

Lesson 2

The Mind of a Robot (Part II)

Overview

Students will explore the “mind” of a robot or a computer further by coding in the mBlock user interface. First, students will be introduced to the format and structure of mBlock, paying attention to the three areas: The Stage Area, the Blocks Area, and the Scripts Area. Students will then explore the concept of input by coding with Looks and Sensing blocks.

Objectives

By the end of class, students will be able to...

- Understand that a user interface is a place where they can write and activate the computer code;
- Add and modify the chosen sprite by utilizing appropriate functions in the Stage and Blocks Areas;
- Understand that the input device in association with the example of the chatbot project.

Materials

- mBlock
- Lesson 2 Activity Sheet
- Lesson 2 Slideshow

Content Standards

Type	Indicator	Standard
ISTE	1a	Students leverage technology to take an active role in choosing, achieving and demonstrating competency in their learning goals, informed by the learning sciences.
	3d	Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
	6a, 6c	Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
	7d	Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.
CSTA	1B-CS-01	Describe how internal and external parts of computing devices function to form a system.
	1B-CS-02	Model how computer hardware and software work together as a system to accomplish tasks.
	1B-AP-11	Decompose (break down) problems into smaller, manageable subproblems to facilitate the program development process.
	1B-AP-12	Modify, remix, or incorporate portions of an existing program into one's own work, to develop something new or add more advanced features.



Vocabulary

Term	Definition
Input	Any information or data that is sent to a computer or device.
Output	Any data or display that is the result executed by a program.



Pre-lesson Checklist

- Print out and/or digitally distribute the Lesson 2 Activity Sheet.
 - If students will use paper versions of activity sheets, make sure the resources are easily available for students. This can be done by providing the links on your LMS, etc., or printing the resources out for each group to utilize during the class.
- Make sure any necessary computer equipment (installed with mBlock) is ready to go.
- Familiarize yourself with key points and notes detailed within this lesson plan and Lesson 2 slideshow.



Agenda (60 minutes)

Time Interval	Content
5 minutes	Warm Up • This phase aims to help review what has been learned in the previous lesson quickly. Pay attention to the concept of the input during revision.
15 minutes	Phase 1 • In this phase, students will be introduced to the format and structure of the mBlock User Interface. Students should be able to recognize the three areas and what they are used for.
15 minutes	Phase 2 • In this phase, students will create the dialogue function for the chatbot by using the “ask (...) and wait” Sensing block and the “say” or “think” Looks blocks.
15 minutes	Practice - Free Creation Time • This phase is a sharing and social networking section. Students will exchange and test each other’s chatbot, provide feedback, and learn from each other.
5 minutes	Wrap Up
5 minutes	Clean Up

 Activities**Warm Up: Slides 2-5**
[5 minutes]**Objectives:**

- This phase aims to help review what has been learned in the previous lesson quickly. Pay attention to the concept of the input during revision.

Procedures:**Slide 2**

- Show Slide 2 to inform the class about the agenda and tasks in this lesson.
 - Inform the class that they will develop a very simple chatbot by themselves.

Slide 4

- Show Slide 4 to help students recall the story context of this course.
 - Let students talk about their expectations on the “time travel field trip”.
 - Ask students to tell you what they have learned about robot citizens.

Slide 5

- Briefly summarize the key points of the I/O System. Inform the class that this lesson will focus on the input function and input devices.

Phase 1: Slides 6-10
[15 minutes]**Objectives:**

- In this phase, students will be introduced to the format and structure of the mBlock User Interface. Students should be able to recognize the three areas and what they are used for.

