Gaming Concepts
Introduction to Technology

SAMPLE

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GENERATION ESPORTS

Gaming Concepts: Introduction to Technology

First printing edition 2025

Publisher
High School Esports League a subsidiary of Generation Esports
4809 NW Northwood Rd.
Riverside, MO 64150

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Meet the Authors

Dr. Kristy Custer spent 24 years in public education. Twenty years were spent in alternative education, including 12 years as a high school administrator. As an alternative educator, she helped create a nationally recognized alternative school program that garnered two National School of Character Awards, as well as a National Dropout Prevention Award. As the 2018 Kansas Principal of the Year, Custer has championed character education and alternative education. In addition to *Gaming Concepts,* Custer also co-wrote a year-long character education curriculum, *186 Days of Character.*

Dr. Michael Russell was a small business owner prior to beginning a career in alternative education. Russell championed the idea of utilizing esports and gaming in the classroom to reach students who were disengaged from school. During his time in the classroom, Russell assisted numerous educators in creating after-school esports programs and implementing for-credit scholastic gaming into their classrooms. Russell was awarded the Kansas Horizon Award for excellence in teaching and is often an invited speaker at educational and esports conferences.

A co-writer of the *Gaming Concepts* curriculum, Heidi Albin was also recognized as a 2017 Milken Educator and a 2019 Presidential Awardee for Excellence in Mathematics and Science Teaching. A science teacher for over 14 years, her passion is to teach underserved students life skills, improve their mental health, and to help other teachers do the same. Albin co-authored the year-long curriculum *186 Days of Character* and served as the Character Education Coordinator to lead the efforts to gain recognition for her school as a two-time National School of Character. She enjoys speaking at conferences to share innovative teaching ideas.

Alex Hirbe is an advocate for meaningful technology integration. He leverages his expertise to develop impactful online curriculum designs and implementations, fostering meaningful interactions and integrations. Additionally, Hirbe has made notable contributions to the field through his publications, including "Virtual Classrooms with MyBigCampus" and "Engagement in the 21st Century Classroom." As an online curriculum developer for *Gaming Concepts* since 2021, Hirbe remains committed to shaping the educational landscape by blending his passion for technology, gaming, and discovery learning to create engaging and innovative learning experiences.

With 26 years of experience in highly diverse schools, Connie Russell has been a passionate and dedicated elementary school teacher. Throughout her career, Connie has not only shaped young minds but has also played a pivotal role in mentoring over 20 student teachers, helping to cultivate the next generation of educators. A respected leader in her school community, Connie has been a long-standing member of the leadership team, contributing to curriculum development, professional growth initiatives, and school-wide improvement efforts. Her commitment to fostering inclusive and engaging learning environments has made a lasting impact on both students and colleagues alike.

An Introduction to Gaming Concepts

Technology is all around us, helping people solve problems, create new ideas, and make everyday life easier. But how does it work? And how can kids start learning about it in a fun and exciting way? That's where ***Gaming Concepts: Introduction to Technology*** comes in.

This engaging course for elementary students introduces young learners to the world of technology through games, activities, and real-world examples. It's designed to help students build confidence with computers, understand how technology is used in their daily lives, and explore the skills they'll need for the future. With ***Gaming Concepts: Introduction to Technology***, students will:

- **Discover the Basics of Technology** – Learn about computers, coding, digital tools, and how technology helps people solve problems.
- **Develop Critical Thinking Skills** – Engage in activities that encourage problem-solving, creativity, and logical thinking.
- **Learn About Internet Safety** – Understand how to use technology responsibly and stay safe online.
- **Connect Learning to Real Life** – See how technology is used in different careers, from game design to science, engineering, and even art.

But learning isn't just about technology—it's also about feeling confident and ready to take on challenges. That's why this book includes special *Mental Health Moments*, which help students develop a positive mindset, manage stress, and build self-confidence. Research shows that these simple mental health strategies can make a big difference in how students feel about themselves and their learning (Jenson et al., 2023).

Gaming Concepts: Introduction to Technology is part of an innovative learning experience on **Blueprint**, a powerful online learning system designed to make education fun and interactive. **Blueprint** helps students explore technology through videos, games, and activities that bring lessons to life. With its easy-to-use tools, teachers can guide students through their learning journey while allowing them to explore topics at their own pace.

By combining hands-on activities, engaging stories, and real-world connections, ***Gaming Concepts: Introduction to Technology*** helps young learners take their first steps into the exciting world of technology. Whether students dream of building video games, designing robots, or just learning how things work, this course provides the perfect foundation to spark their curiosity and creativity.

Esports Career Connections

From designing games to streaming, coaching, and event planning, the world of esports is filled with opportunities for students who love technology, teamwork, and creativity. When teachers introduce young students to careers in esports, they do more than show them fun jobs—they help them see how school connects to their future. By exploring different roles in esports, students can discover new interests and start thinking about what they want to be when they grow up. Use the **Esports Career Connections** graphic to help students imagine their future in gaming and technology. Whether they love playing, creating, or organizing, there's a place for everyone in esports!

Mental Health Moments

Why Are Mental Health Moments Important?
Gaming Concepts makes learning fun and engaging for all students while also helping them develop important life skills like teamwork, problem-solving, and perseverance. *Mental Health Moments* are short, meaningful activities built into the lessons that encourage students to think about positive emotions, friendships, and personal accomplishments. These activities help students feel good about themselves and their abilities, making learning even more rewarding.

Where Do Mental Health Moments Appear in the Curriculum?
Throughout the *Gaming Concepts* course, lessons highlight important areas of mental health that students can relate to easily. These include:

- Feeling positive and confident
- Staying focused and engaged in learning
- Building strong friendships and relationships
- Finding meaning in school and activities
- Celebrating achievements and progress

These moments are not separate lessons that take away from learning—they fit naturally into what students are already doing, making it easy for teachers to guide discussions and encourage healthy habits.

What is a Mental Health Determinant?
A *mental health determinant* is something that affects how we feel about ourselves and the world around us. Some things we are born with, like our personality, while others, like education, friendships, and life experiences, can shape the way we think and grow. The *Mental Health Moments* in *Gaming Concepts* focus on factors that students can build and strengthen, such as self-esteem (believing in yourself) and self-efficacy (knowing you can accomplish things if you work at them). By developing these skills, students are better prepared to handle challenges both in and out of school.

How Are Mental Health Moments Different from Traditional Lessons?
In many classrooms, lessons about personal growth and well-being can feel separate from regular schoolwork, making it harder for students to connect with the ideas. Research shows that students learn best when these moments happen naturally within their regular activities. *Gaming Concepts* takes a different approach by blending mental health discussions into the curriculum in a way that feels real and engaging. Instead of separate lessons, students experience *Mental Health Moments* as part of what they are already learning (Jenson et al., 2023).

