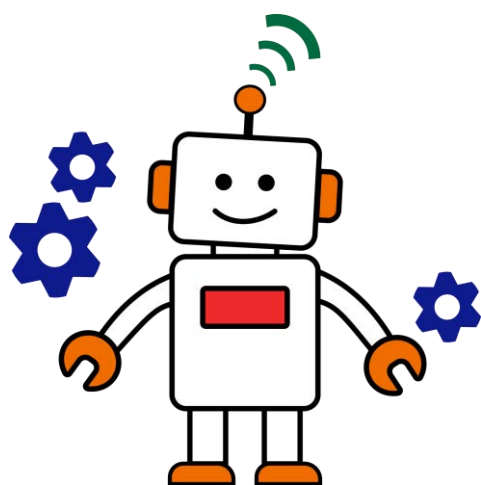


TECHNOHelper Bots AI

Teacher Guide

Lessons for Primary Students | Grades 1-3



AI Technology Course

Invent Helper Bots powered
by artificial intelligence.

In TECHNOHelper Bots AI, students step into the exciting world of Artificial Intelligence as Robot Designers. Over six hands-on sessions, students explore the importance of Helper Bots. They learn how bots work using inputs and outputs, build patterns and sort rules, train a machine learning model, map decision trees, and code interactive choice stories in Scratch. They test and improve their models through the iteration cycle. The course culminates in the Helper Bot Expo, where students present their completed Helper Bots and celebrate becoming Robot Designers.

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Acknowledgment of AI Assisted Image Generation

Certain visual materials in this publication were created with the assistance of AI image generation software such as ChatGPT. Human authors directed the prompts, selected outputs, and performed any necessary editing and curation.

From the Publisher

TechnoKids Inc. develops and publishes computer curriculum that provides a course-based approach to learning. Students integrate the use of Information and Communication Technology (ICT) to complete innovative theme-related activities.

Courses are thoroughly evaluated and tested by certified teachers to ensure they teach leading-edge ICT skills and are developmentally appropriate for students. Each course comes complete with teacher resource materials, such as handouts, activity sheets, evaluation forms, parent letters, extension activities, and certificates.

TechnoKids Inc. courses enable teachers to help students become powerful technology users while developing the problem-solving skills, self-confidence, and positive attitudes that will make them the social and business leaders of tomorrow.

*Our mission is to combine education and technology
to provide children with the core computing skills
that will best prepare them for the future.*

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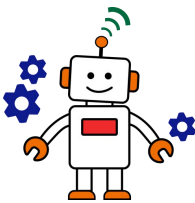
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Introduction

This section provides valuable information about teaching TechnoHelper Bots AI. It includes a description of the Teacher Guide, as well as an overview of the course. In addition, there are ideas for implementation and technology integration.

For additional guidance, open the course in TechnoHub and select Get Started to access preparatory steps, resource list, and scheduling timetable.

How to Use this Guide

TechnoHelper Bots AI Overview

Implementation and Technology Integration Ideas

How to Use This Guide

This Teacher Guide contains the following three sections:

Getting Started: This section contains a course description, as well as ideas for implementation.

Course Instructions: The course is comprised of six sessions, each focused on a problem-solving task that aligns with the course theme. Each session includes assignments that break down the task into manageable steps.

The components of each session are as follows:

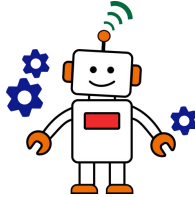
- Overview – an explanation of the session's activities and their purpose.
- Materials – a list of handouts, sample files, and teacher resource materials needed to teach the session.
- Teaching Strategies – instructional methods recommended for teaching the activities.
- Lesson Plan – a detailed list of each step in the session.
- Learning Objectives – a summary of the content knowledge and technical skills taught throughout the session.
- Assignments – a session consists of assignments completed by students. Actions to be performed on the computer by the student are indicated with a triangle (▷). Background information is indicated with a dash (-).
- Review – a session review contains matching or multiple-choice questions intended to review technical knowledge. (answers included).
- Skill Review – an additional theme-based assignment intended to practice presentation skills (includes completed sample).
- Extension Activity – an additional activity that relates to the skills presented in the session.

Appendices: This section contains additional information or materials.

- Assessment Tools
- Glossary
- Contact Information

TechnoHelper Bots AI Overview

In TechnoHelper Bots AI, students step into the exciting world of Artificial Intelligence as Robot Designers. Over six hands-on sessions, students explore the importance of Helper Bots. They learn how bots work using inputs and outputs, build patterns and sort rules, train a machine learning model, map decision trees, and code interactive choice stories in Scratch. They test and improve their models through the iteration cycle. The course culminates in the Helper Bot Expo, where students present their completed Helper Bots and celebrate becoming Robot Designers.



