Scratch that Coding Itch with Scratch!

Barry Webster, computer science teacher
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http://barrywebster.com

MACUL SIG CS

MIchigan Computer Science Teachers Association
A Chapter of the Computer Science Teachers Association

Scratch that Coding Itch

- Install scratch offline editor
- Scratch, from Scratch
- Guide your students' interests
- Where to go after Scratch?
- How Scratch compares to other programming languages
- Choose languages / programming environments
- Resources

Introductions

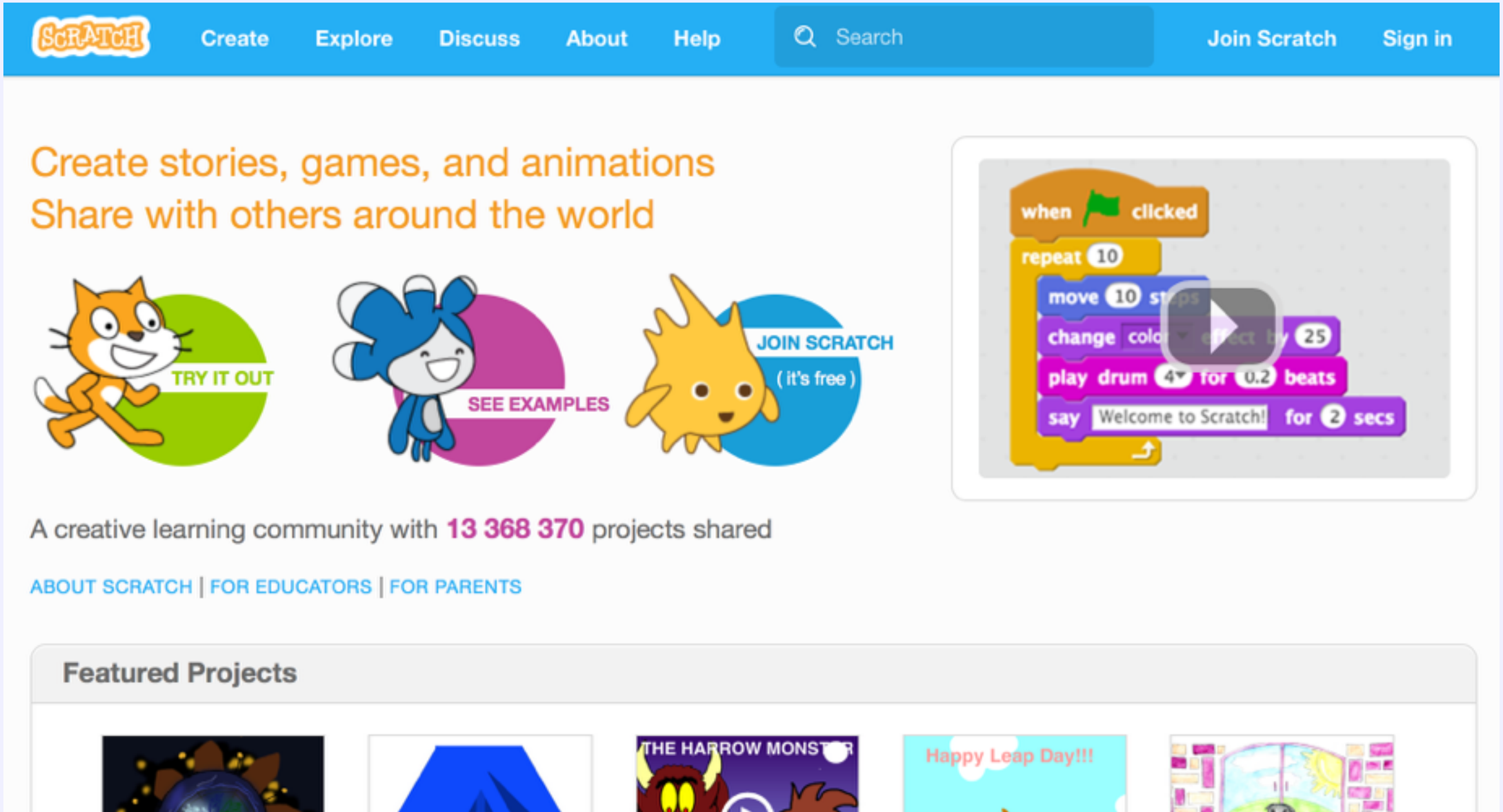
- Name
- Grades and/or subjects you teach
- Where you teach
- What would you most like to get from this workshop?

Install Offline Editor..

- If you don't want to login to the scratch website
- If your Internet access has glitches (or you want to save your files locally)
- If you want capability to work offline
- If you want to use an older version (a standard app)
- To have experience for setting up student computers