Do Mental Health Moments Really Make a Difference?
Yes! Studies have shown that students who participate in *Gaming Concepts* with *Mental Health Moments* experience higher self-esteem and feel more confident in their abilities (Jenson et al., 2023). These moments help students build lifelong skills that will support them in school, friendships, and future careers.
By making mental health a natural part of learning, *Gaming Concepts* helps students develop confidence, resilience, and a positive outlook—one lesson at a time.

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UNIT 3: BEHIND THE SCREENS -- Students explore how computers work by learning about operating systems, networks, and how devices connect and share information. They'll discover how hardware and software work together, how data travels from place to place, and how to solve common tech problems. Through hands-on activities, students will also explore adaptive technology and artificial intelligence, seeing how technology can help people and improve our world.

Lessons

LEVEL 4: MAKING SENSE OF DATA -- Students develop digital literacy by exploring copyright and content use, refining research skills, and analyzing gaming data through surveys, charts, and graphs to identify trends, make predictions, and assess decision-making impacts.

Lessons

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UNIT 5: GAME MAKERS AND WORLD SHAPERS -- Students will learn the basics of coding and algorithm as they examine game design using block-based coding, debugging, and testing. They'll explore how computer science helps people and shapes our world. Through hands-on projects, students will work together to solve problems, get feedback, and make their creations even better, while discovering how technology connects to everyday life.

Lessons

Smart Gamers Take Breaks

Lesson Overview

Students explore the importance of balancing gaming and screen time with physical and emotional breaks. Through movement activities, personal break plans, and mindful reflection, students learn to manage their energy and emotions, fostering healthy gaming habits and supporting positive mental health.

STANDARDS ADDRESSED

- **ISTE 1.2.c**
- **CASEL 1**
- **CASEL 2**
- **CASEL 5**

MATERIALS NEEDED

- **Worksheet:** My Break Plan
- **Video:** Mindful Minute | Soothe Your Thoughts and Feelings | Calming Break

MENTAL HEALTH MOMENTS

- ✓ **Positive Emotion**
- ✓ **Engagement**
- ❑ **Relationships**
- ❑ **Meaning**
- ❑ **Accomplishment**

DIRECTIONS:

- **ENGAGE (10 min.):** Say: *Imagine you just got a brand-new video game that you LOVE playing. You sit down, and before you know it…two hours have gone by. Your eyes feel tired, your legs feel stiff, and you're super hungry. Has this ever happened to you?*

- Say: *Screen time is how much time you spend looking at a screen. This might be on an iPad, a TV, a computer, a video game, or a phone. How do you feel when you sit and stare at a screen for a long time?*
  - Take student answers—examples: sleepy, stiff, tired, dizzy, hungry.

- Say: *Gaming is fun, but too much screen time can make our bodies and minds feel tired. Smart gamers take movement breaks to stay healthy and play better!*

- Say*: What do you think are some fun ways to take breaks while gaming?*
  - Write student answers on the whiteboard. If students struggle, guide them with some ideas:
    - Stand up and jump or stretch every 20 minutes
    - Drink water when reaching a new level
    - Step outside for 5 minutes
    - Set a timer to remind yourself to pause
    - Dance to a favorite song after a game

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- **ENGAGE (5 min.):** Tell students that they are going to practice a movement break together called 5-4-3-2-1 Break! Explain that you will give them 30 seconds to try to complete the following activities:
  - 5 Jumps, 4 Arm Circles, 3 Toe Touches, 2 Deep Breaths, and 1 Big Stretch.
    - Write the five activities on the whiteboard for students to reference.
    - Adjust time and activities to meet the needs of individual students if necessary.
  - Repeat the challenge as many times as is appropriate for your students. Consider reversing the order or adding an extra activity each time, such as 6 claps and 7 blinks. (You could say: If you did all 5 moves, you leveled up to the next round! Let's do another round with another move.)

- **APPLY (10 min.):** Reinforce that taking screen breaks is really important. Your brain thinks better. Your eyes feel better. Your body is more comfortable. Your feelings are more calm.

- Mention to students that their eyes need a break from a screen every 20 minutes so they don't get headaches or hurt their eyes.

- Say: *Since taking breaks during screen time is so important, we're each going to make a Break Plan! You'll pick how and when you'll take breaks when you're gaming.*
  - Students should fill out the "My Break Plan" worksheet, which can be sent home with students to let parents/guardians know about the breaks their students should be taking from screen time.

- **RELATE (5 min.):** Ask: *Have you ever been playing a video game and lost at the last second? Or maybe the game wasn't going the way you wanted? How did that make you feel?*
  - Students respond with emotions: mad, frustrated, sad, upset.

- Say: *Those feelings are totally normal. When we get frustrated in a game, we might feel like yelling, getting mad, or quitting. But smart gamers know how to take a break to calm down and come back ready to try again. Taking a break when we feel upset isn't just for gaming. It can help us all the time. If math is hard, or a friend makes you upset, taking a short break helps you reset and feel better. What are some ways you can take a short break when you feel upset to help you feel calm again?*
  - Write student answers on the whiteboard. If students struggle, guide them with some ideas:
    - Pause and breathe (Take 3 big breaths)
    - Move your body (Jump, stretch, or shake it out!)
    - Drink water (Water helps your brain cool down)
    - Think of something happy (Like your favorite snack or pet!)
    - Talk to a friend or teacher (Ask for help!)

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MENTAL HEALTH MOMENT

Students learn the importance of recognizing when their minds and bodies need breaks, supporting healthy habits around gaming and other screen activities. By practicing short, mindful breaks when frustrated or overstimulated, students learn to manage emotions, reduce stress, and strengthen their mental wellness. This helps build lifelong coping strategies for maintaining positive mental health.

Continued

- **APPLY (5 min.):** Say: *Let's practice taking a short feelings break together. We're going to take three deep breaths. While breathing, think about something that makes you feel happy. It might be your favorite game, a yummy snack, or someone you love.*
  - Lead the class in three slow, deep breaths.
    - Alternatively, the instructor may choose to play the video Mindful Minute | Soothe Your Thoughts and Feelings | Calming Break.
  - After students practice a short feelings break, have them tell their neighbor how it made them feel.

- **JOURNAL WRITING (5 min.):** How can taking a break help you be a better friend, gamer, and student?

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DIFFERENTIATION

- **For Struggling Students:** Students can use the "My Break Plan" worksheet to draw their break activity instead of writing about it or answering the questions on Blueprint.

LESSON EXTENSION

- **For Advanced Students:** Have them create a "Gamer's Break Challenge" poster or digital slideshow.
- **Optional Home Connection:** Students explain their plan to a parent and try it at home.

My Break Plan

DIRECTIONS: Since taking breaks during screen time is so important, you will make a Break Plan. You'll pick how and when you'll take breaks when you're gaming.