Students complete the following tasks:

- In session 1, students become Robot Designers. They meet Helper Bots and discover how these smart digital assistants can make everyday life easier. Students explore how Helper Bots use data by taking in information called input and creating a result called output. Next, students play an interactive online AI game where they draw different objects and watch as AI tries to guess their sketches. Their drawings become the input, while the AI's guesses are the output. To consolidate their learning, students use their creativity and new knowledge to design their very own Helper Bot.
- In session 2, students discover how computers use patterns to help make decisions. They begin by exploring shape patterns and learning how to spot and describe the rules behind them. Next, students become designers as they build their own patterns by creating a friendship bracelet. To finish, students use a hands-on sorting template to group shapes into categories, strengthening their pattern recognition skills and figuring out the sorting rule for each set. This session provides a strong foundation for the next session, where students will train a Helper Bot to classify objects using a real AI system.
- In session 3, students train a 'Clean Up' Helper Bot that is having trouble sorting school supplies and keeps mixing everything up. To begin, students classify different tools and reflect on the rules they used to group each item correctly. Next, they step into the role of AI developers and train a real machine learning model. Using Teachable Machine, they add images to help the bot learn how to identify objects. The newly trained Helper Bot will be ready to keep the classroom clean.

- In session 4, students consider the importance of fairness and why it matters when designing Helper Bots. To understand this issue, students analyze different fairness scenarios and discuss potential outcomes. They then demonstrate their learning by using Scratch to code a Helper Bot Promise.
- In session 5, students create a Helper Bot in Scratch that can transport users to amazing destinations! Users choose where they want to go, and the Helper Bot magically switches the scene to that location. To get ready, students explore decision trees and discover how asking yes and no questions can help guide choices, just like real computers and AI systems do. They then investigate a sample Scratch project to see how the code works behind the scenes. Finally, students become creators as they plan, design, and code their very own Helper Bot experience.
- In session 6, students attend a Helper Bot Expo where they showcase their amazing robot creations. Expo visitors can test the Robot Designers' Helper Bots, explore their features, and leave comments. After the celebration, students can reflect on their learning journey and share what they discovered while designing, coding, and improving their robots.

Implementation and Technology Integration Ideas

In TechnoHelper Bots AI, students become AI Robot Designers. They create Helper Bots to gain an understanding of how devices powered by artificial intelligence can improve lives. This course blends computational thinking, AI concepts, and coding.

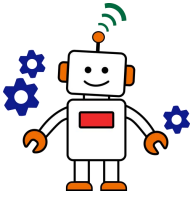
Ideas for Implementation

- **STEM or Computer Science Class:** TechnoHelper Bots AI includes 22 engaging assignments organized into six Sessions. Designed as an introduction to artificial intelligence, each Session explores an exciting AI concept such as AI in everyday life, patterns and sorting rules, training data, or ethics. Activities gradually increase in complexity, helping students build confidence and develop a strong foundation for future learning.
- **Coding Lessons for Beginners:** TechnoHelper Bots AI features two beginner friendly Scratch coding Sessions (Sessions 4 and 5). Students start with a simple coding activity before advancing to a more challenging project where they create a decision tree and transform their plan into working code. These activities make coding approachable, creative, and fun for young learners.
- **AI Unit for Advanced Beginners:** TechnoHelper Bots AI also provides enrichment opportunities for students with prior experience. Every Session includes an extension activity designed to deepen understanding, reinforce AI concepts, or introduce a new challenge. Topics include sequencing, AI recommendation systems, and machine learning, all presented in ways that connect with students' everyday lives and experiences.
- **Workshop Series:** TechnoHelper Bots AI can easily be adapted for after school programs, camps, or community workshops. Educators can select assignments that fit the number of classes offered while considering the age range, interests, and abilities of participants. This flexibility makes it easy to create a fun and meaningful AI learning experience for any group.

Technology Integration Suggestions

The TechnoHelper Bots AI course is primarily a STEM program that introduces students to exciting artificial intelligence concepts. While the focus is AI education, the activities also connect naturally to science, computer science, mathematics, and social studies curriculum expectations.