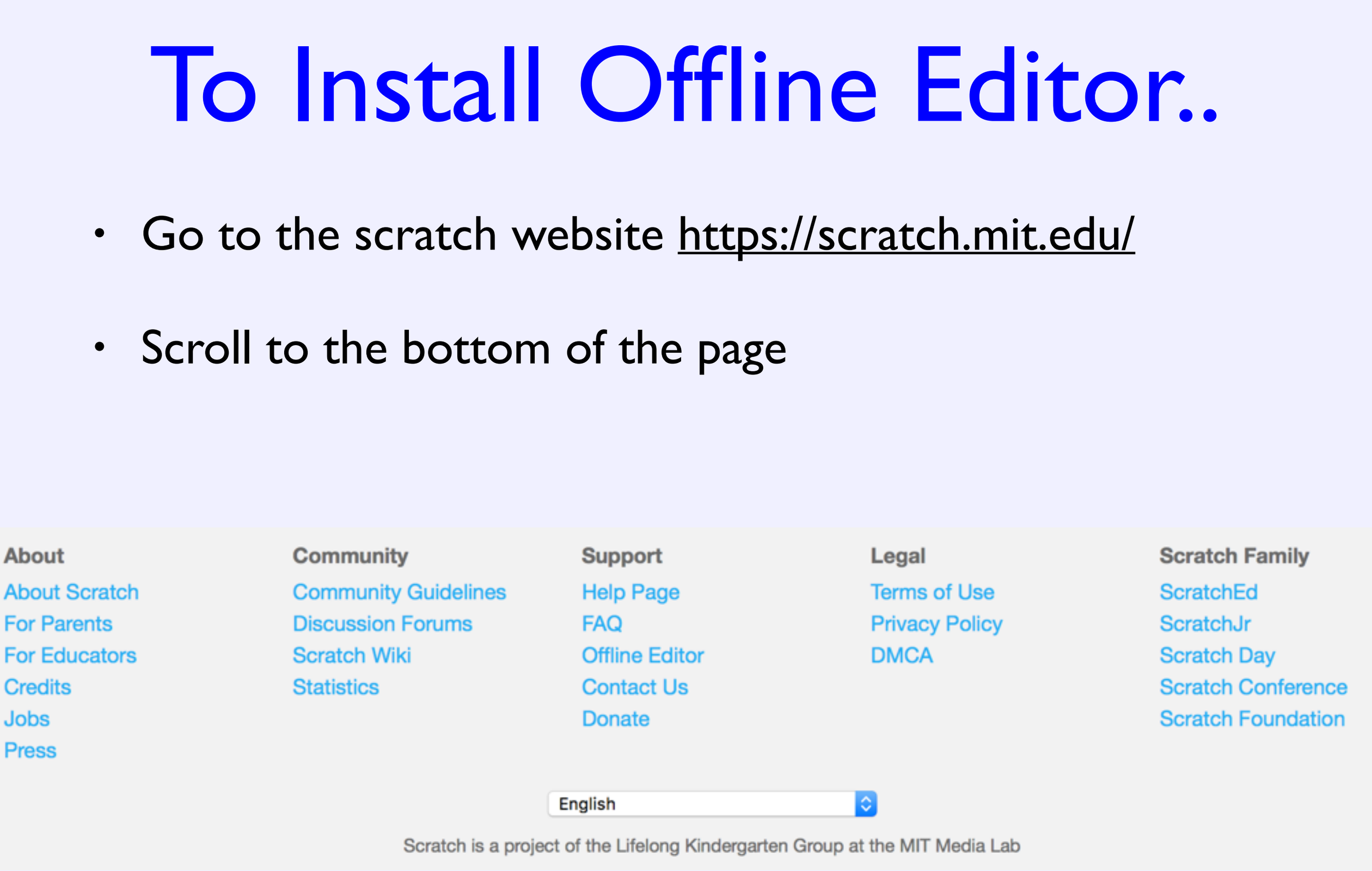
To Install Offline Editor..

- Go to the scratch website https://scratch.mit.edu/



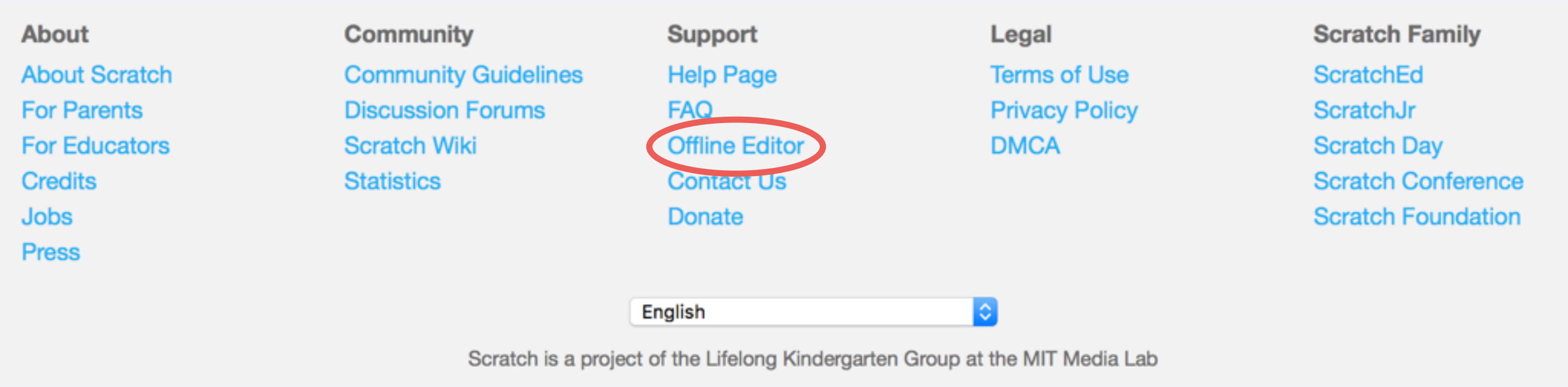
To Install Offline Editor..

- Go to the scratch website https://scratch.mit.edu/
- Scroll to the bottom of the page