1. What is your favorite screen time activity? (For example: iPad games, TV shows, video games, or phone apps.)

_____

2. How much time do you spend on the screen at once? Circle an answer below:

15 minutes **30 minutes** **1 hour** **More than 1 hour**

3. Here are some ideas for how to take a break from screen time.
Circle your 3 favorite ideas.

Get a drink of water **Go outside** **Read** **Stretch**

Do 10 jumping jacks **Draw or Color** **Dance**

4. How often do you want to take a break from screen time?
Circle an answer below:

10 minutes **15 minutes** **20 minutes**

5. Write a sentence or draw a picture of what you will do when you take a break from your screen.

From Messy to Manageable

Lesson Overview

This lesson reinforces the importance of digital organization by helping students understand why saving files in the right place and using clear file names is essential. Through discussions, real-world analogies, and interactive sorting activities, students practice organizing files into appropriate folders and naming them effectively. They also reflect on how these skills connect to their daily lives, fostering responsible digital habits. By the end of the lesson, students will understand the importance of organizing their digital work for easy access and future use.

STANDARDS ADDRESSED

- **1A-DA-06**
- **1B-DA-07**
- **ISTE 1.1.d**
- **ISTE 1.2.d**
- **ISTE 1.3.d**
- **CASEL 1**
- **CASEL 2**
- **CASEL 3**

MATERIALS NEEDED

- **Online Game:** Categories by Lucybarrell on Wordwall
- **Worksheet:** Organizing Files

MENTAL HEALTH MOMENTS

- ✓ **Positive Emotion**
- ✓ **Engagement**
- ❑ **Relationships**
- ❑ **Meaning**
- ✓ **Accomplishment**

DIRECTIONS:

- **ENGAGE (5 min.):** Read or paraphrase the following: *Imagine you just finished an amazing story for class. You worked SO hard on it. The next day, you need to turn it in, but… you CAN'T FIND IT! You look everywhere, but it's missing! Has this ever happened to you? Today, we'll learn how to save files in the right place so this NEVER happens again!*

- Ask students to think quietly to themselves what they remember about the importance of organizing, as discussed in a previous lesson.
  - Ask: *Why is organizing things in a home or classroom important?*
    - Allow students to discuss with their neighbor.
  - Ask: *Why is organizing things on a computer important?*
    - Allow students to discuss with their neighbor. Then ask for a volunteer to answer.

- Explain: *Imagine if you put your clothes in the kitchen and your food in the bathroom—would that make sense? No way! You would have a hard time finding what you need. The same thing happens on a computer! If you save your files in random places, you won't be able to find them later. Keeping files organized is like putting things in the right rooms in a house—so everything is easy to find when you need it!*

- Say: *You have just learned an important rule for organizing your computer: Save your files in the right "room" or folder.*
  - Write this rule on the whiteboard and have students repeat this rule aloud.

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- **PRACTICE (10 min.):** Tell students they will practice their organizational skills by sorting various items into categories, just like they would sort different types of files into folders.
  - Have students open the Categories by Lucybarrell on Wordwall game.
    - Note, this game also serves the purpose of helping students practice the click and drag action with a mouse or touchpad.

- **APPLY (10 min.):** Congratulate students on doing a good job with the sorting activity, and then tell them that they will use their good organizational skills to review what they learned about organizing files in a computer.

- Have students look at the picture of a house on the "Organizing Files" worksheet and discuss quietly with a neighbor what they remember about the picture from the previous lesson.
  - Ask: *What does this picture tell you about organizing files in your computer?*
    - Call on volunteers to summarize what the picture means.

- Summarize the main point of the image by saying: *Your computer is like a big house, and just like in a house, everything needs to go in the right place to stay organized. The desktop is like the living room, where items sometimes pile up but shouldn't stay forever. Important documents belong in the Documents folder, like the office. Pictures go in the Pictures folder, like the art room. Music is stored in the Music folder, like the music room; and videos should be kept in the Videos folder, like the movie theater. Keeping files in the right "rooms" makes it easy to find them when you need them!*

- Students will now complete the matching activity on the "Organizing Files" worksheet.

- **REVIEW (5 min.):** Project or write this list of five file names on the whiteboard:
  - doc1.docx
  - document2.doc
  - newdocument.rtf
  - 1.pdf
  - new(1).wpd

- Ask: *What if you were trying to sort these files? Would it be easy to know what kind of files they are?* (Pause for answers.) *You can't tell what each file is because they don't have good names. What if I asked Student X to answer a question, would you know who I was talking to? Not if I didn't use their name.*

- Ask students to think quietly to themselves what they remember about the importance of using good names for files as discussed in the previous lesson. Allow them to discuss with a neighbor and then ask for a volunteer to share.

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MENTAL HEALTH MOMENT

This lesson fosters self-management, responsible decision-making, and organization skills. Students practice self-awareness as they reflect on personal experiences with losing or misplacing important items, connecting these emotions to digital organization. The lesson also strengthens responsible decision-making by helping students understand how good digital habits impact their productivity and success. By organizing files effectively, students build self-discipline and executive functioning skills, essential for both academic and real-world success.

Continued

- Say: *At the beginning of this lesson, you were supposed to imagine that you just finished an amazing story for class. You worked SO hard on it. The next day, you need to turn it in, but you need to find it on your computer first! It would be hard to find your file if it didn't have a good name!*

- Project or write this second list of file names on the whiteboard:
  - ClassRules.docx
  - MyAmazingStory.doc
  - NoteToFriend.rtf
  - MathHomework.pdf
  - ScienceWorksheet.wpd

- Say: *But what if your files were named like the ones in this new list? Would you know which document was your amazing story?*

- Have students say the file name they think would be their amazing story, then say: *The file named MyAmazingStory.doc is the right file. You know that because its name is MyAmazingStory. Great detective work! See why it is important to give your files good names?*

- Tell students that the second thing to remember about keeping your computer organized is: *Give your files good names so you know what they are.* Write that on the whiteboard and have students say it aloud.

- **EXPLAIN (5 min.):** Say: *Today, you learned two important rules about saving files on your computer. The two important rules about saving files are: 1. Give your files good names so you know what they are. 2. Save your files in the right folder.*
  - Point to the two rules on the whiteboard and have students say them aloud together a few times and/or write them on their own note paper.

- **JOURNAL WRITING (5 min.):** What are some ways you already practice organizing in your daily life?

DIFFERENTIATION

- **Physical Sorting Activity:** Use printed paper “files” and have students physically place them in labeled folders before transitioning to the digital activity.

LESSON EXTENSION

- Have students re-organize misplaced classroom items to reinforce the idea of putting items in the right place.
- **For advanced learners:** Advanced File Naming Task: Have students rename poorly labeled files using a naming convention (such as “Subject_Assignment_Date”).

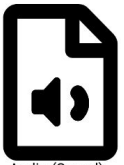
Organizing Files

Try to remember from the last lesson: What does this picture tell you about organizing files in your computer?