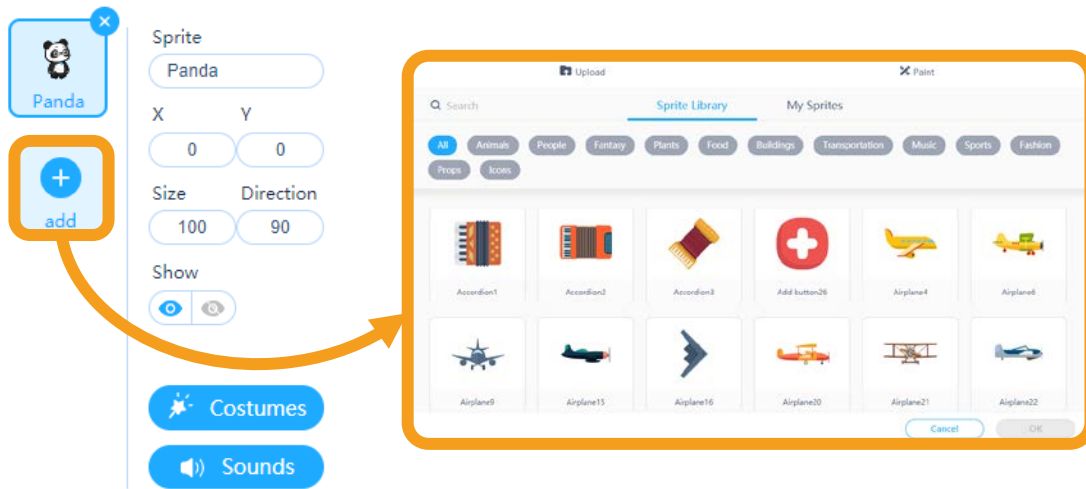
Procedures:**Slides 7-8**

- Instruct students to open the mBlock application.
- Introduce the three areas:
 - In the Stage Area, you can connect mBot, design your sprites and backgrounds, as well as present your designs.
 - In the Blocks Area, you can find and drag various coding blocks to generate lots of amazing effects for your sprites and mBot.
 - In the Scripts Area, you can write computer code. Besides, if you left-click on the program, you can test and see how the effect would look like.
- Most importantly, instruct students to create their online account so that they can save their code and projects in the cloud.
 - Better project your operation directly and have students follow and model what you did.
 - Please refer to the online tutorial here:
<https://www.mblock.cc/doc/en/mblock-account/sign-in-mblock.html>.

Slide 9

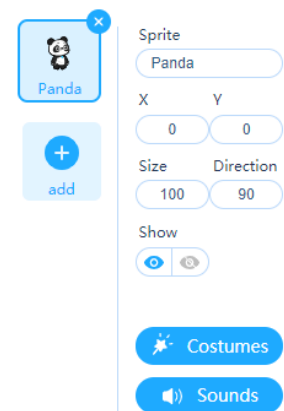
- Instruct students to first delete the default sprite (i.e. the panda) and then add another sprite whatever they like to be the character of the chatbot.
 - Remind the class that it is not necessary to choose a robot sprite to act as the chatbot – they can select even a very odd object.

- o Also, remind that the chatbot project they develop in this lesson will still be used in the later learning activity.



Slide 10

- Introduce the use of the information box at the bottom of the stage by asking some practical questions, for example:
 - o Give the chosen sprite a name whatever you like;
 - o Change the position of the sprite by adjusting the X- and Y-coordinates;
 - o Change the original sprite into a bigger or smaller size;
 - o Rotate the orientation of the sprite;
 - o Make the sprite invisible (and then visible again) in the stage;
 - o ...
 - o You can even go further to the “Costumes” to modify the shape and pattern of the sprite.



Phase 2: Slides 11-16 [15 minutes]

Objectives:

- In this phase, students will create the dialogue function for the chatbot by using the “ask (...) and wait” Sensing block and the “say” or “think” Looks blocks.

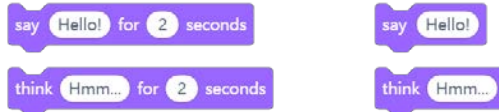
Procedures:

Slides 12-13

- Ask students to recall the chatbot demo that appeared in the previous lesson.
 - o Ask students to identify and discuss what might be the input data and what might be the input device to transport the data.
- Emphasize programming scripts that process the input data sent by the keyboard and the mouse.

