

Possible Futures



Facilitator Guide: How to Prepare for This Lesson



STEMPLORATION

Information Technology

Lesson 2—The World of Coding

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About This Facilitator Guide

This facilitator guide provides the details to help you enable students to complete the lesson **The World of Coding: What Does It Take to Speak Computer?**

Instructions for using the SCORM files in Blackboard and Canvas can be found at this [link](#). Instructions for using Flipgrid can be found in this guide.

While this lesson is designed for online learning, you will find information in this guide about In-Person Learning Adaptations to enable you to facilitate your students who may be completing this lesson in the classroom instead of online. Callouts will provide guidance on how to adapt various activities for in-person learning.

Before You Get Started

Before you get started with this lesson, please be sure to:

- Read through the facilitator guide.
- Download SCORM. (You will only need to add SCORM once. After that, you will be set to use SCORM for any remaining lessons.)
- Review the Rise lesson.
- Prepare any resources needed for the lesson.
- Set up Flipgrid.

Flipgrid Instructions: Setting Up Flipgrid

Both educators and students will need to set up Flipgrid for use.

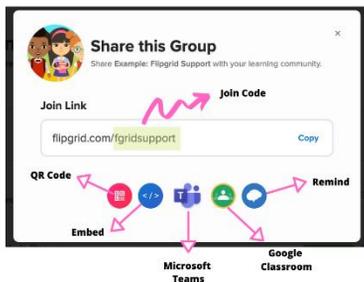
Educator Step-by-Step Guide

Set up your free educator account at [Flipgrid.com](https://flipgrid.com) and create a **Topic** for the class. Please copy and paste the heading from the facilitator guide that pairs with the Flipgrid so that the topic aligns with student expectations. A Topic is a discussion prompt for students. Students respond to the Topic with a short video using Flipgrid's fun, social-media-style camera. Students can watch and comment on videos from peers, with the educator in complete control.

1. Create a Topic

Topics start the conversation in Flipgrid. Just write a prompt and include anything for students to review before responding, such as videos and links.

When you create a new Topic or Group, a Join Code is automatically created for it. To share the Join Code to your Topic or Group, log in to your educator account and select the blue Share button to access your Join Link and Code, as well as other ways to share your discussion.



The Join Code also creates a link. Copy and paste the link in emails, texts, social media, Google Classroom, or other websites to invite your students to join! You can download/print QR codes for students to scan on the Flipgrid app. The Flipgrid app and flipgrid.com offer a QR scanner on the home page.

The student receives the Join Code in the form of a link, a code, a QR code, or a guest username and password. The student can then enter a student username or a password.

2. Set Access and Share

After creating the Topic, choose how students will access it. If they have email addresses, add the domain (everything after the @ symbol in their email address). If students do not have email addresses, create usernames for each student. Invite families and guests by adding a guest password.

Share the Topic by using one of the Share buttons or copy and paste the unique Join Code wherever you connect with your community.

3. Students Respond

After entering the Join Code, students gain access by logging in via email or username.

Students can share their voices by recording a short video with Flipgrid's fun, simple, and powerful camera. It's packed with everything they need to tell their story, including text, emoji, inking, boards, screen recording, and the ability to upload clips!

References:

[Educator Step-by-Step Guide](#)

[Educators: A Teacher's Guide to Flipgrid \[YouTube\]](#)

[Educator Guide to Flipgrid](#)

Student Step-by-Step Guide

A student can create a video to submit to the educator in a few easy steps!

1. Locate the Join Information From Your Educator

Your educator would have given you one of these ways to join the discussion:

- A Join Code (e.g., FGrid3567 or a591dc5d) or a QR code
- A Join Link (e.g., <https://flipgrid.com/FGrid3567> or <https://flipgrid.com/a591dc5d>)
- If you don't have a school-provided email, then a unique username or guest password

Flipgrid works on most web browsers and mobile devices. Microsoft Edge or Google Chrome is recommended for the best web experience. For easy access to Flipgrid, download the Flipgrid extension. On mobile devices, download the free Flipgrid app for iOS and Android devices.

2. Join the Discussion

Get the educator's discussion by using the link or code provided by your educator in Step 1.

- If you have a Join Link, select that link.
- If you have a Join Code, do either of these:
 - Go to your web browser and enter <https://flipgrid.com>. You'll see an area to enter a Join Code. Type the Join Code and press Enter on your keyboard.
 - On a mobile app, enter the code.
- If you have a QR code, scan the QR code with your device camera or the Flipgrid mobile app.

You'll see a prompt to log in. Enter a student username or a password. If your student username or password is not working, be sure to double-check the case and space sensitivity.

Tip: If you're prompted to log in, choose Google if your school uses Google Classroom, Docs, and Drive. Choose Microsoft if your school uses Word, OneDrive, or Microsoft Teams.

3. Record and Submit

Once you've joined, you'll see your educator's Topic, or discussion prompt. Follow the instructions and when you're ready to record, select the red Record a Response button or the Flipgrid logo for the camera to start.

