Lesson 1 - Network Communication Basics

In this lesson, students will learn about the basics of network communication, specifically the differences between Local Area Networks (LANs) and Wide Area Networks (WANs). They will explore the concept of computer networks and their importance in today's world. Through direct instruction, guided practice, and independent practice, students will gain a deeper understanding of LANs and WANs, as well as how to execute a traceroute to analyze network traffic. The lesson will conclude with an exit ticket to assess students' understanding and a closure to review key concepts and encourage further exploration of computer networks.

Objectives:

- Students will be able to differentiate between a Wide Area Network (WAN) and a Local Area Network (LAN).

- Students will be able to execute a traceroute to see network traffic from various hosts on the internet.

Materials:

- Computers with internet access

- Projector or smart board

- Traceroute software or website

Bell-Ringer Activity:

- Display a diagram of a network on the board or projector.

- Ask students to identify the different components of the network and explain their functions.

- After a few minutes, discuss the answers as a class.

Introduction:

- Begin by explaining the concept of computer networks and their importance in today's world.

- Define a Local Area Network (LAN) as a network that connects devices within a limited area, such as a home, office, or school.

- Define a Wide Area Network (WAN) as a network that connects devices over a large geographical area, such as multiple cities or countries.

- Discuss examples of LANs and WANs that students may be familiar with, such as home networks and the internet.

Direct Instruction:

- Use the projector or smart board to display a comparison chart of LANs and WANs.

- Go through each characteristic and explain the differences between LANs and WANs, such as size, speed, and ownership.

- Provide examples and real-world scenarios to help students understand the concepts better.

Guided Practice:

- Divide the class into pairs or small groups.

- Instruct each group to research and find examples of LANs and WANs in different industries or sectors, such as healthcare, finance, or education.

- Each group should present their findings to the class, explaining why they classified each network as a LAN or WAN.

Independent Practice:

- Have students individually execute a traceroute using the provided software or website.

- Instruct them to choose different hosts on the internet and analyze the network traffic between their computer and the chosen host.

- Students should take screenshots or notes of their traceroute results and be prepared to share their findings with the class.

Exit Ticket:

- Distribute a short quiz or worksheet to assess students' understanding of LANs, WANs, and traceroute.

- The quiz should include questions that require students to differentiate between LANs and WANs, as well as interpret traceroute results.

Closure:

- Review the main points of the lesson, emphasizing the differences between LANs and WANs and the importance of traceroute in analyzing network traffic.

- Ask students if they have any remaining questions or if there are any concepts they would like to review in future lessons.

- Encourage students to continue exploring computer networks and their applications in their daily lives.