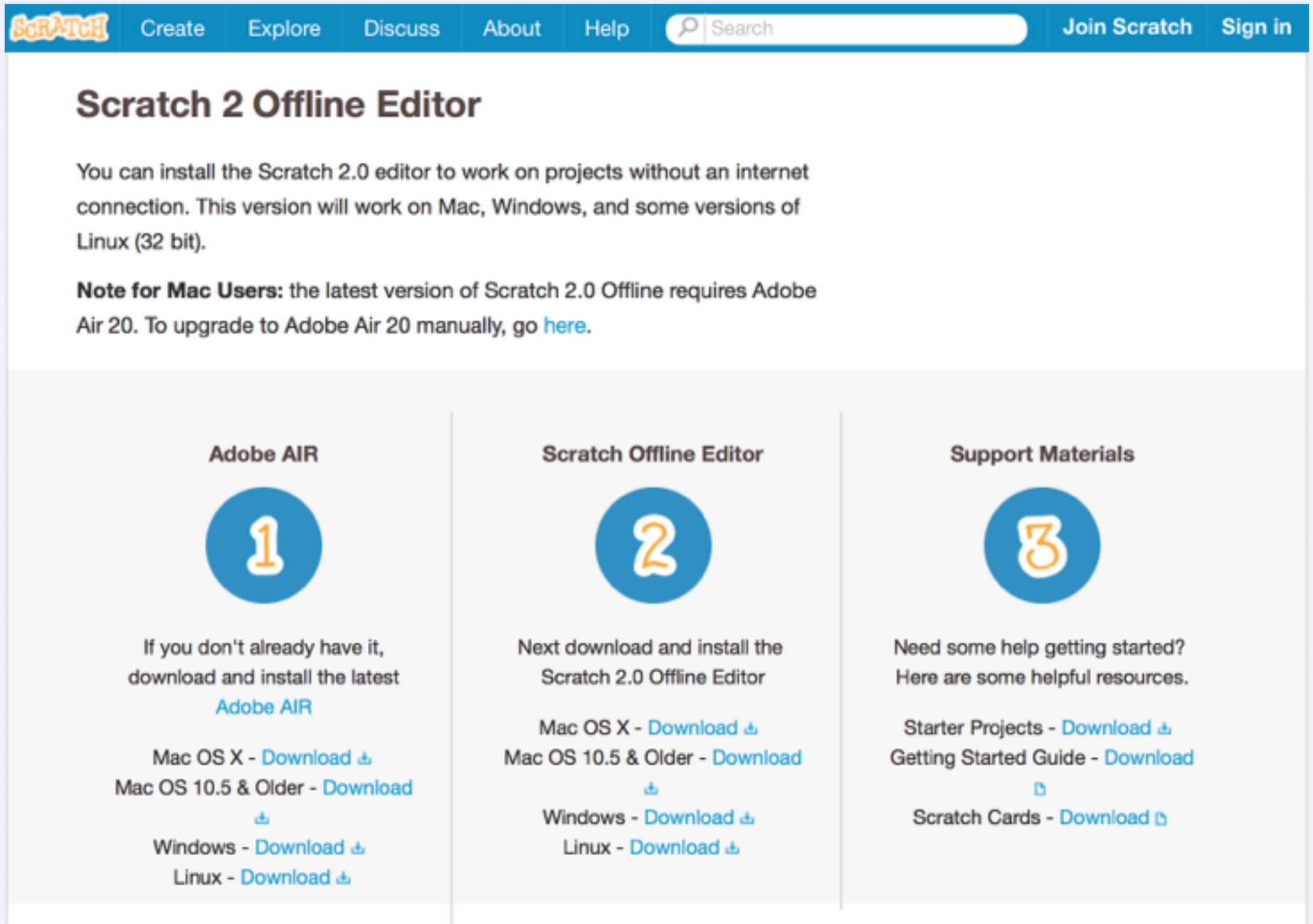
To Install Offline Editor..

- Go to the scratch website https://scratch.mit.edu/
- Scroll to the bottom of the page
- Click on Offline Editor



To Install Offline Editor..

- Follow instructions 1 and 2 on page



Scratch, from Scratch

- Computer Science and Scratch
- Editor tips
- Build a project, with add-ons
- (break)
- How might you guide students using Scratch?
- Learning more Scratch
- Scratch teaching resources

Now, let's explore

- Launch your offline editor OR

- Sign in (click "Sign in" at top right of scratch webpages) so you can save projects, then click "create" at top left for online editor.

Scratch 2 Offline Editor

SCRATCH File Edit Tips About

v444

Scripts Costumes Sounds

Motion Looks Sound Pen Data Events Control Sensing Operators More Blocks

move 10 steps
turn 15 degrees
turn 15 degrees
point in direction 90
point towards
go to x: 0 y: 0
go to mouse-pointer
glide 1 secs to x: 0 y: 0
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce

x: 0
y: 0

x: -130 y: 10

Sprites New sprite:

Stage
1 backdrop

New backdrop:

Sprite1

Scratch 2 Offline Editor

SCRATCH File Edit Tips About

Show Tips

v444

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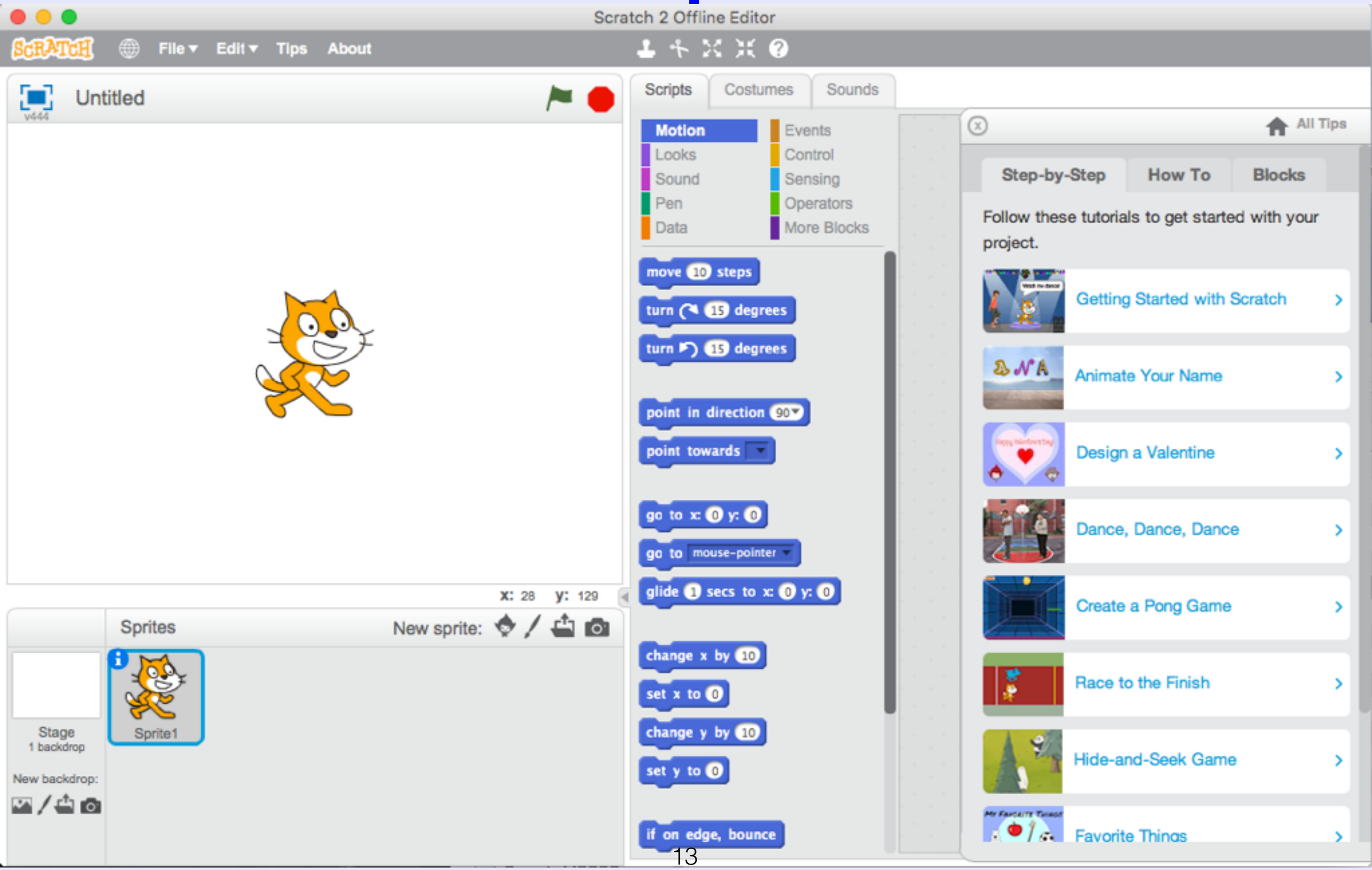
Show Tips