- **Artificial Intelligence Unit and Science:** TechnoHelper Bots AI provides an engaging introduction to artificial intelligence. Students explore foundational AI concepts including ethical awareness, real world AI applications, and AI driven project design. If your focus is AI literacy and understanding how technology impacts society, teach Session 1 to explore how AI affects everyday life, Session 2 to investigate classification and decision making, and Session 4 to develop awareness of fairness and ethics in AI systems.
- **Computer Science Class:** TechnoHelper Bots AI can be integrated into a coding or computer science unit. Sessions 4 to 6 use Scratch programming to help students apply coding skills through fun, hands-on projects. Students learn important computational thinking skills including sequencing instructions, making choices based on conditions, breaking problems into manageable steps, and testing and improving their solutions.
- **Mathematics:** TechnoHelper Bots AI supports mathematical thinking by helping students develop problem solving and early algebraic reasoning skills. In Session 2, students recognize patterns, identify rules, predict outcomes, and represent patterns in different ways. In Session 3, students build on this understanding through computational thinking activities where they identify rules, make predictions, and train a bot using sorting and classification concepts.
- **Social Studies:** TechnoHelper Bots AI also supports conversations about fairness, inclusion, empathy, and kindness in technology. Students learn that AI powered bots should treat all users fairly and respectfully. While these ideas are woven throughout the course, Session 4 places a special emphasis on ethical awareness and responsible AI design.



Session 1 Meet the Helper Bots

In this session, students become Robot Designers. They meet Helper Bots and discover how these smart digital assistants can make everyday life easier. Students explore how Helper Bots use data by taking in information called input and creating a result called output. Next, students play an interactive online AI game where they draw different objects and watch as AI tries to guess their sketches. Their drawings become the input, while the AI's guesses are the output. To consolidate their learning, students use their creativity and new knowledge to design their very own Helper Bot.

Assignment 1 What is a Helper Bot?

Assignment 2 How Do Helper Bots Work?

Assignment 3 Play Quick, Draw!

Assignment 4 Design a Helper Bot

Session 1 Review: Input and Output

Session 1 Skill Review: Plan a School Helper Bot

Session 1 Extension Activity: Put the Events in Order

Session 1 Getting Started

Overview

In this session, students become Robot Designers. They meet Helper Bots and discover how these smart digital assistants can make everyday life easier. Students explore how Helper Bots use data by taking in information called input and creating a result called output. Next, students play an interactive online AI game where they draw different objects and watch as AI tries to guess their sketches. Their drawings become the input, while the AI's guesses are the output. To consolidate their learning, students use their creativity and new knowledge to design their very own Helper Bot.

Materials

- Quick, Draw! <https://quickdraw.withgoogle.com>
- If drawing the Helper Bot on paper:
 - Session 1 A4 handout
 - Paper, crayons, markers
- If using digital paint tools use a program such as *Paint* or *Google Drawings*
- Session 1 Review: Input and Output (optional)
- Session 1 Skill Review: Plan a School Helper Bot (optional)
- Session 1 Extension Activity: Put the Events in Order (optional)

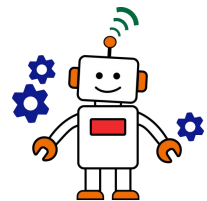
Teacher Preparation

(Refer to the Preparing to Teach section of this course for instructions)

- Determine a location for students to save their work during this course.
- Select if your students will create a Helper Bot using digital tools or paper and crayons.

Teaching Strategy

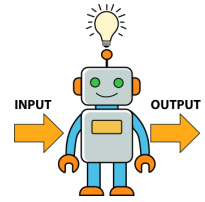
In this **course**, students are introduced to Artificial Intelligence with a focus on how computers can learn and make simple decisions. Explain the TechnoHelper Bots AI course scenario:



Explore the exciting world of artificial intelligence! In TechnoHelper Bots AI, you become a Robot Designer. Through fun, hands-on activities, you will discover how Helper Bots use inputs and outputs, play AI drawing games, create patterns and sorting rules, and train a real machine learning model to recognize objects. You will also learn about fairness in technology, build interactive Helper Bots in Scratch, and use decision trees to help computers make choices. Along the way, you will test, improve, and redesign your projects just like real AI developers. The course ends with a fun Helper Bot Expo where you showcase your robot creations and celebrate becoming a Robot Designer!

In this **session**, students learn about Helper Bots while exploring the role of input and output. Explain session scenario:

In this session, you become a Robot Designer. You will meet Helper Bots and discover how these smart digital helpers can improve your daily life. You will learn how Helper Bots use information called input to create an answer called output. Next, you will play a fun online AI game where you draw pictures and watch the AI try to guess your sketches. Your drawing is the input, and the AI's guess is the output. Then, you will use your creativity and new learning to design your very own Helper Bot.



Assignment 1 What is a Helper Bot?