Now, look at the kinds of file names below and draw a line from each name to the folder it should go in.


Text (Words)


Image (Pictures)


Audio (Sound)


Video

- A family picture
- Your favorite song
- A letter to a friend
- A YouTube video you saved
- A map of your school
- A recipe for making cookies
- An image of cookies
- A video showing you how to bake cookies

The Internet's Puzzle Pieces

Lesson Overview

Students model how information is broken into packets, sent through a network, and reassembled at the destination. Through hands-on activities, they explore how messages travel across the internet, experience challenges like lag and lost packets, and reflect on the importance of responsibility in teamwork and communication.

STANDARDS ADDRESSED

- **1B-NI-04**
- **1B-AP-11**
- **ISTE 1.1.b**
- **ISTE 1.1.d**
- **ISTE 1.3.d**
- **ISTE 1.5.c**
- **CASEL 2**
- **CASEL 3**
- **CASEL 5**

MATERIALS NEEDED

- Paper, pencil to draw with, and scissors for each student
- **Worksheet:** What I Learned

DIFFERENTIATION MATERIALS

- Internet's Puzzle Pieces Diagram

MENTAL HEALTH MOMENTS

- ❑ **Positive Emotion**
- ✓ **Engagement**
- ✓ **Relationships**
- ❑ **Meaning**
- ❑ **Accomplishment**

DIRECTIONS:

- **EXPLAIN (5 min.):** Say: *Today, we're going to learn a secret about how computers and video games send messages! Have you ever sent a message in a video game like Minecraft, Roblox, or Fortnite? How does it get from your screen to your friend's screen?*
  - Allow for students to guess. Then say: *Great guesses! Here's how it works: Computers use something called "packets" to send messages. Packets are tiny pieces of information. When you send a message, the computer chops the message up into smaller pieces called packets. Each packet travels a different way through the internet and then, when they all reach your friend's computer, they get put back together.*

- Provide this example to reinforce student's understanding: *Imagine you want to send a big birthday card to your friend, but your envelope is too small. Instead of sending it as one big card, you cut it into smaller pieces, mail each piece separately, and when your friend gets all the pieces, they tape them back together. That's how computers send messages online. They break messages into packets, send them different ways, and put them back together when they arrive.*

- **ENGAGE (25 min.):** Tell students that they are going to act like the internet. They will send pictures to their classmates, but, just like the internet, the pictures won't travel as whole pictures, but in little packets.
  - Consider displaying the Internet's Puzzle Pieces Diagram during this part of the lesson.

- Pass out a blank piece of paper to each student and give them 1-2 minutes to draw a simple picture that is big enough to take up most of the page.

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- Give students scissors and have them cut their paper into four pieces. It may be beneficial to have students fold their papers in half and then in half again to create four squares and cut along the folds.

- Choose one student to be the "sender" and ask them which student in the classroom they want to send their picture to. Preferably, this should be a student who is in a different part of the classroom. (Alternatively, have students sit in a big circle on the floor, and the sender student will send their message to the student across the circle from them.)
  - Let students know that the student sending the picture is the "sender" and the student who is getting the picture is the "receiver."

- Choose four students to be routers and have them stand in the middle of the room or student circle.
  - Say: *You are about to pretend to be the internet. When you send a message in a video game or on a computer, it doesn't go straight to your friend. Instead, the internet breaks it into little pieces called packets and sends them through different paths. The people standing in the middle are called "routers." Routers help packets find their way to the right place.*

- Have the router students walk over to the sender student. Each router student should pick up one of the pieces of the sender student's cut up picture.

- Say: *Routers don't keep the packets—they pass them along to the receiver. Routers are like GPS navigation for the internet. When you ask your device for a game update, routers help find the best path to send you the right data quickly.*
  - Have the four router students take the paper pieces over to the receiver student.

- Say: *The receiver collects the packets and reassembles the picture once all the pieces have arrived. Sometimes packets arrive out of order, but computers fix this.*
  - Have the receiver student assemble the pieces they received to put the picture back together again.

- Thank the student volunteers and then tell students they are going to do this process again. Choose a new sender, a new receiver, and four new routers.

- Once students are in place, say: *Let's learn some more about how this process works. The internet doesn't send all packets in a straight line. Instead, it sends them through many different routes to make sure they get there as fast as possible. If one road is too busy, the internet finds another way—just like cars taking different roads to avoid traffic.*

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MENTAL HEALTH MOMENT

This lesson reinforces responsibility, teamwork, and problem-solving. Students learn that just like packets must arrive on time for a message to work, their actions impact the success of a group. By working together to simulate internet communication, they develop collaboration, adaptability, and critical thinking skills in a fun and engaging way.

Continued

- Have the student volunteers simulate the process again (router students walk over to the sending student, each router collects one of the pieces of paper, then delivers their paper to the receiver student). But this time, tell router students to walk in a wavy line to get to the receiver instead of a straight line.
  - To help students visualize, consider placing a few chairs or other objects between the sender and receiver that router students must walk around, causing each router student to take a different path.

- Ask the following reinforcement questions:
  - *Did all packets take the same path?*
  - *Which packet arrived first?*
  - *What happened when packets arrived out of order?*

- Choose six new students to act out the scenario again.
  - When they are in place, say: *Sometimes, a packet takes a long way around. This happens in real life too. When you have a slow internet connection, it might be because some packets are taking longer to get to you. Let's see what happens if we make this game a little harder.*

- Have the new student volunteers run the simulation again, but tell them that this time there is a slow internet connection. One of the router students must wait 5 seconds before they walk to the receiver students. (Tell students that when this happens, it is referred to as "lag.")

- Repeat the reinforcement questions:
  - *Did all packets take the same path?*
  - *Which packet arrived first?*
  - *What happened when packets arrived out of order?*

- Say: *Imagine you're playing a game, and one of your packets (like the picture pieces) takes too long to arrive. What could happen in the game? What do you think your computer does to fix it?*
  - Allow students to guess, then tell them they will discover the answer in the next simulation.

- Choose six new student volunteers and have them take their places. Say: *Sometimes, a packet gets stuck and needs to be sent again. Let's try this challenge.*
  - Instruct one of the router students to hold on to their piece of paper and not give it to the receiver. When the receiver gets the other three pieces of paper and assembles them, emphasize that some of the information is missing.

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- Say: *Remember the question I asked about what could happen in a game if one of the data packets gets stuck or takes too long to arrive? If that happens, the game might freeze, glitch, or lag. You might see players stop moving, or the screen could take a long time to load. Your computer notices that a packet is missing, so it asks for it again. When the missing packet finally arrives, the game fixes itself and catches up.*
  - Have the receiver student politely ask the sender to resend the packet, then have the router student, who kept their piece of paper, deliver it to the receiver, who will then complete the picture assembly.
  - Students can return to their seats.

