresses, including their format (IPv4 or IPv6) and how they are assigned to devices.

- Discuss the role of MAC addresses in identifying devices on a local network.

- Explain the concept of protocols and provide examples of common protocols such as HTTP, DNS, and POP3.

- Show how protocols are used to facilitate communication between devices on a network.

Guided Practice:

- Divide the class into small groups and assign each group a different operating system (Windows, Mac, or Linux).

- Instruct each group to research and find the steps to retrieve the MAC address and assigned IP address on their assigned operating system.

- Circulate the classroom to provide assistance and answer any questions.

Independent Practice:

- Ask each group to present their findings to the class, demonstrating how to retrieve the MAC address and assigned IP address on their assigned operating system.

- Encourage students to ask questions and engage in discussions about the different operating systems.

Exit Ticket:

- Distribute a short quiz or worksheet to assess students' understanding of the lesson objectives.

- The quiz should include questions about the differences between IP addresses and MAC addresses, examples of common protocols, and the steps to retrieve MAC and IP addresses on different operating systems.

Closure:

- Review the main points of the lesson, emphasizing the differences between IP addresses and MAC addresses, as well as the importance of protocols in computer networks.

- Summarize the steps to retrieve MAC and IP addresses on different operating systems.

- Encourage students to continue exploring and learning about networking concepts.