 **Time:** 10 minutes

In this assignment, explore how Helper Bots make everyday life easier. To start, students identify real-world helpers, describe how they support others, and consider what makes someone a good helper. Next, they use a checklist to identify Helper Bots they use. This activity can be completed independently or as part of a class discussion.

Before you begin, introduce the following term:

- *Helper Bot*: computer program that helps people to do a task

Assignment 2 How Do Helper Bots Work?

 **Time:** 10 minutes

In this assignment, students learn how Helper Bots use input and output to complete tasks. They explore examples, such as asking a computer to read a story aloud or selecting a show to watch.

Introduce the following terminology:

- *data*: information such as words, pictures, or sounds
- *input*: data that is goes into a computer
- *output*: an action that a computer does after following steps

Assignment 3 Play Quick, Draw!

 **Time:** 25 minutes  **Tools:** Quick, Draw! <https://quickdraw.withgoogle.com>

In this assignment, students play a drawing game to explore how the amount of input a bot receives can improve its output. Afterwards, they reflect on the experience. Prior to students working independently, you may wish to model the use of Quick, Draw! If you do not have enough devices, place students in small groups and have them take turns.

EXTENSION: To reinforce the idea that AI learns from large amounts of data, after students complete six sketches, they can open a link to view drawings created by other players. By exploring these collections, students can notice how AI learns from many examples.

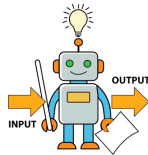
Assignment 4 Design a Helper Bot

Time: 45 minutes **Tools:** Paint program or paper, markers, and crayons

In this assignment, students design a Helper Bot that improves the lives of children. Before beginning the lesson, brainstorm a list of problems a bot could help. To save time, consider having students describe their Helper Bot orally instead of writing their responses. If your students have limited experience with digital paint tools, use paper and crayons to draw the bot.

Introduce the following terminology:

- *user*: someone who uses a computer
- *flowchart*: a diagram with arrows that shows the order of steps.



Session 1 Skill Review: Plan a School Helper Bot

To extend students' understanding of how AI powered devices can support users, have them design a Helper Bot for their school. Encourage students to consider how the bot would assist others and emphasize the importance of fairness in its design.

Lesson Plan

Assignment 1 What is a Helper Bot?

- How do people help you?
- How do you help people?
- Select qualities that make a good helper.
- Identify Helper Bots used in daily life.

Assignment 2 How Do Helper Bots Work?

- What is input and output?
- Identify inputs and outputs for common Helper Bots.

Assignment 3 Play Quick, Draw!

- Play a drawing game.
- Answer questions about the drawing game to reflect on input and output.

Assignment 4 Design a Helper Bot

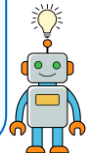
- Plan the design of a Helper Bot using questions as prompts.
- Draw a Helper Bot, labelling the input and output.
- Complete a flowchart to identify the input and output for a Helper Bot.

Learning Objectives

- describe how Helper Bots assist people in everyday life by solving problems
- identify the inputs and outputs of a Helper Bot to understand how bots receive information and produce responses
- analyze a drawing game to recognize how providing more input can improve a bot's output
- design a Helper Bot that improves the lives of children and label the input and output
- explain how a Helper Bot treats all users fairly
- sequence events to create a clear written description of a daily process or activity (optional)

Session 1 Extension Activity: Put the Events in Order

Extend learning by having students organize actions in a logical order, just like a real Helper Bot. Write the sequence for events, such as the end-of-day school routine.



Assignment 1 What is a Helper Bot?

In this project, you are going to learn about Helper Bots. These are computer programs that help people do tasks.



How Do People Help You?

Some people have jobs that help others. For example, your teacher helps you learn.

1. Match the job to how the person helps.



dentist



heal a cut



nurse



find a book



librarian



clean teeth

How Do You Help People?

You help people too! You may hold the door for someone or share food with a friend.

2. How do you help others?

What Makes a Good Helper?






Not everyone or everything is helpful. Some actions do not help.

3. Check the things that make a good helper.
 - listen to a person when they ask for help**
 - use kind words**
 - give a wrong answer to some people
 - try their best to help everyone**
 - rush people

How Do Helper Bots Help People?

Machines called **Helper Bots** are computer programs that help people do tasks.

4. Which of these Helper Bots have you used before?

✓	Helper Bot	What It Does
<input type="checkbox"/>	 Smart Speaker	Listen to your voice and answers questions
<input type="checkbox"/>	 Spell Checker	Find spelling mistakes and fix them.
<input type="checkbox"/>	 Screen Reader	Read words on a screen to you.
<input type="checkbox"/>	 Photo Sorter	Tag or sort photos to make them easy to find.
<input type="checkbox"/>	 Like System	Pick a book, song, or show you might like.