- Clearly state the key learning point: *Computers send messages in packets. These packets travel different paths and sometimes arrive out of order, but the computer knows how to fix them.* (Consider writing this on the whiteboard.)

- **REVIEW (5 min.):** Have students answer the review questions on the "What I Learned" worksheet page.
  - The instructor may choose to print the Internet's Puzzle Pieces Diagram and have struggling students color it instead of answering the questions on Blueprint.

- **JOURNAL WRITING (10 min.):** In our game, when a packet was slow or missing, the whole message couldn't be put together right away. Think about when everybody has to work together as a team to do something at school, like line up for lunch. What happens if one person takes too long to do their part?
  - Remember: Being responsible helps things run smoothly, whether it's on the internet or in real life!

DIFFERENTIATION

- **For struggling learners**: Instead of drawing and cutting out their own picture, give students premade packet pieces to assemble.
- **Visual Cues**: Use the "Internet's Puzzle Pieces Diagram" to show how packets travel and reassemble.
- **Hands-On Alternative**: Use building blocks (like LEGO) to represent packets instead of paper.

LESSON EXTENSION

- **Art Connection**: Students draw a comic strip showing how information is broken into packets, sent, and reassembled.
- **Real-World Connection**: Ask students to research and discuss why lag happens in video games and how internet speed affects streaming and online gaming.
- **At-Home Activity**: Tell students they can take their paper packets home to show their parents/guardians how internet data transmission works.

What I Learned

You learned a lot today. Let's see what you remember.

Fill in the bubble next to the correct answer.

1. What happens to information before it is sent over the internet?
   - ○ It disappears
   - ○ It stays whole
   - ○ It is broken into smaller packets

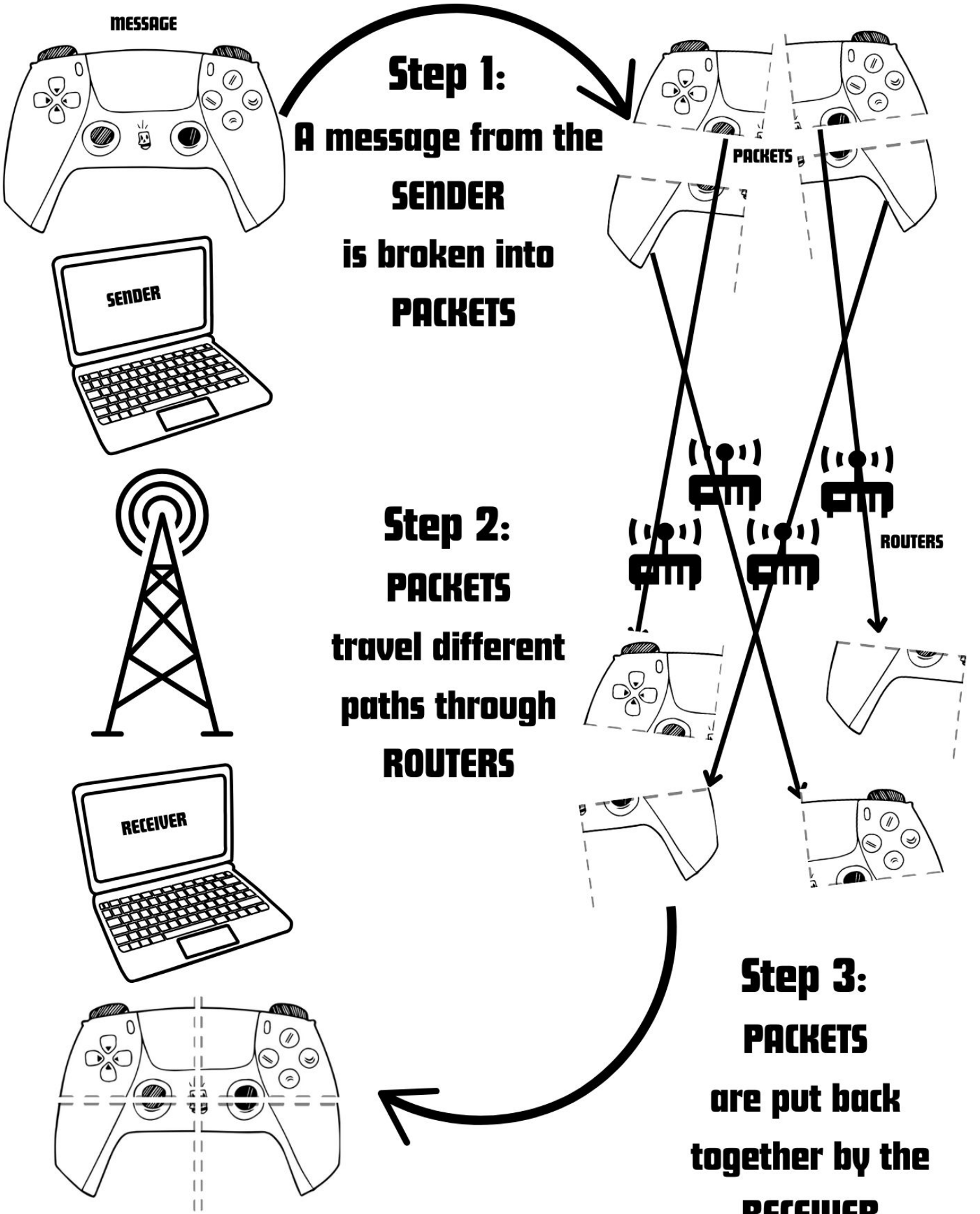
2. What do computers do if packets arrive out of order?
   - ○ Reassemble them (put them back) in the correct order
   - ○ Delete them
   - ○ Send them back

3. Put these steps in order by writing a 1 next to the first step, 2 next to the second step, and 3 next to the third step:

   _____ Packets are put back together by the receiver

   _____ A message is broken into packets

   _____ Packets travel different paths


MESSAGE
Step 1:
A message from the SENDER is broken into PACKETS
PACKETS
SENDER
ROUTERS
Step 2:
PACKETS travel different paths through ROUTERS
RECEIVER
Step 3:
PACKETS are put back together by the RECEIVER

Career Lesson: Comparing Tech Careers

STANDARDS ADDRESSED

- **1B-DA-06**
- **1B-DA-07**
- **ISTE 1.3.c**
- **ISTE 1.3.d**
- **ISTE 1.5.b**
- **ISTE 1.6.c**
- **CASEL 1**
- **CASEL 5**

MATERIALS NEEDED

- **Document:** Careers in Computer Science
- **Google Sheet Template:** Compare Careers
- **Worksheet:** What I Learned

DIFFERENTIATION MATERIALS:

- **PDF:** Compare Careers

MENTAL HEALTH MOMENTS

- ✓ **Positive Emotion**
- ❑ **Engagement**
- ❑ **Relationships**
- ✓ **Meaning**
- ✓ **Accomplishment**

Lesson Overview

Students explore different careers in computer science, analyze key factors that influence career choices, and practice organizing information using a spreadsheet template. Through interactive discussions, movement-based engagement, and guided data collection, students will compare three careers of interest and reflect on which career might be the best fit for them. By the end of the lesson, students will understand how comparing data in table form helps them make informed decisions and recognize the important factors to consider when choosing a career.

