Telephone Drawing

In this coding challenge, students will work together remotely to create a program that draws a collective picture. This is an activity that students will complete and pass along in the background of a video call, so plan on filling its downtime with another lesson or game. Alternatively, it could be completed over the course of a week or full-day.

Subject(s):
Coding / Robotics
SEL: Communication

Experience Level:
Beginner

Time:
30-60 mins

Group Size:
Full-class activity

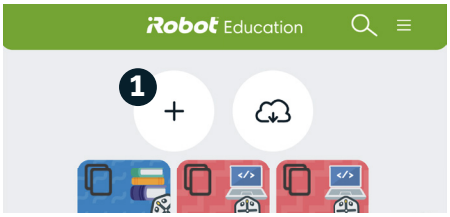
Supplies:
iRobot Coding App
Coding Devices

Teacher Prep

Video Call Prep

- Set up a video call with your students. Ensure that there is a way for them to share chat messages with the group.
- Create a numbered list of your students. Be prepared to share the list in the chat feature of your video call. This will be your telephone chain.
- Visit **code.irobot.com** or open the iRobot™ Coding App on your device.
- Review the steps for "Uploading Your Projects" and "Downloading your Projects" (both attached)

Set Up Your First Project



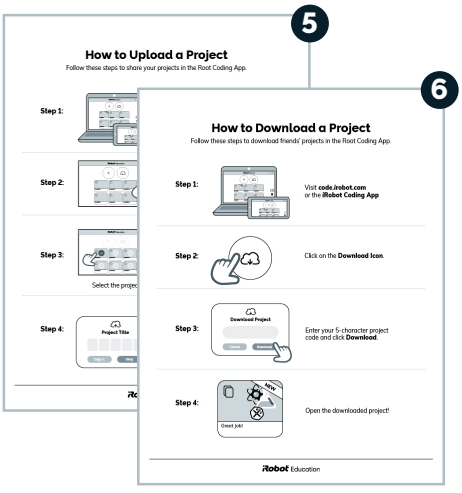
1. In the iRobot™ Coding App, click on the "+" button to create a blank code project.

2. Next, drag out a **Marker Block**; connect it to the **Play Block**.

3. Tap the title of the project and rename it "Telephone Drawing"

4. Press the orange back arrow button.

5. Follow the steps in "**How to Upload a Project**" (attached) to share your code project with the class. Ensure that you copy your 5-character code from the Upload Dialog!
    - *Your students will follow these same upload steps to pass their projects along to the person after them in the telephone chain.*



6. Practice following the steps in "**How to Download a Project**" (attached), using the 5-character code you generated in your upload.
    - *Your students will follow these same download steps to dowload peojects passed onto them from the person before them in the telephone chain.*

With the Class

7. Demonstrate the steps in **“How to Upload a Project”** and **“How to Download a Project”** to your students.

8. Challenge your students to work together to create a collaborative project that codes Root to draw a picture.
    - *See “Picture Goal Menu” (attached) for ideas.*

9. Share your list of student names (the “telephone chain”) in the chat box of the video call.

10. Ask Student #1 on the telephone chain to download your Telephone Drawing project using the 5-character code you previously generated in Step 5, following the steps in **“How to Download a Project”**.

11. Inform students of which Learning Level you will all be coding in for this project.
    - *Example: “All of the code we add MUST be in Level 2”*

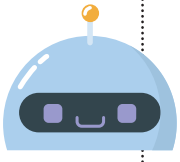
12. Challenge Student #1 to:
    - add their own code blocks to the project *(We recommend outlining specific requirements; see Modifications section)*
    - re-upload the project following the steps in **“How to Upload a Project”**,
    - and send the NEW 5-character project code in the chat to Student #2.

13. Ask Student #2 to repeat Steps 10-12, using Student #1’s NEW 5-character project code. When Student #2 is finished adding their new code pieces, their project should contain all of the code blocks you, Student #1 AND Student #2 added together.