5. Pick one of the Helper Bots. How does it make your life better?

Assignment 2 How Do Helper Bots Work?

In this assignment, you are going to learn how Helper Bots use input and output.

Input and Output

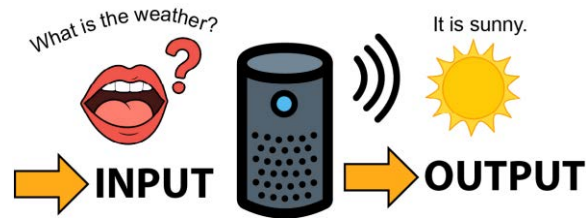
A Helper Bot needs data to work. **Data** is information such as words, pictures, or sound. The Helper Bot has a program with a set of instructions. It follows the instructions to do an action such as answer a question, draw a picture, or play a song.



INPUT: The data is input. **Input** is the information you PUT IN to a computer.



OUTPUT: The action is output. Output is what the computer will PUT OUT.



What is the Input? What is the Output?

1. You want a Helper Bot to read a story to you.
What is the input?

- words on the page of the e-book
- sound coming from the speaker

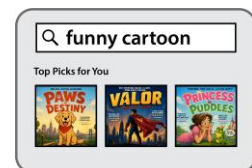


2. You want the Helper Bot to read a story to you.
What is the output?

- words on the page of the e-book
- sound coming from the speaker

3. You want a Helper Bot to pick a show you would like to watch.
What is the input?

- ask for a funny cartoon
- list of shows



4. You want a Helper Bot to pick a show you would like to watch.
What is the output?

- ask for a funny cartoon
- list of shows

Assignment 3 Play Quick, Draw!

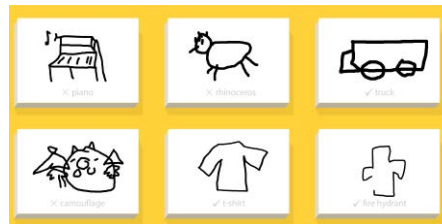
To be helpful, a Helper Bot needs to learn from its mistakes. The more data you **input**, the more it can improve its **output**.



Play a Drawing Game

Play a game with a bot. You will draw 6 pictures, and the bot will guess what you made. The lines you draw are the **input**, and the guess is the **output**. The more lines you draw, the better the bot can guess. Try it!

- ▷ Visit <https://quickdraw.withgoogle.com>. Click *Let's Draw*.
- ▷ Draw the objects before the time is up.

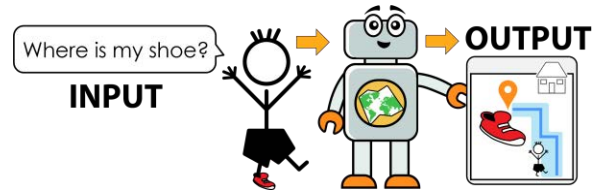


Questions About the Drawing Game

1. Was the bot able to guess the drawing after making the first line?
 - yes
 - no
2. Did the bot improve its guess when you made more lines?
 - yes
 - no
3. A Helper Bot needs lots of data. How did your drawings train the bot?
 - It learns only from the perfect drawings you made.
 - The more drawings it sees, the more it learns how objects look.**
4. A Helper Bot helps people. How did this bot help you? Check all the ways.
 - act as a friend to play a game**
 - pick a song you like
 - teach you about input and output**

Assignment 4 Design a Helper Bot

Be an AI Robot Designer. Invent a Helper Bot that improves the lives of children.



A **user** is someone that uses a computer. How could a Helper Bot help a user, such as yourself or a friend? Below are some ideas:

- do a chore
- pick clothes for today's weather
- find something lost
- study for a test
- play a game you like
- make a healthy snack

The Helper Bot that you design must be fair to all users. A Helper Bot must:

