Puzzle Tunnel Game: Internet Packets

About This Activity

Introduction

In this activity, learners will complete a puzzle-based game that is actually a visual demonstration of how data is broken down into packets and then reassembled when sent through the Internet to a device. Learners will color a puzzle, cut it out, feed the pieces through a tube that they constructed, and then reassemble the puzzle. You will be given talking points to teach your learner about this concept.

Objective

Upon completion of this activity, learners will:
• understand the basics of how data travels through the Internet to a device

What You Need

This activity requires a high level of facilitator participation.	This activity will take about 30 minutes to complete.	You will need the following supplies: • Coloring supplies • Scissors • Tape • Glue stick (optional)

Facilitator's Instructions

You will be using the information from the Learner's Sheet pages to help teach this concept. It may be helpful to have your own set of these pages to reference during the activity.

1. Print out the Learner's Sheet pages.
2. Gather your supplies.
3. Tell your learner about this activity: "Today, you're going to learn how stuff travels through the Internet! Then, we're going to play a puzzle game to see just how this works. Let's start by looking at the first part together."
4. Pause and give your learner the first three pages of the worksheet. Review the information together about how files and data travel through the Internet.

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Facilitator's Instructions Cont'd

5. Tell your learner: "Now, we're going to do the activity part!" Give them the other pages and walk them through sets of instructions under "Help Bobby Send a Picture" to complete the activity.
6. Congratulate your learner on a job well done!

Standards Addressed

CSTA
1B-NI-04, Networks & The Internet, Network Communication & Organization: Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination.

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What You Need

- ✓ Coloring supplies
- ✓ Scissors
- ✓ Tape
- ✓ Glue stick (optional)

How Does the Internet Send Stuff?

Ever wonder how stuff gets sent through the Internet? When you send an email to your friend, how does it get from your computer to your friend's computer?
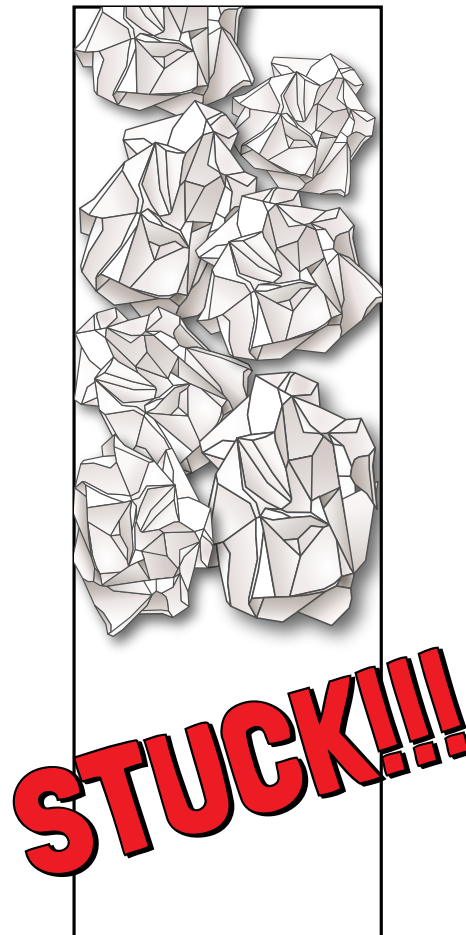
When you turn in homework online, all of your classmates are sending files to your teacher at once. Imagine the Internet as a narrow tube that connects all computers. Now, imagine everyone's homework as crumpled up balls of papers. The papers are different sizes, some big and some small. But, the tube can't stretch and can only fit so much through it at once without getting clogged.

Now, imagine all of those balls of papers trying to drop through the narrow tube at once. There's a traffic jam and they get stuck, just like in the picture on the right! Many block the way of the rest and nothing can get through. How can all of the homework get through the tube to reach your teacher?

This is what would happen if the Internet didn't use a thing called packets. A packet is a small piece of a whole file that gets stamped with file information and sent through the tube. Once it reaches its destination, the packet finds its friends, which are the rest of the packets that make up the entire file. The file information that they were stamped with helps the packets find their friends and reassemble into one big file again.

STUCK!!!

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Let's imagine all of your classmates sending their homework to your teacher again. This time though, instead of the crumbled up balls of paper, imagine everyone's papers broken up into tiny pieces.

The tiny pieces move right through the narrow tube without any trouble, just like in the picture on the right! Then, using the information that each tiny piece, or packet, was stamped with, the homework files put themselves back together so your teacher can see them.