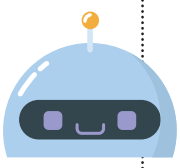
14. As students pass along new 5-character codes down the telephone chain and continue to add code blocks to the project, ask them to test running the code in the simulator *(pictured “Activity Example: Draw a Flower” on next page)*.

Example Flow

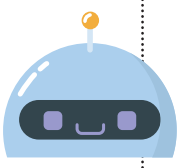
Teacher
Sends: 1ABCD



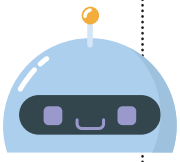
Student #1
Downloads: 1ABCD
Adds 3 Code Blocks
Uploads: 2EFGH



Student #2
Downloads: 2EFGH
Adds 3 Code Blocks
Uploads: 3IJKL



Student #3
Downloads: 3IJKL
Adds 3 Code Blocks
Uploads: 4MNOP



Student #4
Downloads: 4MNOP
Adds 3 Code Blocks
Uploads: 5QRST

Teacher
Checks 5QRST to see if it completes the Picture Goal!

15. Repeat these steps until all students have contributed to the Telephone Chain. Refer to the **Example Flow** *(pictured on right)* for guidance.

16. When you’ve reached the end of the telephone chain, ask the last student to send you the last 5-character project code. Press Play and watch the resulting artwork materialize in the Simulator together as a class. Were you able to create a project that fulfills the Picture Goal?

Modifications

Adding Code Blocks

- As you consider how you'd like your students to modify the code project when it's their turn, some options could be:
    - Every student must add 3 (or any other number) code blocks to the project when it is their turn.
    - Every student must make 3 "moves" when it is their turn. A move may consist of adding or deleting a block, or editing exisiting blocks.
    - Every student has 3 minutes to make as much progress as they can to the project (this will require a teacher or student serving as a "timer")

Downtime

- Naturally, as with any other "telephone-style" game, this activity has a lot of downtime for student that have either already completed or are waiting for their turn to edit the master code project.
- You may want to consider activities for the group to do together or individually as students are completing the Telephone Drawing in the background.

- Some suggested *group activities* may be:
    - Making predictions on what the drawing might look like at the end. Example: How many yellow command blocks will it have? What about aqua flow control blocks?
    - Playing a game like Simon Says or Trivia
    - Learning how to use new code blocks

- Some suggested *individual activities* may be:
    - Working through a worksheet
    - Coding their own picture drawing to practice before or after their turn

Fun for the Year!

Looking for a way to keep students coding throughout the school year?

Challenge your class with an elaborate Picture Goal that will take weeks to complete!

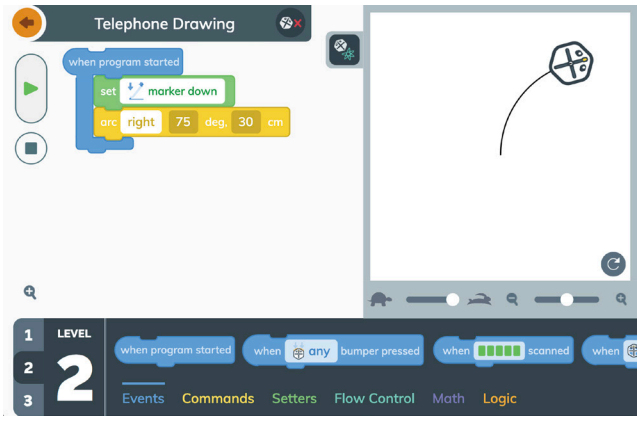
Students can complete their contributions to the Telephone Chain as an ongoing homework assignment or use it as a permanent quiet-time activity.