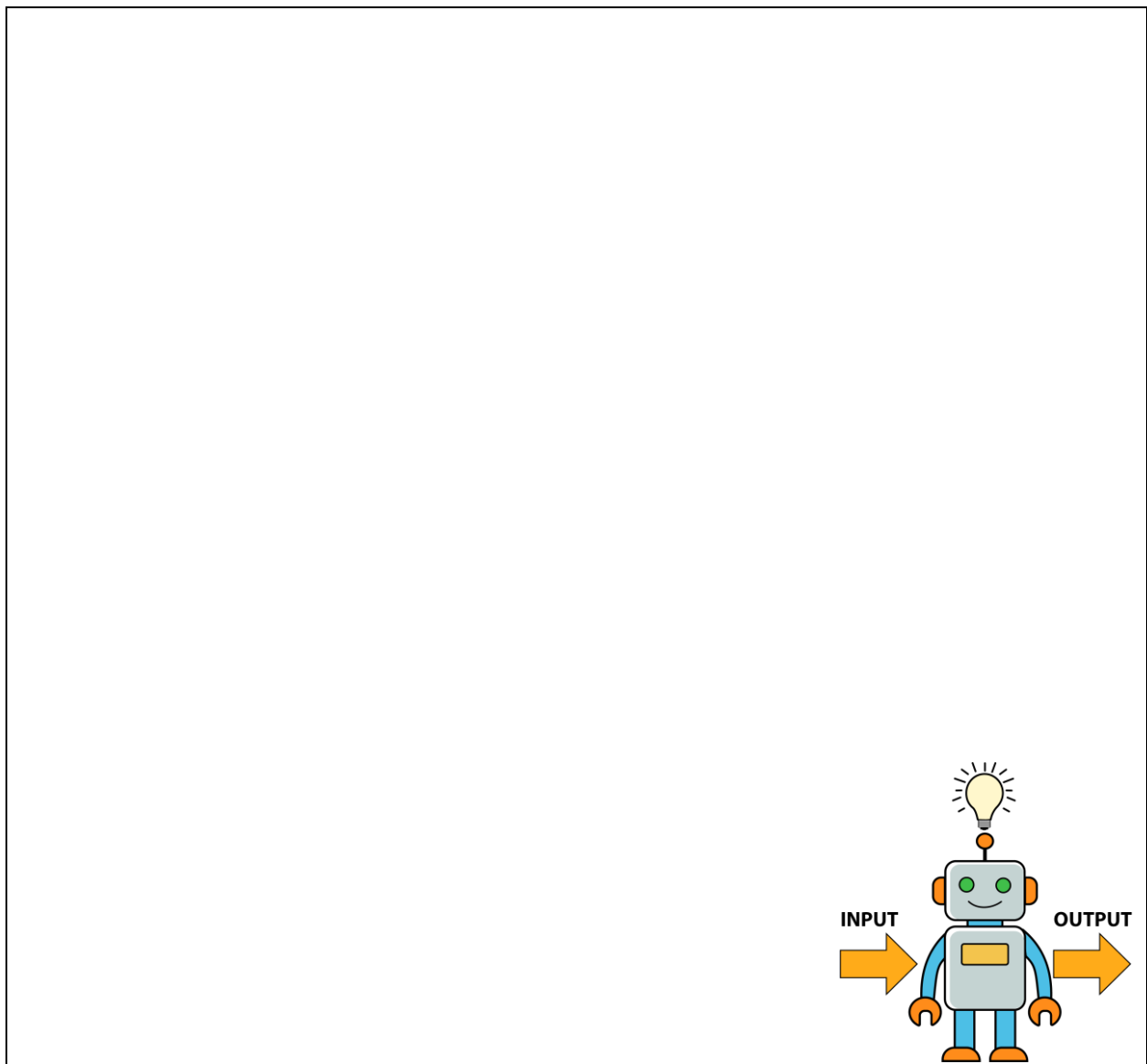
- ✓ help everyone the best it can
- ✓ never pick favorites
- ✓ use kind words
- ✓ apply the same rules to everyone
- ✓ help users that speak different languages
- ✓ help users with vision, hearing, physical, or other disabilities

Plan a Helper Bot

1. What is the name of the bot?
2. Who does it help?
3. How does the Helper Bot improve people's lives?
4. What data do you need to **input** into the Helper Bot to make it work?
5. What action will the Helper Bot **output** to show it has done the task?
6. How will your Helper Bot be fair to all users?

Create a Helper Bot

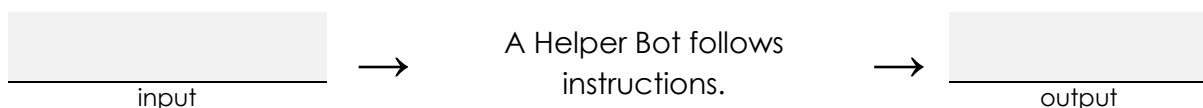
Draw your Helper Bot on this sheet or use a computer program such as Paint. Label the input and output.



Make a Flowchart to Explain How the Helper Bot Works

You can explain how a Helper Bot works using a flowchart. A **flowchart** is a diagram that shows the steps to doing something. Arrows show what comes next.