Did we mention that all of this happens in just microseconds? Pretty amazing!
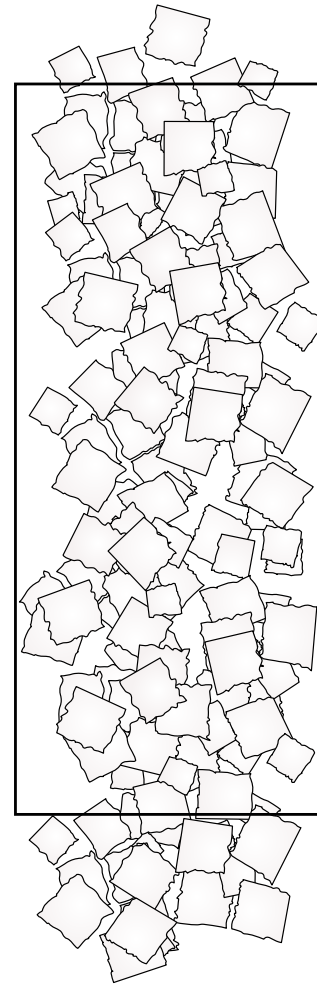
Help Bobby Send a Picture

Bobby wants to send his friends a picture of a cool playground he and his family went to this weekend. The only problem is that the picture is too big to fit through the Internet tube!

Follow the directions below and on the next page to help him send the picture by breaking it into pieces and then reassembling it.

Make the Packets
Let's start by getting the picture ready to turn into smaller packets that can make it through the tube.

1. Color in the puzzle on the page that says, "Bobby's Picture," at the top.
2. Cut out the picture along the thicker lines that look like puzzle pieces. Set them aside for later.

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Make the Internet Tube
Now you need an Internet tube for the picture to travel through.

1. Color in the tube on the page that says, "The Internet Tube," at the top. You can color this any way you like, be creative! If you could see it, what would the Internet look like? Draw whatever you want!
2. Cut out the tube along the solid lines.
3. Roll the tube so that the side without the tab overlaps the side with the tab. The side without the tab should line up over the dotted line. Tape or glue the sides into place.

Help the Packets Travel
1. Fold up your packet pieces to make them even smaller and scoop them up in one hand.
2. Pick up your tube in your other hand.
3. Drop the packets through the tube.

Wow, you just sent a file through the Internet!
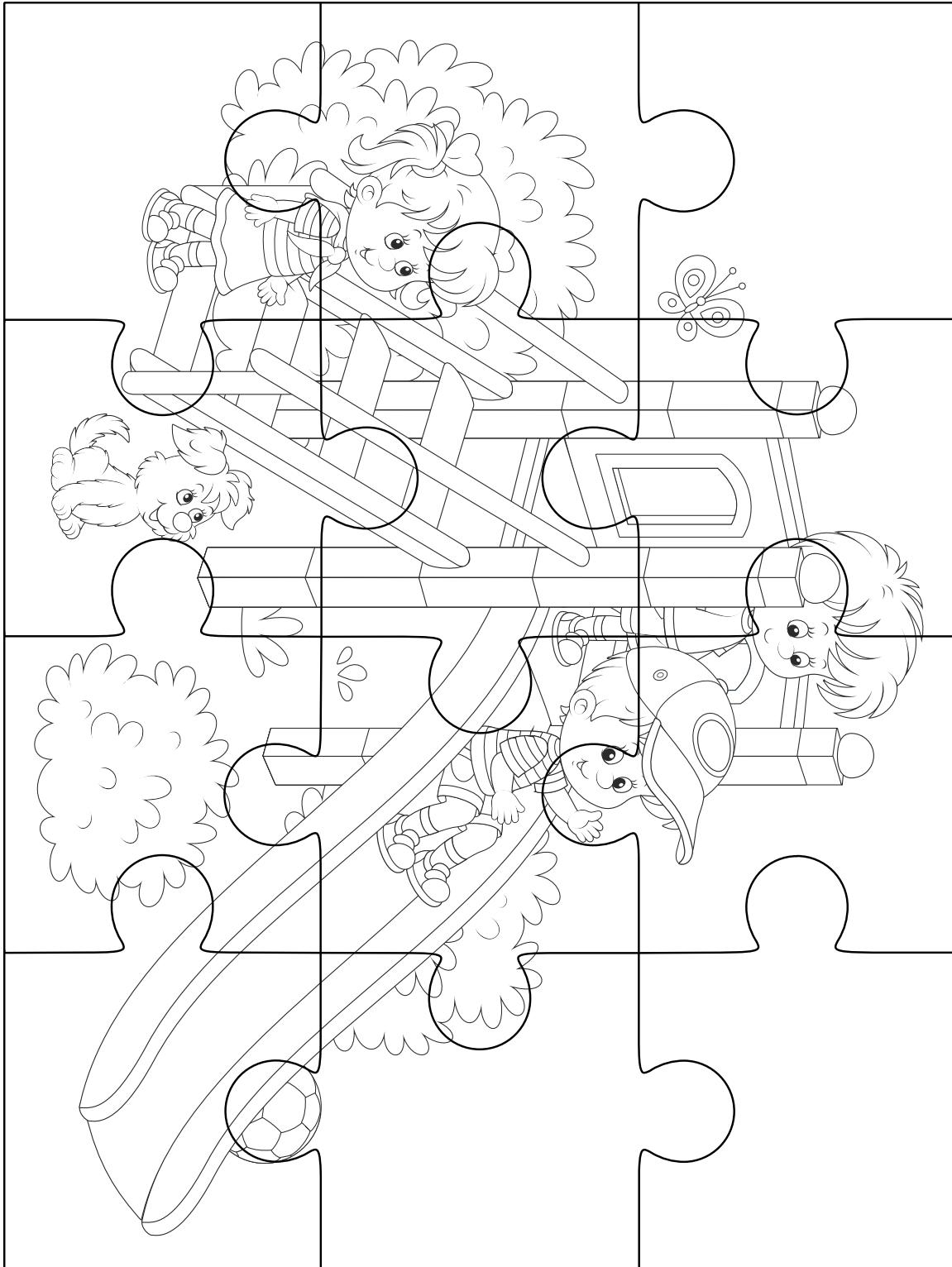
Reassemble the Packets
Finally, it is time to reassemble the packets into one big picture.