Tips


Scratch 2 Offline Editor
SCRATCH
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Untitled
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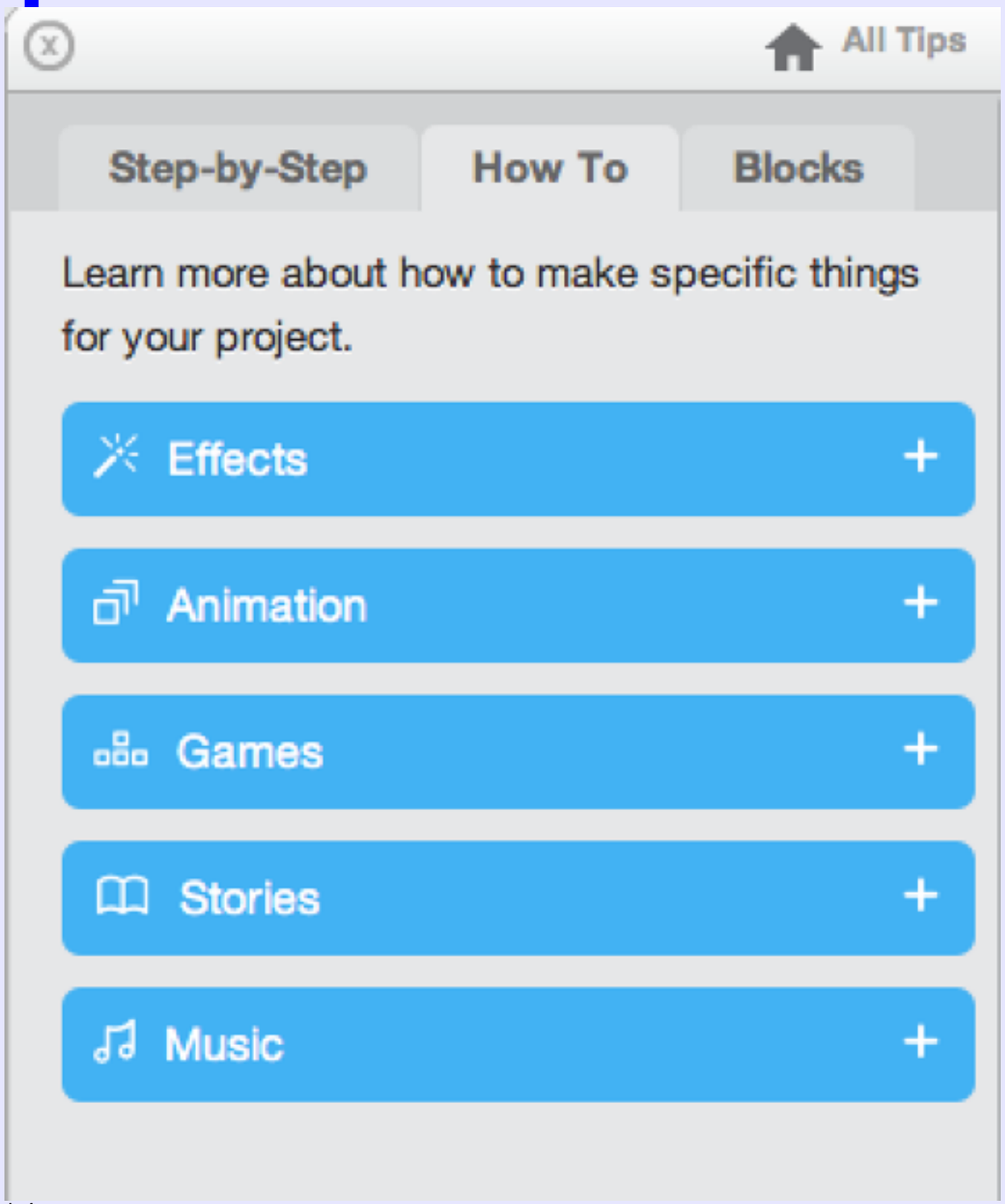
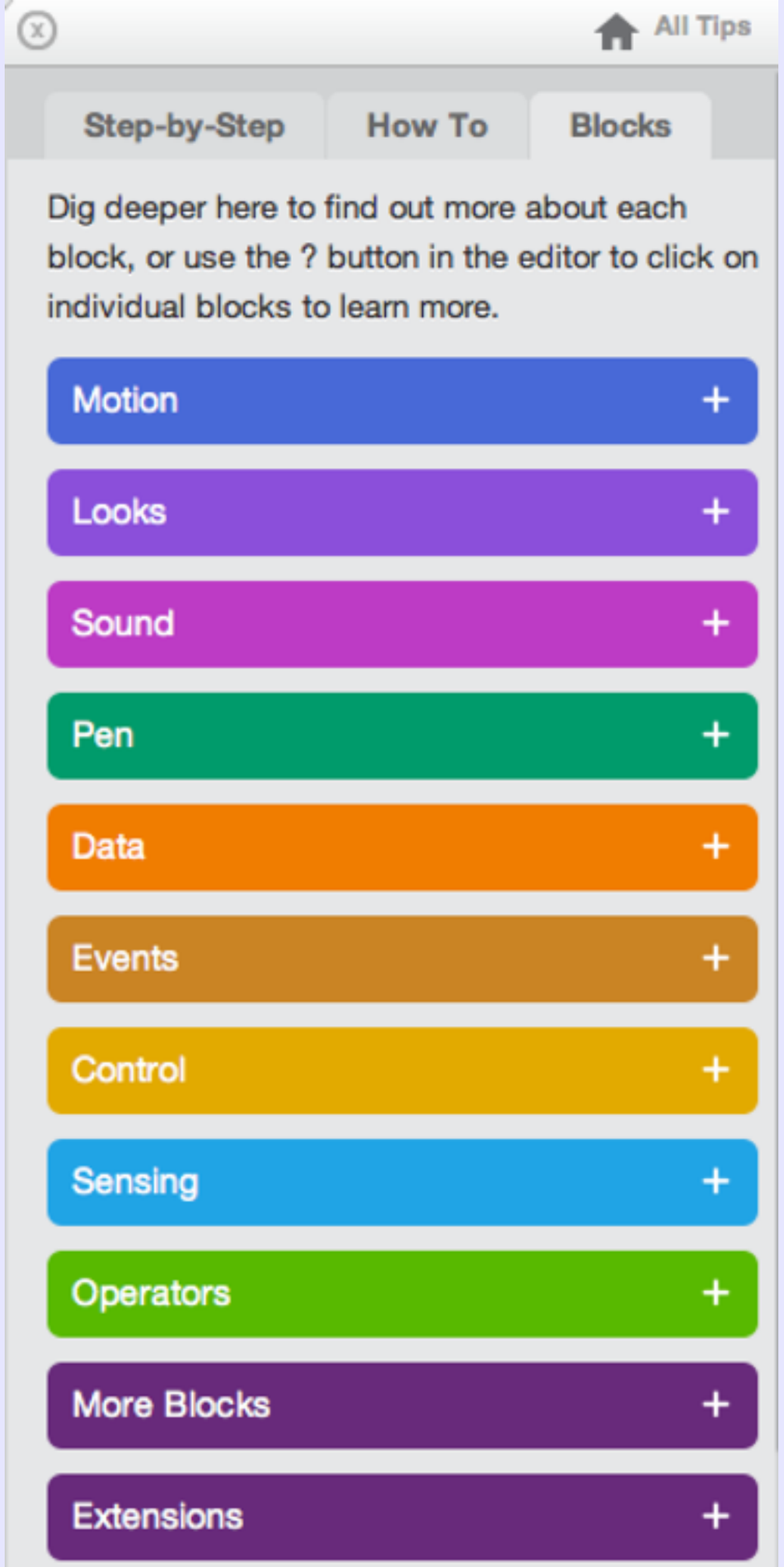
All Tips
Step-by-Step
How To
Blocks
Follow these tutorials to get started with your project.
Getting Started with Scratch
Animate Your Name
Design a Valentine
Dance, Dance, Dance
Create a Pong Game
Race to the Finish
Hide-and-Seek Game
Favorite Things