7. Label the input and output.



Session 1 Review: Input and Output

Computer Terms

1. What is data?
 - information such as words, pictures, or sounds**
 - steps the computer follows
 - a Helper Bot that does a task

2. What is input?
 - the computer thinking about the task
 - the data that goes into a computer**
 - the action that comes out of computer after it follows instructions

3. What is output?
 - data such as numbers, sound, or video
 - a question a person asks
 - an action the computer does after following steps**

Input and Output

Is it input or output?

4. You ask a bot to play a pop song. <input type="checkbox"/> input <input type="checkbox"/> output	5. The bot plays a song you like. <input type="checkbox"/> input <input checked="" type="checkbox"/> output
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6. You show the bot a picture. <input type="checkbox"/> input <input type="checkbox"/> output	7. The bot labels objects in a picture. <input type="checkbox"/> input <input checked="" type="checkbox"/> output
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About Helper Bots

8. What is a Helper Bot?
- a toy robot made from blocks
 - a camera that takes photos
 - a computer program that helps people do tasks**
9. Which tool is a Helper Bot?
- pencil
 - spell checker**
 - scissors
10. A Helper Bot needs two things to work. What are they?
- input and output**
 - data and information
 - screen and keyboard

True or False

Is the sentence true or false?

11. A Helper Bot should help everyone the best it can. **true** false
12. A Helper Bot needs lots of data to do a good job. **true** false
13. A Helper Bot needs output to run a program. true **false**

Make a Flowchart

A smart speaker can listen and answer questions. Label the flowchart.



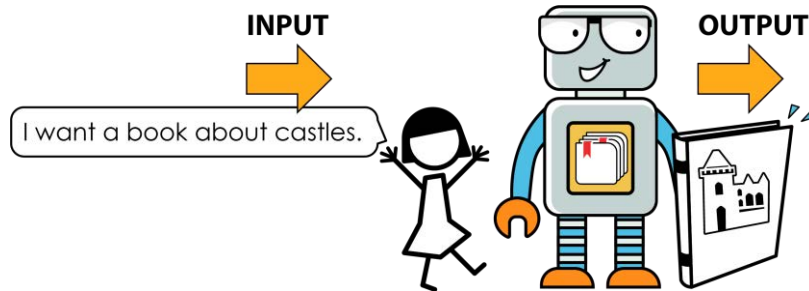
<p>14. What is the input?</p> <ul style="list-style-type: none"> <input type="checkbox"/> question <input type="checkbox"/> answer 	<p>15. What is the output?</p> <ul style="list-style-type: none"> <input type="checkbox"/> question <input checked="" type="checkbox"/> answer
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TOTAL: /15

Session 1 Skill Review: Plan a School Helper Bot

Be an AI Designer. Invent a Helper Bot for your school. What problem can it solve?

The Helper Bot must be fair to all users. It should help everyone the best it can, use kind words, and apply the same rules to everyone. It should also be able to help those that speak different languages or have different abilities.



IDEAS

- students cannot find the perfect library book
- lunch line is too long
- sports equipment gets lost at recess
- did not hear the morning announcements