When you're in the Flipgrid camera, you can record a video in these three easy steps:

- Tap to record: Tap the record button on the bottom to start. Add fun stickers, filters, text, and more. Tap the arrow on the bottom right to advance.



Review your video: Trim, split, rearrange, or add more. Tap the arrow on the bottom right to advance.



Submit your video: Edit your cover image and name, add a title, or attach a link. Then submit!

The Flipgrid camera offers a lot of fun and creative ways for you to share your ideas and voice! [Check out all the camera features here](#). Learn [how to import a custom video](#) or [how to include a screen recording](#).

References:

[Getting Started: Students](#)

[Getting Started with Flipgrid - Students \[YouTube\]](#)

Using Editable PDFs

Most lessons include the use of an editable PDF for students to capture responses to questions and other activities.

Guiding language is included in the lesson to help students access and use the editable PDFs where they appear.

Students who will be using Chromebooks will need to use the Print to PDF function to save their editable PDFs to their devices. Here's how to do this:

1. Open the editable PDF and select Ctrl + P.
2. Open the file destination where the file will be saved to.
3. Select Save as PDF.
4. Select Print. Your document is now "printed" as a PDF file, which will save your work.

PDFs cannot be submitted via the Rise activities. If you plan to collect these documents for career planning portfolios or grading, you will need to coordinate that with your students.

To view a video on using Flipgrid and editable PDFs in the lessons, select [this link](#).

“Ask an Expert” Interviews (Optional)

You may choose to include an “Ask an Expert” interview in this lesson.

An interview provides an opportunity for students to talk with and ask questions of experts who work in various professions to learn about their career journeys, current job roles, and responsibilities and glean valuable insights.

Additionally, interviews also provide the following benefits:

- real-world information about careers
- an awareness of the workplace habits and interpersonal skills needed to succeed in any job
- further encouragement to go to college or postsecondary training or apprenticeship and get ready for the career of their choice
- an understanding of the fact that each person’s career journey is unique and that most people encounter obstacles and challenges that they must overcome to reach their goals

When selecting experts to participate in the small group interviews, look for “down to earth” people who you think are good speakers and who would be comfortable talking to young students, ages 12 to 14. An ideal ratio is one expert for every five students.

There are two options that can be used if you choose to use an “Ask an Expert” interview:

- Schedule a Zoom/Skype call with an expert in the field.
- Find an existing YouTube video of an expert to share with students.

In-Person Learning Adaptation: For in-person learning, project/share the Zoom/Skype call with an expert with your class. YouTube videos may also be projected/shared in person. You can consider facilitating further discussions on the key takeaways from the session and/or a specific topic discussed in the session.

Review the following resource for additional information:

[Career and College Exploration Experiences: Planning for Success](#)

How to Implement This Unit

For students to get the most value from this unit, please plan on implementing all lessons in this unit, in sequential order.

When it may not be possible to implement the entire unit, we recommend implementing the following lessons to support optimum student learning based on the time available:

- Recommended combinations: Choose any of the following:
 - Lesson 4 as a stand-alone lesson
 - Pairs: Lessons 2 and 3, Lessons 4 and 6, Lessons 3 and 4, and Lessons 4 and 5
 - Trios: Lessons 3 through 5 or Lessons 4 through 6
- Mini four-lesson unit: Lessons 1 and 2 and Lessons 4 and 5
- The Introduction to Information Technology unit: Lessons 1 through 3 in sequential order

Alignment of Learning Outcomes

The program learning outcomes for Possible Futures 2.0 are as follows:

- A. Gain awareness of and exposure to a wide array of careers.
- B. Increase self-awareness and begin to form one's potential occupational identity.
- C. Develop employability skills.

- D. Develop foundational technical skills as appropriate.
- E. Be positioned to make more informed educational choices.
- F. Transition to high school with an actionable plan for the next steps.

The curriculum learning outcomes for the Information Technology unit are as follows:

1. Students learn the basics of coding and computer programming.
2. Students explore career options within the information technology industry.
3. Students identify their strengths and interests in the field of information technology.
4. Students connect their strengths and interests in the field of information technology to potential careers.
5. Students explore local labor market data and education opportunities for careers in the field of information technology.

The Arizona Career Literacy Standards for Grades 5 through 8 can be found at [this link](#).

This lesson’s learning outcomes align with the program learning outcomes (PLOs), curriculum learning outcomes (CLOs), and Arizona Career Literacy Standards (CLSs) as follows:

CL Os	Lesson Learning Outcomes	PLOs	CLSs
1	Use a variety of media to develop and deepen the understanding of a topic or idea.	D, F	4.0, 5.0
1	Apply the logic principles of writing code to solve a challenge.	C, D	2.0, 5.0

Tracking Completion of Lessons

If you are using SCORM Cloud or Canvas with the lessons in this unit, completion tracking options are available. If you are not using either platform, please determine if and/or how you plan to track the completion of lessons by students.