Tips


All Tips
Step-by-Step
How To
Blocks
Learn more about how to make specific things for your project.
Effects
Animation
Games
Stories
Music

Tips


All Tips
Step-by-Step
How To
Blocks
Dig deeper here to find out more about each block, or use the ? button in the editor to click on individual blocks to learn more.
Motion +
Looks +
Sound +
Pen +
Data +
Events +
Control +
Sensing +
Operators +
More Blocks +
Extensions +

There are several ways to learn scratch

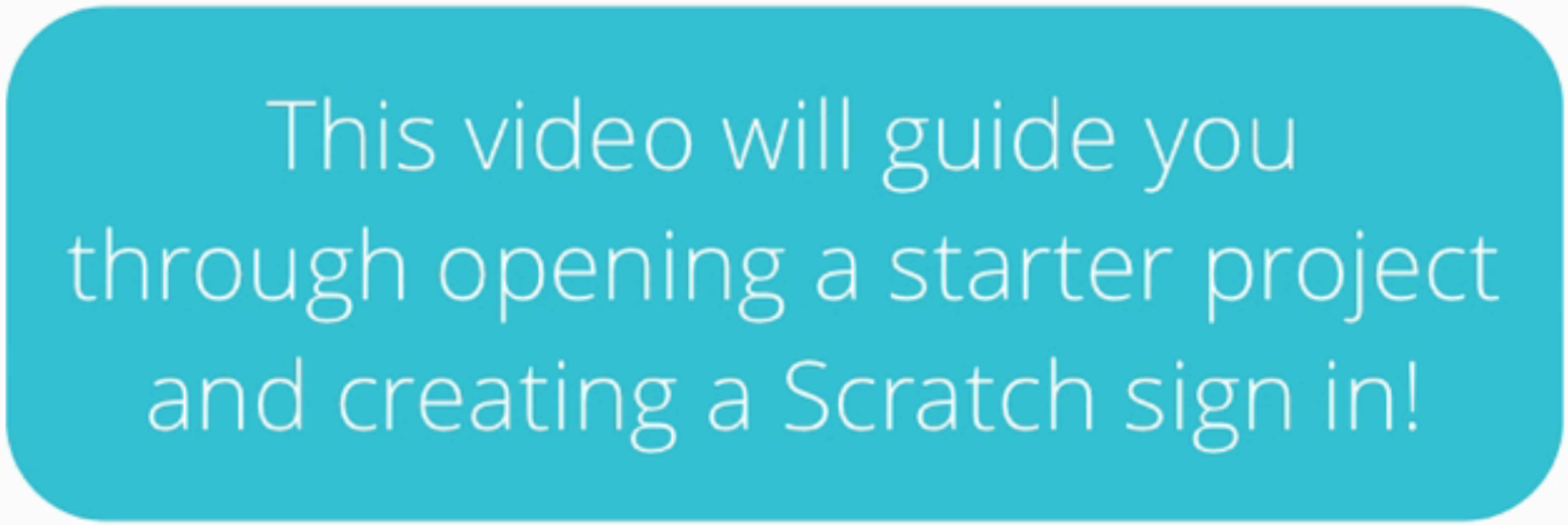
- Explore the editor and its tips
- Scratch website resources
- Other websites
- Workshops