Slide 14

- Instruct students to use the relevant Sensing and Looks coding blocks to create the chatbot.
 - o Using the “say” or “think” blocks in the Looks category can make the selected sprite display a speech or thought bubble with words you input.



- o Using the “ask (...) and wait” block in the Sensing category can create an input box at the bottom of the stage.
- o There is also another script “answer” which stores your input. Select the checkbox in front of the “answer”, you could then see what you have answered in the input box in the stage.

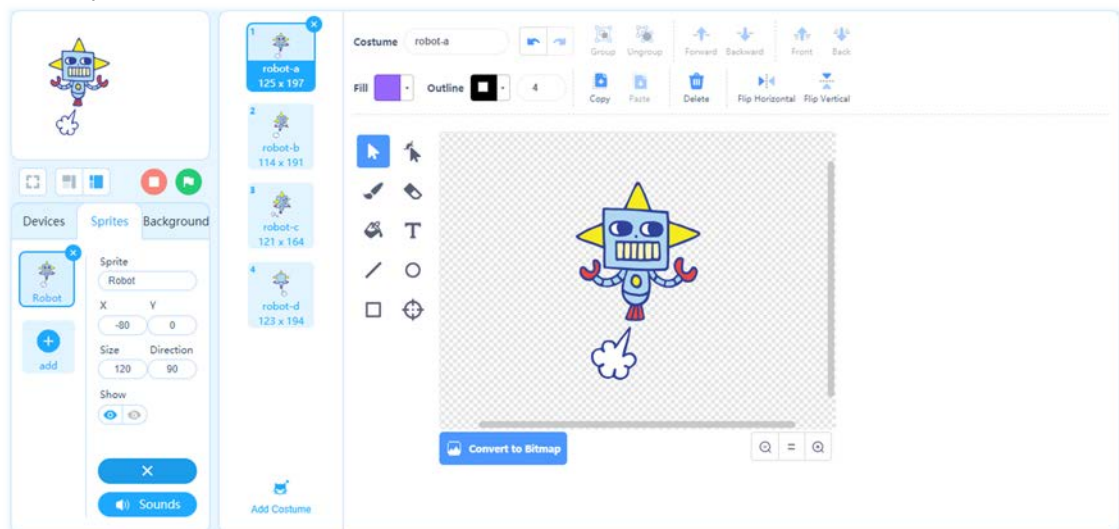


Slides 15-16 (Optional)

- Challenge students if they want to design and produce some motion effects for the chatbot. Instruct them to use the Costume blocks:



- o Before using the above two Costume blocks, have students explore the “Costumes” of a sprite in the Stage Area in the first place.
- o Students should figure out that the selected sprite should have more than one costume so that the scripts can be executed.



Practice: Slides 17-22 [15 minutes]

Objectives:

- This phase is a sharing and social networking section. Students will exchange and test each other's chatbot, provide feedback, and learn from each other.

Procedures:

Slide 18

- Instruct students to publish their projects onto the mBlock community.
 - o Again, project your operation directly and have students follow and model what you did.
 - o Remind students to give a name to the chatbot project in the toolbar.

Slide 19

- Ask students to invite their partner to chat with each other's chatbot, and then color the stars in the activity sheet for feedback.

- If time permits, encourage students to test other peers' chatbot projects and to communicate with their developers for sharing and networking.
- Remind students that everyone can get six-star feedback if the project deserves this.

To what degree would you say you enjoy the chat with the chat bot?	☆☆☆☆☆☆
To what degree do you think the chat bot is smart to know your words?	☆☆☆☆☆☆
To what degree do you think the chat bot is human alike to react to you?	☆☆☆☆☆☆
To what degree do you think the chat bot is interactive?	☆☆☆☆☆☆

Slide 21

- Show Slide 21 to summarize the key points of this lesson.
 - You can also have the class discuss the question, for example:
 - *"What makes a chatbot smart enough to communicate with a human?"*
 - You can assign the above discussion as homework and ask students to draw a poster to explain their thought.

Wrap Up & Clean Up [10 minutes]