Plan Ideas for a School Helper Bot

1. What is the name of the bot?

2. Who does the Helper Bot help?

3. What problem does the Helper Bot solve?

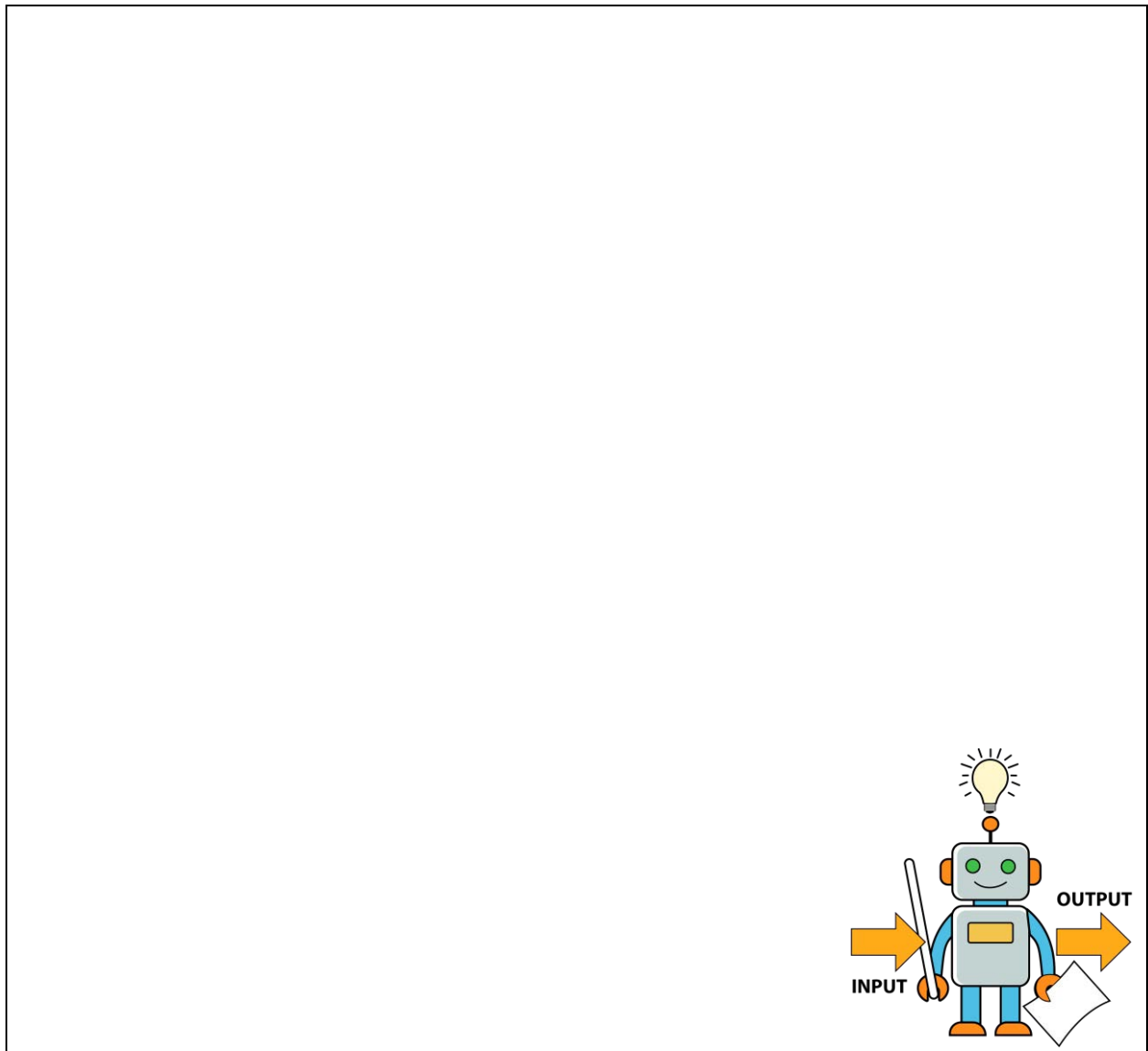
4. What data do you need to **input** into the Helper Bot to make it work?

5. What action will the Helper Bot **output** to show it has done the task?

6. How will your Helper Bot be fair to users?

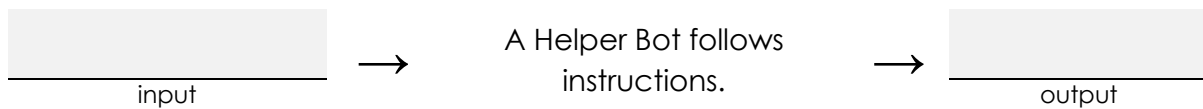
Create a School Helper Bot

Draw your Helper Bot on this sheet or use a computer program such as Paint.
Label the input and output.



Make a Flowchart to Explain How the Helper Bot Works

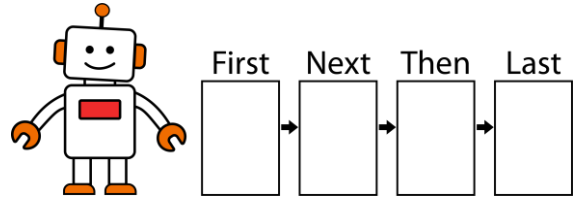
7. Label the input and output.



Session 1 Extension Activity: Put the Events in Order




A **flowchart** is a diagram that shows the steps of a process, using arrows to show what happens next. A Helper Bot can follow steps to do a task and make choices.

Help the Helper Bot Do a Task







Put the steps into the flowchart in the right order.

- Order the steps for making a sandwich.

		
spread jam on bread	put jam on knife	get a slice of bread

First	Next	Last
get a slice of bread	put jam on knife	spread jam on bread

- Order the steps for growing a flower.

			
put dirt in pot	water the seed	get a pot	place seed in dirt

First	Next	Then	Last
get a pot	put dirt in pot	place seed in dirt	water the seed

Write the Steps

What is your routine at school for getting ready to go home at the end of a school day?

Think about the steps.

What do you do first?

Do you tidy the room, stack your chairs, or pack your bag?

What do you do next?

Sit on the carpet? Line up at the door?

What do you do last?

Do you walk home, ride your bike, or get on the bus?

1.

2.

3.

4.



Write the steps in order.