

6.NI.1 Networks and the Internet



The student will outline the advantages and disadvantages of transmitting information over the Internet, including speed, reliability, cost, and security. (a) Explain the role of the Internet in social life, culture, and the economy. (b) Explain data transfer and the impact of connectivity speed when data is going from one device to another. (c) Compare the speed and reliability of various data transmission media. (d) Describe the advantages and disadvantages of transporting information over the Internet.

Integration Opportunities

Understanding the Standard

Data transmission speed refers to the rate at which data can be transferred between devices and depends on factors such as file size, available bandwidth, and network activity, with examples of data types including jpeg, pdf, Word documents, Google Docs, and videos. Data-rich media like videos take a lot longer to transmit than simpler kinds of data like text. Fast, reliable internet connectivity is expensive, and requires a lot of infrastructure. While Internet access is often thought of as more-or-less ubiquitous, this often isn't the case. Students may only have access to slow, intermittent connectivity outside of school. Poor students and students from rural areas are less likely to have access to persistent, fast, reliable Internet than their peers. Many countries have even less reliable Internet infrastructure than the US, creating the need for other kinds of data transmission and storage outside of cloud services like Google Drive. The advantage to data storage and transmission practices that don't rely on the Internet is that the data is often more secure and easier to keep track of. However, the advantages of fast and reliable Internet connectivity are hard to overstate. Cloud storage, video streaming, and other conveniences which have become commonplace all rely on fast and reliable Internet connectivity.

Term	Definition
Connectivity speed	A measurement of how quickly data can be transmitted from one computer to another
Reliability	A measurement of how stable Internet connectivity is in an area
Internet	The worldwide network of computers facilitating global online communication

Prerequisite Knowledge

Students should have a basic understanding of how computers communicate over the Internet before engaging with this standard.

Summary of a Lesson

Students will actively investigate the impact of data transmission on various aspects of daily life through a survey activity. Working in small groups, they design survey questions to gauge the influence of data transmission on the environment, music industry or effectiveness of media messages. Once the surveys are completed and collected, students will analyze the data and consolidate their findings. Engaging in class discussions, students share their observations and identify noteworthy patterns, distinctions, and insights derived from the survey

responses.