from https://www.cs-first.com

Sample Activity

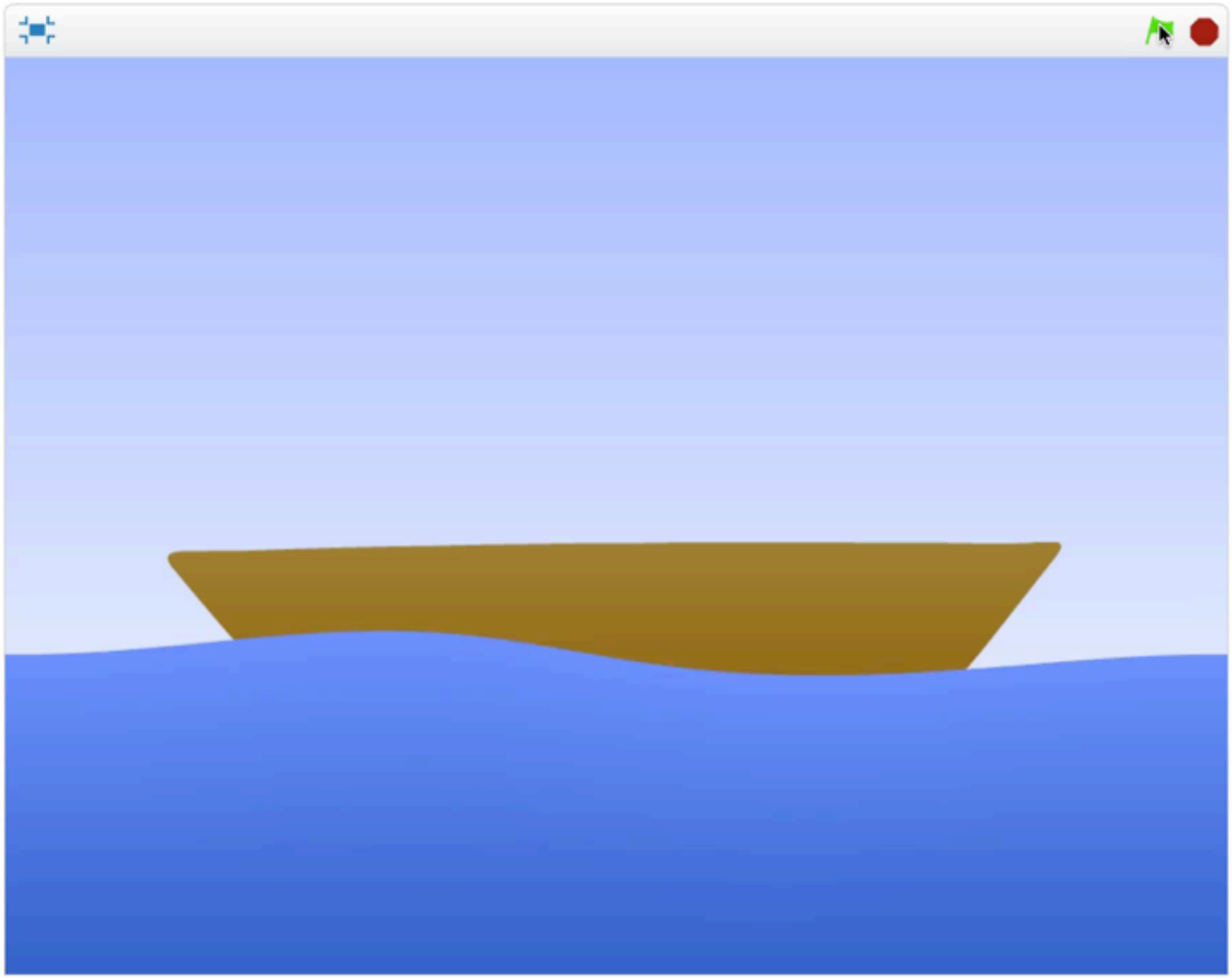
High Seas Introduction

from https://www.cs-first.com



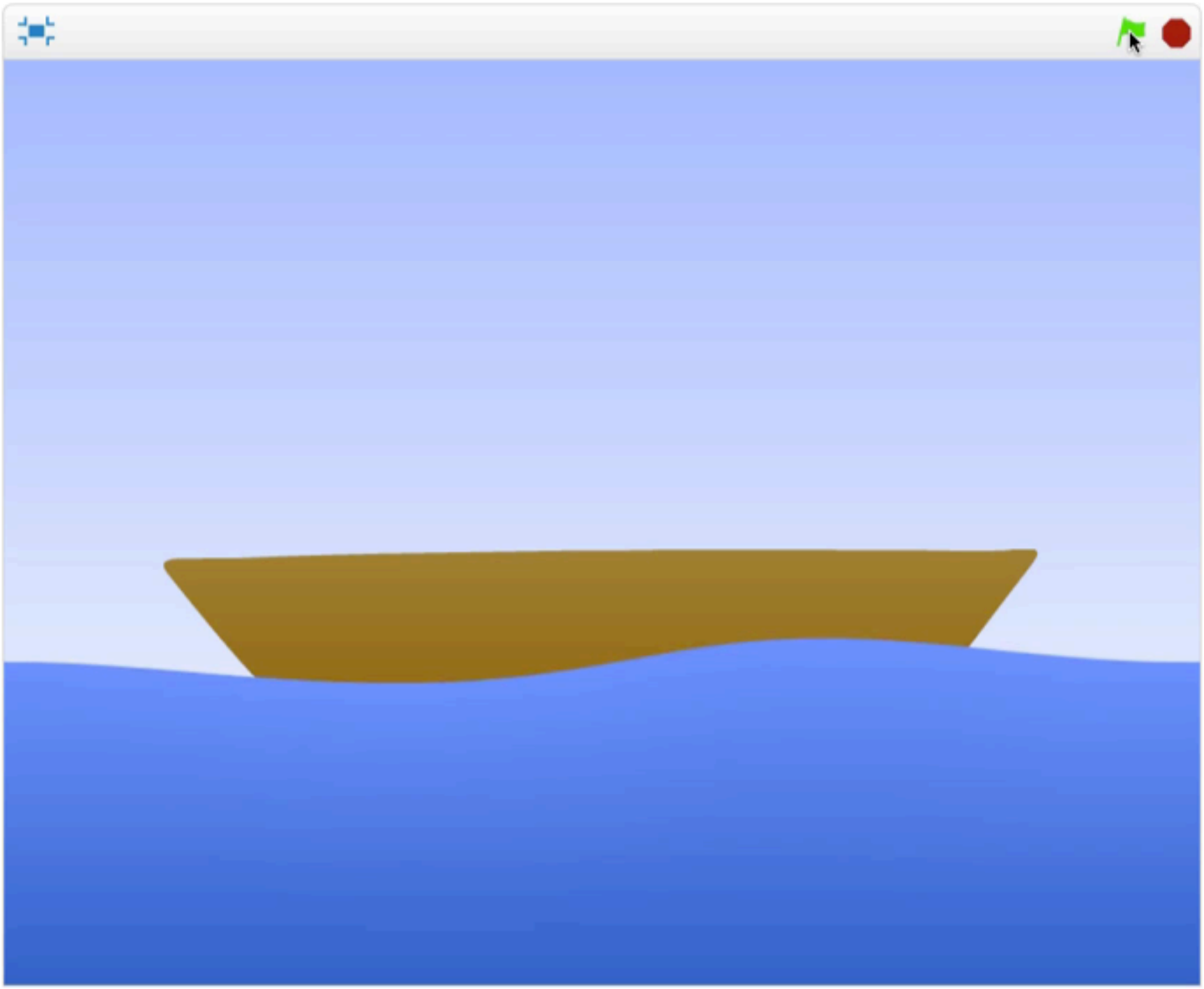