Lesson 2 Components

Guiding Question

The guiding question is intended to provide a focal point for each lesson. Here is this lesson's guiding question:

- **What Does It Take to Speak Computer?**

Lesson Overview

This section provides an overview of the lesson. In this lesson, students will be introduced to various terminologies involved in coding. They will also watch a video to understand the basics of coding. Students will learn more about coding through an activity they will perform online.

Vocabulary in This Lesson: Flip Card Activity

Students should use the flip card activity to familiarize themselves with key vocabulary terms and definitions for this lesson.

- **Code:** A set of instructions for a computer
- **Coder:** A general term for a person who creates computer programs; also called computer programmer, software engineer, and developer
- **Coding:** The act of writing a set of instructions, or code, run by a computer; also known as computer programming
- **Bug:** A problem that prevents a computer program or system from working properly
- **Debug:** To remove mistakes from a set of **code**, such as a computer program or software
- **Developer:** A person or company that creates computer software

Learning Targets

By the end of this lesson, students will be able to:

- Use a variety of media to develop and deepen the understanding of a topic or idea
- Apply the logic principles of writing code to solve a challenge

Video Block: What Is Coding?

This section contains a [video](#) with a short introduction to coding. The section starts by setting the context for the video by telling students that they have been hired at “Information Technology Operations” or “IT Ops.”

The section mentions an elaborated definition of coding, which is stated as follows:

“Coding (also called computer programming) is the act of writing a set of instructions, or code, run by a computer. Code is all around us. Whether we are playing computer games, driving in our cars, or flying across the country, we are benefiting from code that a coder (also called a computer programmer, programmer, software engineer, and developer) wrote.”

In-Person Learning Adaptation: For in-person learning, the facilitator may discuss any queries or observations about the video after the students have finished watching it.

The video can also be projected via Zoom/Skype or in person via a projector.

Activity Block: Code.org Classic Maze

This section contains a hyperlink to a website called [Code.org](https://code.org). This activity does not require students to log in or create an account. However, students must be reminded that they might be required to enter their age (13 or higher) to access the content.

The link consists of an introductory video explaining the activity and instructions on how to perform the task. The activity is split up into 20 tasks, each improving upon the last task.

Facilitators are encouraged to go through the activity to offer support to students as needed. The students must select “I finished” at the end of the activity.

In-Person Learning Adaptation: For in-person learning, facilitators can run the activity via a projector and help the class through the first five tasks in the activity collaboratively.

The rest of the activities can be given to the students to solve in their own time.

Editable PDF—Software Developer and Systems Software Careers

In this section, students will be asked to download the editable PDF titled **Lesson 2—The World of Coding—Editable PDF**.

The PDF has the following instructions:

“Read each statement below about systems software development careers and then indicate on the continuum how important the statement is to you by selecting the preferable spot on the line.”

Students will be asked to use a sliding scale to mark how much the statement is important to their values.

Thinking About Your Future

At the end of the lesson, students will see the following statement on Rise: “You’ve been exploring software development. In this lesson, you learned more about what computer coding is and got to try it out for yourself with the Classic Maze tutorial.”

Before the next lesson, think about how you might respond to these questions:

- What did you think about your first-time using computer language? Was it easier or more difficult than you thought?
- Can you imagine yourself working with code for a living?

Career Pathways

Share the following with your students: “It’s never too soon to start exploring future career options!”

Students can access the resources at this link: [Pipeline AZ Information Technology Careers](#).

Lesson Completion

At the end of the lesson, students will see the following message on Rise:

In future lessons, you will learn more about different aspects of the IT field. Topics will include determining criteria for good apps, designing a user interface, and coding apps.

Extension Activity: How to Train Your Robot

This activity will see students performing a physical and a mental activity to how coding works.

Students will be assigned to work in pairs with one student being the coder and their partner being the robot. The coder will then use a list of commands to give the robot instructions on how to perform a physical task. This activity has the students write code for their partners to follow while navigating an obstacle course.

1. Print out the image below as a set of instructions called the **Robot Language Dictionary** on the next page and give it to students with a sheet of paper.
2. Students will be required to use the Robot Language Dictionary to display instructions for their partners to enact. They must use the appropriate symbols to give directions.
3. Give them about 10 minutes to come up with their code on the sheet of paper.
4. Once that is complete, ask one of the students in each group to perform the task following the instructions on the sheet of paper.

Students are not expected to get it right the first time. Once all groups have enacted their coding, ask them the following questions:

- Was your program successful? Why or why not?
- Did everyone program their robot the same way?

Have the groups exchange their sheets of code and ask the next question:

- What differences do you notice? Would you make any changes to your code based on what you see in these examples?

Finally, as a thought to think through, ask the following question:

- Have you encountered a bug in an app or computer program?

Invite students to debug their code to ensure that their program is successful. If time allows, invite pairs to work together to invent new moves and “run” a new program together.



DRTECHNIKO

www.facebook.com/drtechniko

ROBOT LANGUAGE DICTIONARY

Dr kid name

LEFT

RIGHT

LEG FORWARD



LEG BACKWARD



BODY ROTATE



GRAB



DROP



TALK "BIT BOT"

**empty space
for inventing new
commands**