DIRECTIONS:

- **ENGAGE (5 min.):** Ask: *What sounds like the most fun to you? Making video games, fixing computers, designing cool art, or solving big problems?*
  - Assign each option to a corner of the room and have students move to the option they like best.

- Say: *Different people like different things, and that's okay. The good news? There are lots of cool jobs in technology and gaming. Have you ever thought about what you want to be when you grow up? It might seem far away, but the choices you make now—like what skills you practice and what subjects you enjoy—can help you find a job that makes you happy in the future.*
  - *Choosing a career is about more than just picking something that sounds cool. It's important to think about different things, like:*
    - *Do you enjoy the work? You'll spend a lot of time doing your job, so you want it to be something you like.*
    - *What skills are needed? Some jobs require coding, math, creativity, or teamwork—what do you enjoy doing?*
    - *How much school or training is needed? Some jobs need a little training, and others need a lot of college.*
    - *How much does it pay? Different jobs pay different amounts, and that can be an important part of your decision.*
    - *What is fun or challenging about it? Every job has parts that are exciting and parts that can be tough.*

- Say: *Today, we are exploring different careers and organizing our ideas in a chart. Looking at information side by side helps us compare jobs, so we can start thinking about which career might be the best fit for each of us!*

Continued on next page

Continued

- **EXPLORE AND APPLY (20 min.):** Direct students to look at the Careers in Computer Science document, which is provided in this book at the end of this lesson. Project the document as well and briefly summarize each of the six careers that are listed by reading the title of the career and "What they do."

- After each career, ask students to stand if they think they like the career, squat down if they don't like the career, or sit in their chair if they don't know. (You may need to re-emphasize that different people like different things, so not all students will like all of the career options.)

- Say: *Now that we've learned about different careers in computer science, it's time for you to explore and compare them. You will choose three careers that sound the most interesting to you. For each career, you will collect and record some information.*

- Walk students through opening the Compare Careers Google Sheet Template. Demonstrate on your computer screen once, then demonstrate a second time as students follow along:
  - *Click on the Compare Careers link to open the Compare Careers Google Sheet Template.* (Share this link with students using whatever method works best for you.)
  - *Click the "Make a Copy" button. The template opens up.*
  - *Pick three careers that you like the most.*
  - *Fill in the information about each career: Keep all of the information for each career in the same row.*

- Demonstrate filling out one of the rows by choosing a career from the list and entering the information as students watch.

- Students will now work individually to choose three of the careers that they are most interested in and record data into the Compare Careers Google Sheet Template
  - **Note:** Allowing students to type into a premade Google Sheet template gives them additional practice with important computer science skills. However the form is also provided as a hard copy at the end of this lesson.

- **ANALYZE (10 min.):** Have students look at their table and ask the following questions:
  - *Which career on your table pays the most money? Click and drag one of the stars from the bottom into the box that shows the most money.*
  - *Which career on your table needs the most school? Click and drag another star from the bottom into the box that shows the most school.*
  - *Which career do you think would be the most fun? Click and drag the last star from the bottom into the box that has the name of that career.*
  - *Tell a partner which career you think is the best choice for you and why.*

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MENTAL HEALTH MOMENT DAY 1

This lesson helps students develop self-awareness as they reflect on their interests, strengths, and values when exploring careers. It also fosters responsible decision-making as students compare options and analyze key factors like education, salary, and job responsibilities. By emphasizing that different people enjoy different careers, the lesson promotes confidence, a growth mindset, and reduces anxiety about the future. Encouraging students to explore opportunities helps them understand that their interests and efforts today can shape their future success.

Continued

- Have students answer the review questions on the "What I Learned" worksheet.

- **JOURNAL WRITING (5 min.):** What do you think is the most important thing about a career?
  - How much money it pays?
  - How much school you need?
  - How much you will like doing it?
  - Choose one. Why do you think that one is most important?

DIFFERENTIATION

- **For Students Who Need More Support: Guided Career Selection** – Instead of choosing three careers on their own, some students might benefit from choosing from a teacher-provided selection based on their interests.
- **Pre-filled Google Sheet Option** – Provide a version of the Compare Careers Google Sheet with some information already entered to scaffold the activity for students who struggle with data entry or reading comprehension.
- **Small Group Work** – Pair students or use teacher-led small groups for extra guidance in filling out their tables.

LESSON EXTENSION

- **For Advanced Learners:** Analyze a Fourth Career – Encourage early finishers to compare four careers instead of three and find patterns.
- **Career Day Show & Tell:** Have students draw, present, or act out what a day in their favorite career might look like. Allow students to create a mini poster or digital slideshow about their top career choice.

What I Learned

You learned a lot today. Let's see what you remember.

Fill in the bubble next to the correct answer.

1. Putting information in a table helps us see differences between careers more easily.
   - ○ True
   - ○ False

2. Writing down career details in a table can make it easier to choose the best one for you.
   - ○ True
   - ○ False

3. Here are things you might think about when choosing a career. Draw a star next to the things that are important. Draw an X next to the things that are not important.