Video 2

from https://www.cs-first.com



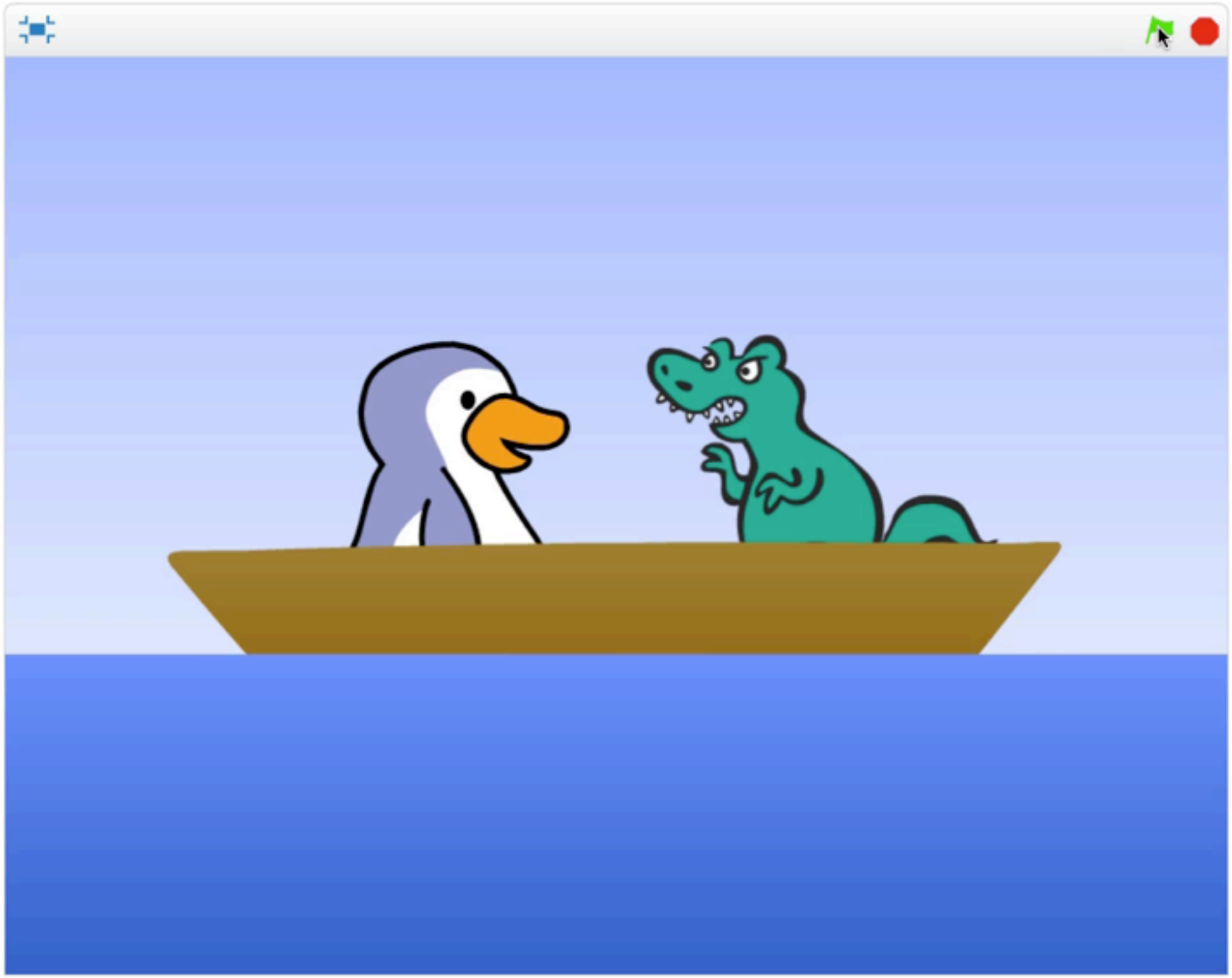
Video 3

from https://www.cs-first.com



Video 4

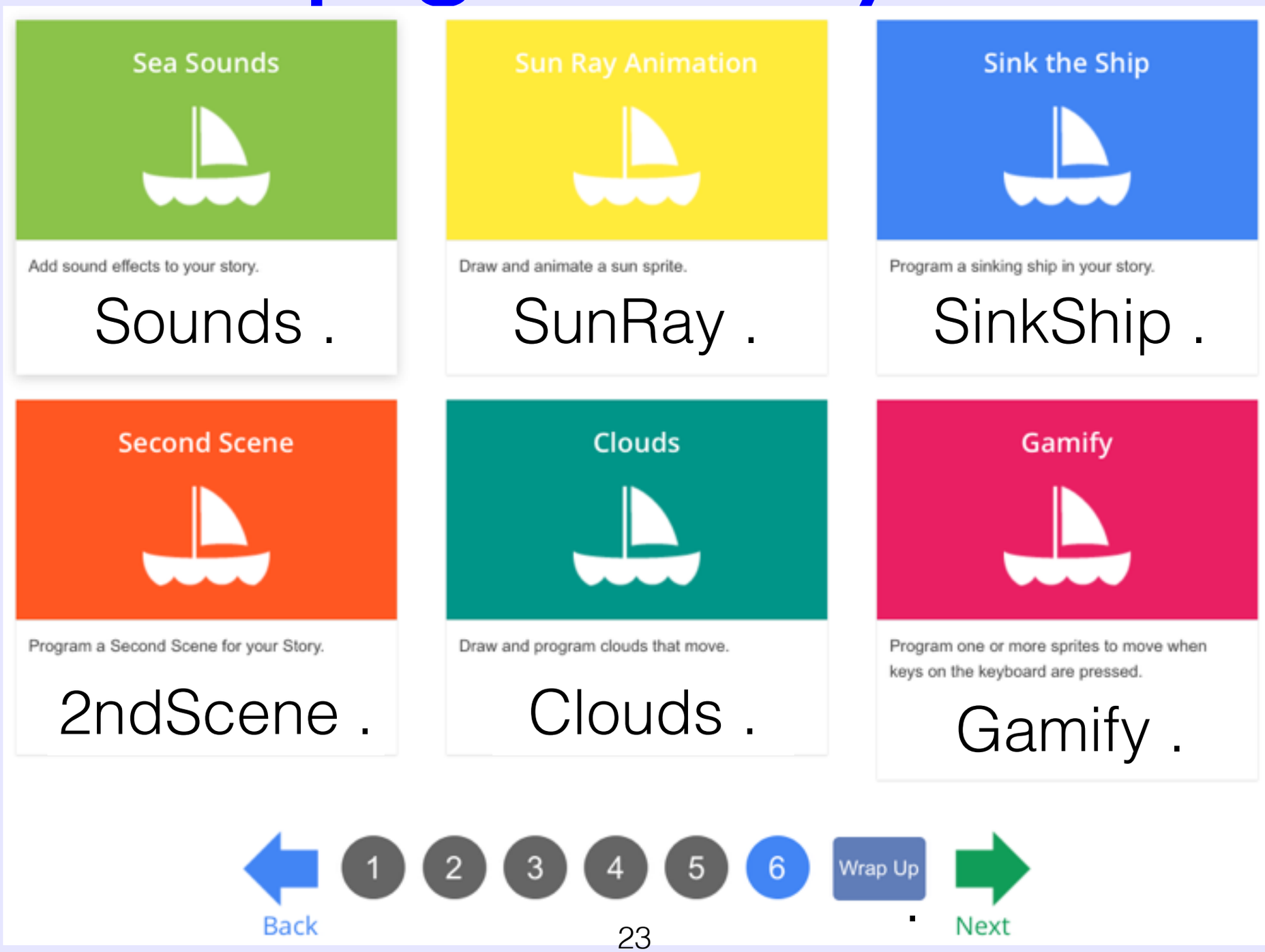