Education

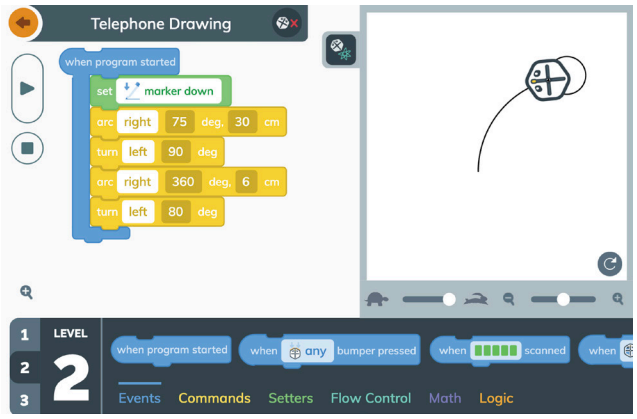
Activity Example:

Draw a Flower

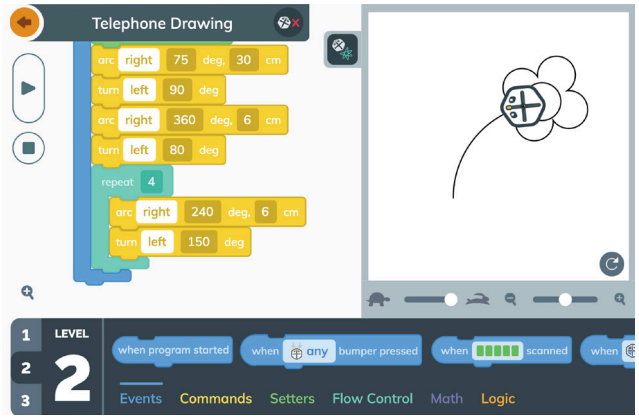
Starter Project



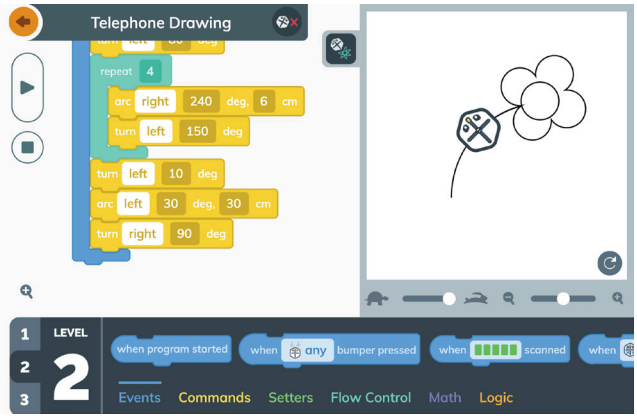
Student #1's Code



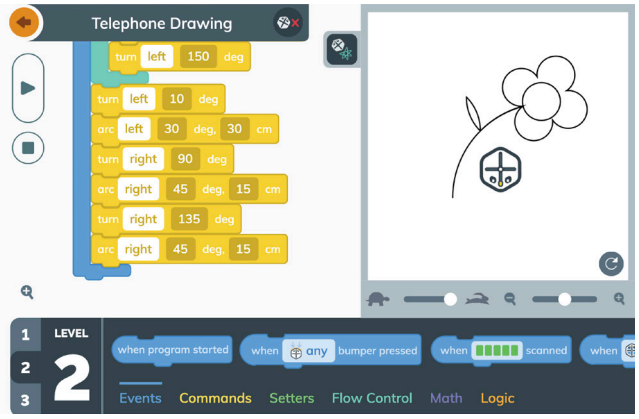
Student #2's Code



Student #3's Code



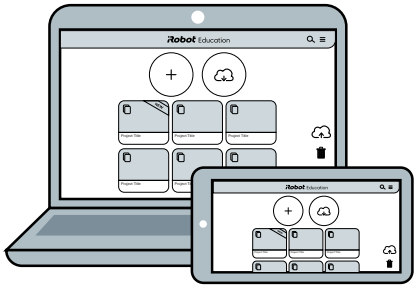
Student #4's Code



How to Upload a Project

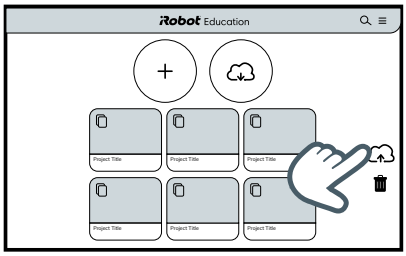
Follow these steps to share your iRobot™ Coding projects.