   _____ How much money it pays

   _____ The name of the job

   _____ If you like doing the job

   _____ If your friend likes the job too

   _____ How much school you need

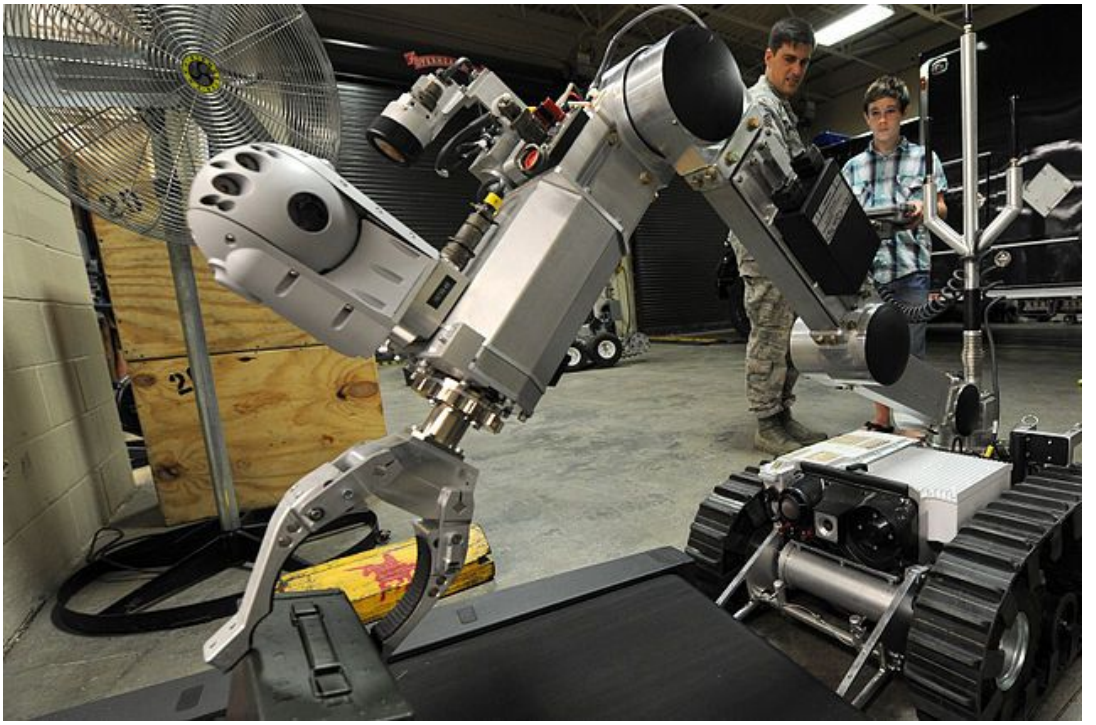
Video Game Designer

📌	**What they do**	Design video games, create characters, and build fun game levels.
🔧	**Skills they need**	Creativity, coding, storytelling
💰	**How much money they make**	$75,000 per year
🎓	**How much school they need**	4 years of college
🎉	**Fun parts**	Making fun games for people to play!
⚠️	**Hard parts**	It takes a long time to make a game.

Computer Programmer

📌	**What they do**	Write code that tells computers what to do.
🔧	**Skills they need**	Problem-solving, math, coding
💰	**How much money they make**	$80,000 per year
🎓	**How much school they need**	2-4 years of college
🎉	**Fun parts**	Creating cool apps and websites!
⚠️	**Hard parts**	Fixing bugs (mistakes in code) can be tricky.

Robotics Engineer



📌	**What they do**	Build and program robots to do different tasks.
🔧	**Skills they need**	Engineering, coding, creativity
💰	**How much money they make**	$90,000 per year
🎓	**How much school they need**	4+ years of college
🎉	**Fun parts**	Making robots move and do cool things!
⚠️	**Hard parts**	Robots can be hard to build and fix.

Cybersecurity Expert

📌	**What they do**	Protect computers from hackers and viruses.
🔧	**Skills they need**	Problem-solving, attention to detail, coding
💰	**How much money they make**	$100,000 per year
🎓	**How much school they need**	4 years of college
🎉	**Fun parts**	Stopping hackers like a digital detective!
⚠️	**Hard parts**	Keeping up with new threats all the time.

AI (Artificial Intelligence) Engineer

📌	**What they do**	Teach computers to think and learn like humans.
🔧	**Skills they need**	Math, coding, problem-solving
💰	**How much money they make**	$120,000 per year
🎓	**How much school they need**	4+ years of college
🎉	**Fun parts**	Creating smart robots and talking assistants!
⚠️	**Hard parts**	AI is complex and requires lots of math.

IT Support Specialist

📌	**What they do**	Help fix computers and keep them running smoothly.
🔧	**Skills they need**	Problem-solving, patience, tech knowledge
💰	**How much money they make**	$55,000 per year
🎓	**How much school they need**	Some college or training
🎉	**Fun parts**	Helping people fix computer problems!
⚠️	**Hard parts**	Can be frustrating when things don't work.

Worksheet: Compare Careers

Name of the Career Type the names of your 3 favorite careers in each of the boxes below (click in the box and start typing)	**How much school they need** Type how much school each career needs in the box next to the name of the career.	**How much money they make** Type how much money each career makes in these boxes.

Smart Computers, Smart Choices!

Lesson Overview

Students explore how computers make decisions without direct human input by following If-Then rules based on data and settings. Through interactive activities, students will classify decisions made by computers vs. humans, analyze how hardware and software work together, and apply If-Then logic to both programming and emotional regulation. By the end of the lesson, students will understand that computers do not think but instead follow structured rules, and they will reflect on how similar If-Then decision-making can help in real-life situations, including emotional responses.

STANDARDS ADDRESSED

- **C1B-CS-02**
- **1B-AP-10**
- **1B-IC-18**
- **ISTE 1.1.d**
- **ISTE 1.5.a**
- **ISTE 1.5.c**
- **ISTE 1.5.d**
- **CASEL 2**
- **CASEL 5**

MATERIALS NEEDED

- **Video:** Conditional Statement | Da Vinci Innovation Labs (S1E8) | FULL EPISODE | Da Vinci
- **Document:** How Computers Make Decisions: Key Words Table
- **Worksheet:** What I Learned

DIFFERENTIATION MATERIALS

- **Document:** How Computers Make Decisions: Key Words Table (Spanish translation)

MENTAL HEALTH MOMENTS

- ✓ **Positive Emotion**
- ❑ **Engagement**
- ❑ **Relationships**
- ❑ **Meaning**
- ❑ **Accomplishment**

DIRECTIONS:

- **ENGAGE (10 min.):** Ask: *Do you think computers can think and make choices by themselves?*

- After students respond, say: *Interesting! Some of you think computers make decisions all on their own, and some think people have to tell them what to do all the time. Today, we're going to explore how computers make decisions without needing a person to press a button each time.*

- Explain: *Computers don't have brains like we do. They can't think or make choices on their own. But they can follow instructions—kind of like a recipe or a set of rules! Computers use two key tools to make decisions without asking a person every time:*
  - *Data – This is information the computer collects, like a robot vacuum sensing dirt or a traffic light knowing when cars are waiting.*
  - *Settings – This is a program that tells the computer what to do with the data. For example, 'IF there is dirt → THEN start cleaning!' or 'IF a car is waiting → THEN turn the light green!'"*
    - Write "Data = Information," and "Settings = Rules" on the whiteboard.

- Say: *So, computers don't 'think,' but they follow programs that tell them what to do based on the information they get. That's how they make decisions!*

- Show students the video Conditional Statement | Da Vinci Innovation Labs (S1E8) | FULL EPISODE | Da Vinci from the beginning to 1:30 minutes.