1. Unfold your packet pieces.
2. Get the page that says, "Reassemble the Packets," at the top.
3. Using this page, put the puzzle pieces back together so that they form a picture again. The outline of the puzzle pieces will act as your file information by helping to tell you where the packets go.
4. Tape or glue the pieces into place once you have all of the pieces in the right place.

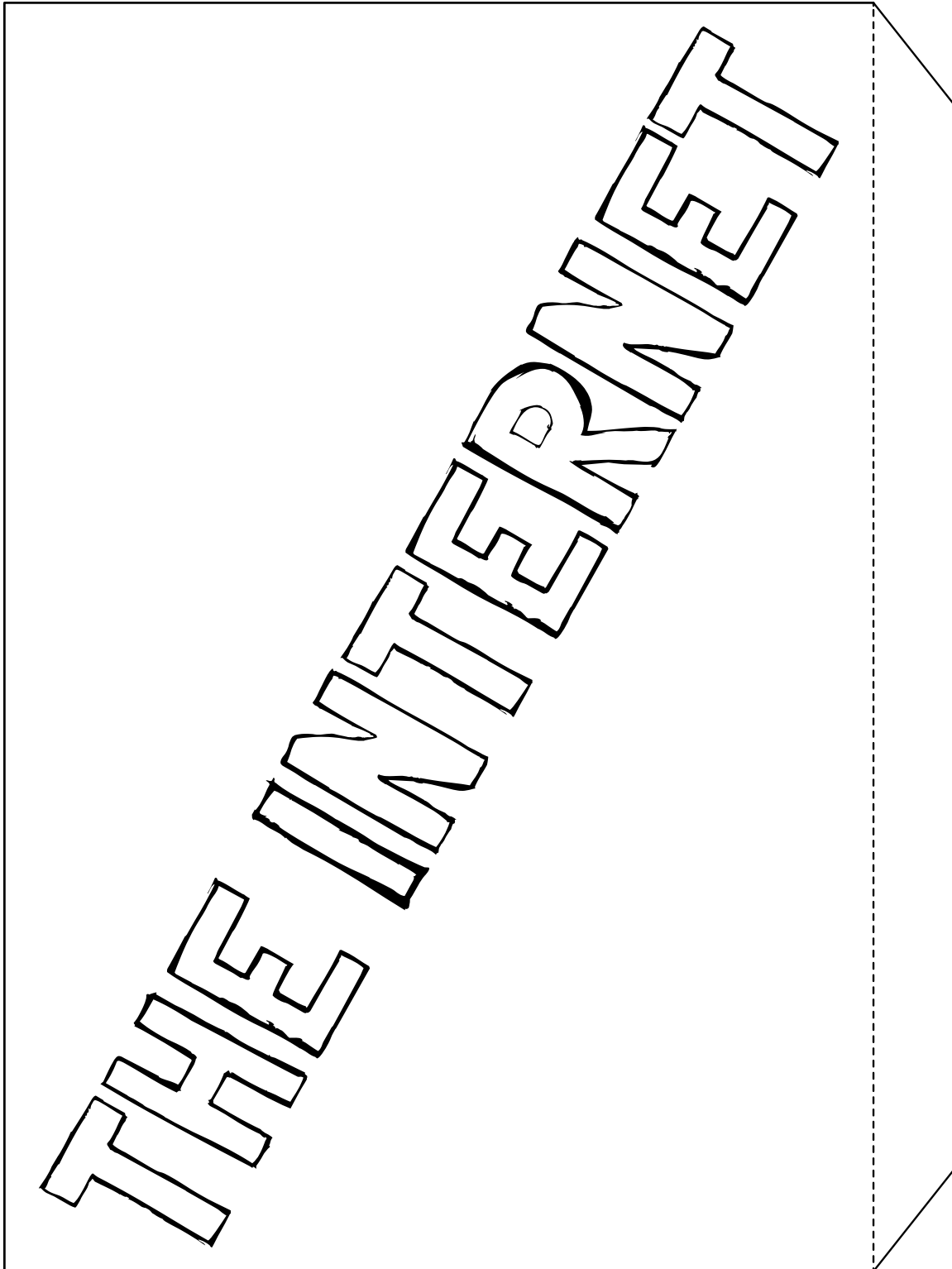Congratulations, you helped send the picture to Bobby's friends!

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Bobby's Picture

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The Internet Tube

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Reassemble the Packets

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