Step 1:



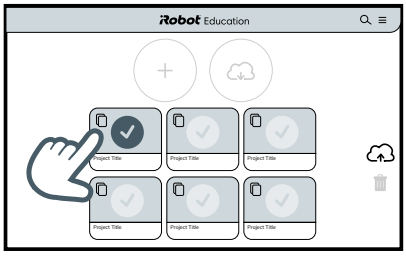
Visit **code.irobot.com** or the **iRobot™ Coding App**.

Step 2:

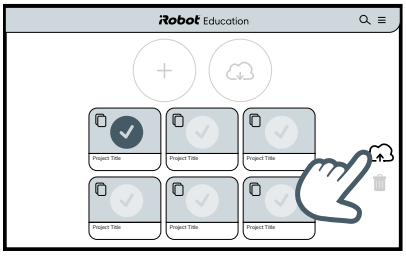


Click on the **Upload Icon**.

Step 3:

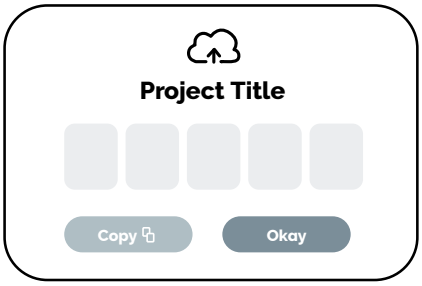


Select the project.



Click on the **Upload Icon** again!

Step 4:

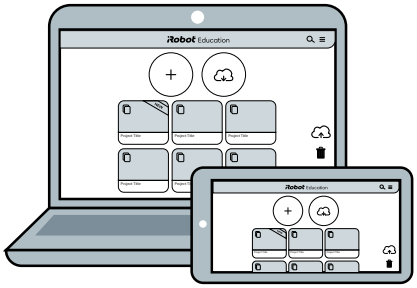


Copy the project code to share with your friends!

How to Download a Project

Follow these steps to download friends' iRobot™ Coding projects.

Step 1:

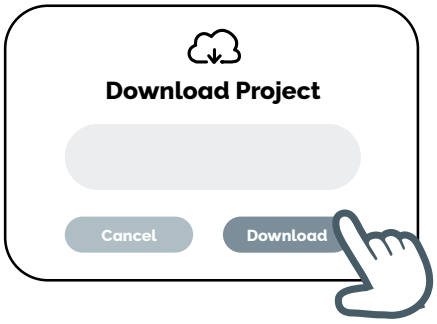


Visit **code.irobot.com**
or the **iRobot™ Coding App**

Step 2:

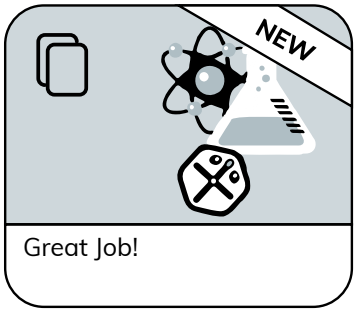
Click on the **Download Icon**.

Step 3:



Enter your 5-character project code and click **Download**.

Step 4:



Open the downloaded project!

Picture Goal Menu

# of Students	Picture Goal	Challenge Level
5-10	Flower	Beginner
5-10	Single Letter (See Root Alphabet)	Beginner
5-10	Tree	Beginner
10-15	(Smiley, angry, silly) Face	Easy
15-20	The Word “HELLO”	Easy
5-10	House / Building	Easy
5-10	Slice of Pizza	Easy
10-15	Birthday Cake	Medium
15-20	The Phrase “GOOD MORNING”	Medium
15-20	Snowman	Medium
20+	Garden	Difficult
20+	Group of People	Difficult
20+	Map of Classroom	Difficult