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Continued

- **EXPLORE (10 min.):** Say: *Let's play a fun game! You're going to see different kinds of decisions. If you think a computer can make that kind of decision, walk to one side of the room. If you think a human has to make that kind of decision, walk to the other side of the room.*
  - Indicate which side of the room represents computers and which side represents humans. Then, play the game by giving the examples below. After each example, briefly explain if it is a human or computer decision:
    - *Make a stoplight turn green* (Computer decision - sensors detect if there are cars, then the computer changes the light)
    - *What to eat for lunch* (Human decision - this is based on what you like, you have to choose yourself)
    - *Start an alarm in the morning* (Computer - the clock can switch an alarm on when it detects a specific time)
    - *What to wear to school* (Human - this is personal choice)
    - *Turn on a light when it gets dark* (Computer - a sensor can see when it gets dark, and then switches on a light.)
    - *Who to play with at recess* (Human - computers can't make friendships)

- **CONNECT (5 min.):** Say: *Now, let's talk about one of my favorite robots—Ramona the Robot Vacuum! Ramona helps clean floors. But Ramona doesn't think like a person. Instead, Ramona has two things inside:*
  - ***Hardware**: These are the robot's sensors—they help it 'see' dirt, walls, and furniture.*
  - ***Software**: This is the program that gives instructions to the robot about what to do.*
    - Write "Hardware = collects data" and "Software = decides what to do" on the whiteboard.

- Project or write "Ramona's Rules" on the whiteboard. Then, go over each of Ramona's Rules with students:

Ramona's Rules	
Data (Information)	**Settings (Rules)**
● IF the sensor finds dirt →	● THEN start cleaning.
● IF the battery is low →	● THEN go to the charging station.
● IF an obstacle is ahead →	● THEN turn around.

MENTAL HEALTH MOMENT

This lesson connects to mental health by helping students understand how structured decision-making can support their emotional well-being. Just as computers follow If-Then instructions to make choices, people can use similar strategies to manage their emotions and interactions. By practicing If-Then statements for feelings, students learn self-regulation skills, helping them recognize emotions and respond in a positive way.

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- Ask: *Does Ramona 'think' about what to do, or does it follow these rules?* (Students answer: 'It follows rules.')

- Say: *Exactly! Computers don't think, they collect data and information using hardware; then, they make decisions by following settings and instructions from software.*

- Say: *Lots of technology works like Ramona. Smart homes adjust temperature and lights by themselves. Self-driving cars can stop at red lights without a person. Video game characters react to what players do automatically. How do these technologies change the way people live?*

- **APPLY (5 min.):** Say: *Now, we're going to be computers. I'll give you a rule, and you'll follow it just like a computer does.*
  - Project or display the following game rules:

If-Then Game	
Data (Information)	**Settings (Rules)**
● IF your instructor touches their nose →	● THEN jump once
● IF your instructor claps their hands →	● THEN spin around
● IF your instructor says "Robot" →	● THEN pretend to vacuum

- Perform each of the "data" actions in a random order and have students respond by performing the correct "setting" action. Repeat the list as many times as is appropriate for your classroom.

- **REVIEW (5 min.):** Say: *Let's think about everything we learned today. Can you name one way computers help us by making decisions on their own?*
  - Students share answers, such as: "Traffic lights," "Smart lights," "Video game characters move by themselves."

- Continue: *Yes! Technology helps make life easier by following programs and rules. But remember—computers don't actually 'think' like we do. They use hardware to collect data; then, they use software to follow settings and decide what to do.*

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Continued

- Have students access the “How Computers Make Decisions” document, which provides a table that relates the key terms from this lesson (Data, Settings, Software, Hardware, If-Then).

- Using the “How Computers Make Decisions” document, students should answer the review questions on the “What I Learned” worksheet.

- **JOURNAL WRITING (10 min.):** “If-Then” instructions can help us every day when we feel big emotions. Here are some "If" statements. Finish the sentence with your own idea of what you can do:

Data (Information)	Settings (Rules)
IF I feel angry →	● THEN I can_____
IF my friend looks sad →	● THEN I can_____
IF I feel sad →	● THEN I can_____

DIFFERENTIATION

- **For Students who Struggle Socially:** Reinforce listening, turn-taking, and following instructions during the movement activity. Praise effort and participation.
- **For Visual Learners or English Language Learners:** Allow students to draw a picture of a computer making a decision rather than answering the review questions.
- **For Struggling Learners:** Print out the How Computers Make Decisions: Key Words Table for them to look at during the lesson.
- **For English Language Learners:** Print and provide students with a translated version of the How Computers Make Decisions: Key Words Table. A Spanish version is included in this book at the end of this lesson.

LESSON EXTENSION

- Students can go on a “Tech Detective” mission at home by finding technology that makes decisions by itself.
- Students can form small groups and create their own If-Then game. Students take turns inventing a rule (IF I stomp my foot, THEN everyone claps twice).

What I Learned

You learned a lot today. Let's see what you remember.

Fill in the bubble next to the correct answer.

1. Computers always need humans to tell them exactly what to do at every moment.
   - ○ True
   - ○ False

2. How does Ramona the Robot Vacuum know when to clean up dirt?
   - ○ It guesses
   - ○ It uses information (data) and rules (settings)
   - ○ It asks a person

3. Many computers make our lives easier. Look at the computers below and draw lines to match them with what they do.

● Smart air conditioner	● Opens when a person walks close to them
● Automatic door	● Cleans when it senses dirt
● Robot vacuum	● Turns on when the room is too hot

How Computers Make Decisions: Key Words

Word	What it Means	How It Helps Computers Make Decisions
Data 📊	Information a computer collects (like sensors detecting dirt or a clock keeping time).	Data helps computers **know what is happening** around them.
Settings ⚙️	Rules that tell a computer what to do.	Settings help computers **decide what action to take** based on data.
Software 🖥️	The programs and instructions that tell a computer what to do.	Software gives computers **step-by-step rules** for making decisions.
Hardware 🛠️	The parts of a computer (like sensors, buttons, or screens).	Hardware **collects data** and does the actions the software decides.
IF ❓	Something that happens first.	Tells the computer **when to start** an action (Example: "IF the room is dark…").
THEN ✅	What happens next if the "IF" condition is true.	Tells the computer **what to do next** (Example: "…THEN turn on the light!").

Cómo Toman Decisiones las Computadoras: Palabras Clave

Término	Qué Significa	Cómo Ayuda a las Computadoras a Tomar Decisiones
Datos 📊	Información que una computadora recoge (como sensores detectando suciedad o un reloj midiendo el tiempo).	Los datos ayudan a las computadoras a saber qué está pasando a su alrededor.
Configuraciones ⚙️	Reglas que le dicen a una computadora qué hacer.	Las configuraciones ayudan a las computadoras a decidir qué acción tomar según los datos.
Software 🖥️	Los programas e instrucciones que le dicen a una computadora qué hacer.	El software da a las computadoras reglas paso a paso para tomar decisiones.
Hardware 🛠️	Las partes físicas de una computadora (como sensores, botones o pantallas).	El hardware recoge datos y realiza las acciones que el software decide.
SI (IF) ❓	Algo que sucede primero.	Le dice a la computadora cuándo comenzar una acción (Ejemplo: "SI la habitación está oscura…").
ENTONCES (THEN) ✅	Lo que sucede después si la condición "SI" es verdadera.	Le dice a la computadora qué hacer a continuación (Ejemplo: "…ENTONCES enciende la luz!").