



Netbuilder: Information Transfer

Objectives

Students will be able to:

- **Perform research** in order to develop an understanding of how information transfer occurs on the Internet.
- **Develop** a way to clearly and concisely **explain** how the Internet transfers information to someone unfamiliar with technology.

Overarching Question

How does the Internet transfer information to my device?

Activity Summary

Students are presented with a scenario in which they must teach others about how information is transferred over the Internet, but before they can do this, they must educate themselves! First, students will investigate how this information transfer occurs. They will then synthesize what they have learned and then explain this information in a way that younger students will understand.

Grades

4–6

Timing

60 minutes

Materials

- Device with the ability to project, one for the teacher
 - Devices with Internet access, enough for half the class
 - [What is the Internet?](#) video, to project
 - Network handout, enough for half the class
 - [How Does the Internet Work?](#) article, one per student
 - [The Internet: Packets, Routers, and Reliability](#) video (for students to access on their devices)
 - Student Explanation handout, one per student
- *Optional Challenge Resources:
- [How Does the Internet Work?](#) video
 - HowStuffWorks' [How Does the Internet Work?](#) full article

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Activity Directions

Premise | 5 minutes

- Begin a class graffiti board by writing the word “Internet” on the board. Then kick off class by encouraging every student to jot a word, phrase, or a quick picture of what comes to mind when they think of the Internet. Once the board is full of students’ ideas, have the class take a moment to review what they have created.
- They are going to pretend that students in a younger grade have decided they would like to start using the Internet. However, they don't really understand it. Therefore, the class must explain how this occurs in a manner that younger students will understand.

Investigate | 35 minutes

- Ask students: Though you use the Internet constantly, how much do you know about how it works? Have students demonstrate with their hands, from 0 fingers to indicate no knowledge to 10 fingers to indicate extremely knowledgeable.
- Tell students that it’s not unusual to not really understand how the Internet works! Play the *What is the Internet?* [video](#) and ask students to listen for at least one new fact about the Internet. When the video is complete, call on a couple students to share what they learned.
- Explain that before students can explain the Internet to younger students, they must have a basic understanding of how it communicates information—so they are about to complete some research.
- Divide students into pairs. Then distribute one Network handout and two *How Does the Internet Work?* articles to each pair. Each pair will also need a device for video viewing.

Note: If any students already have a strong working understanding of the Internet, you may supplement/replace these articles with the articles or video listed under the Challenge section of the Materials list.

- Read the Network handout’s step-by-step directions aloud, explain that pairs will have about 25 minutes to complete this work, and then encourage them to begin their research.
- When time wraps up or as students finish, instruct pairs to share their vocabulary notes with another pair to compare how they interpreted the information. If there are major discrepancies, encourage them to discuss their answers and come to consensus.

Solve | 20 minutes

- Finally, tell students that it is time to share their new knowledge with younger students.
- Pass out one Explanation handout to each student and read the directions aloud. Decide if students will be completing this handout independently or with their partner, and share these instructions as well.
- Answer questions as needed and then encourage the class to get to work! Students should have the remainder of the class period to complete their explanation.
- If there is extra time at the end of this class session or the beginning of the next session, encourage

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students to share their work with each other. As they view their peers' work, they should try to put themselves in the shoes of a younger student and consider what parts may be clear and what parts may be confusing. Students can then edit their work based on their peer's feedback.

Standards

Standards for Technological Literacy (ITEEA) Standards

- Standard 1. Students will develop an understanding of the characteristics and scope of technology. In order to comprehend the scope of technology, students should learn that:
 - D. Tools, materials, and skills are used to make things and carry out tasks.
 - F. New products and systems can be developed to solve problems or to help do things that could not be done without the help of technology.
- Standard 17. Students will develop an understanding of and be able to select and use information and communication technologies. In order to select, use, and understand information and communication technologies, students should learn that:
 - H. Information and communication systems allow information to be transferred from human to human, human to machine, and machine to human.

Common Core English Language Arts Standards

- Reading: Informational Text
 - CCSS.ELA-LITERACY.CCRA.R.9: Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.
- Writing
 - CCSS.ELA-LITERACY.CCRA.W.2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
 - CCSS.ELA-LITERACY.CCRA.W.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- Speaking and Listening
 - CCSS.ELA-LITERACY.CCRA.SL.2: Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

Internet Vocabulary Words

Below are six key words you will need to know when you teach younger students how the Internet transfers information. As you learn about these words and the role they play in the Internet, add notes below.

Web browser:

Server:

Packet:

Data:

Router:

Transmission Control Protocol:

Step 1: Read the following paragraphs aloud with your partner. As you read, annotate for vocabulary words. Then jot quick notes above that will help you begin to understand these words.

When you use the Internet, you open a web browser (like Google Chrome, Firefox, or Internet Explorer) on your device. A web browser is a software program that lets you view and use websites—but it doesn't create the websites. So how is this information transferred so websites can appear on your device's web browser? This is what you will investigate today!

First, it is important to understand that the Internet is an interconnected network of devices. Your family or school pays an Internet service provider (ISP) for Internet access. Your ISP is connected to other ISPs, and through connection after connection, all networks around the world are connected in one huge web.

All devices connected to this enormous network are able to share data (which is information displayed as words, pictures, videos, etc.). In this worldwide web, there are not only devices that are searching for websites and data, there are also millions of devices that provide information. These devices are called servers, and it is their job to store the data you see when you use the Internet and view websites. Servers may be controlled by people, companies, or governments—so no one person or group owns the Internet!

Step 2: Next, read the *How Does the Internet Work* article with your partner. This article will help you begin to understand how data is sent and received over the Internet. As you read, continue to annotate for the vocabulary words. When you are done reading, add details to your vocabulary notes.

Step 3: Type youtu.be/AYdF7b3nMto into your web browser, and watch a video to learn even more about how data is transferred over the Internet. As you hear any vocabulary words mentioned, pause the video and jot notes to help you further understand what each word means.

Directions: Younger students may be able to understand how a letter appears in their mailbox, but they can't understand how information travels over the Internet to their computer. Think about how you can teach them this in a way that they will understand. You may want to draw a picture, create a diagram, or write a letter, story, or song.

No matter what you decide, be sure to include each of the following vocabulary words:

Web browser Server Packet Data Router Transmission Control Protocol