from https://www.cs-first.com



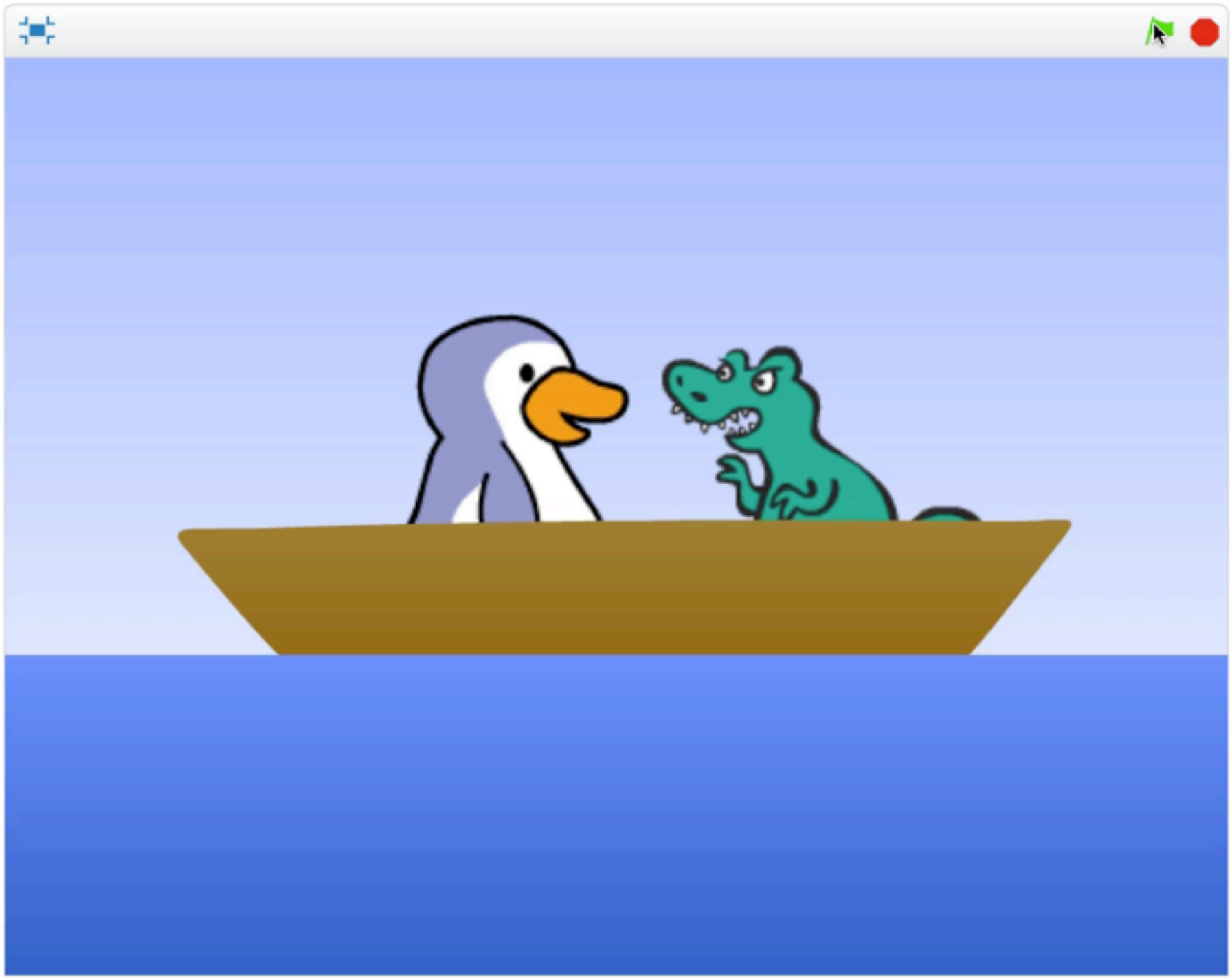
Video 5

from https://www.cs-first.com

https://www.cs-first.com/studentpage/activity-add-ons

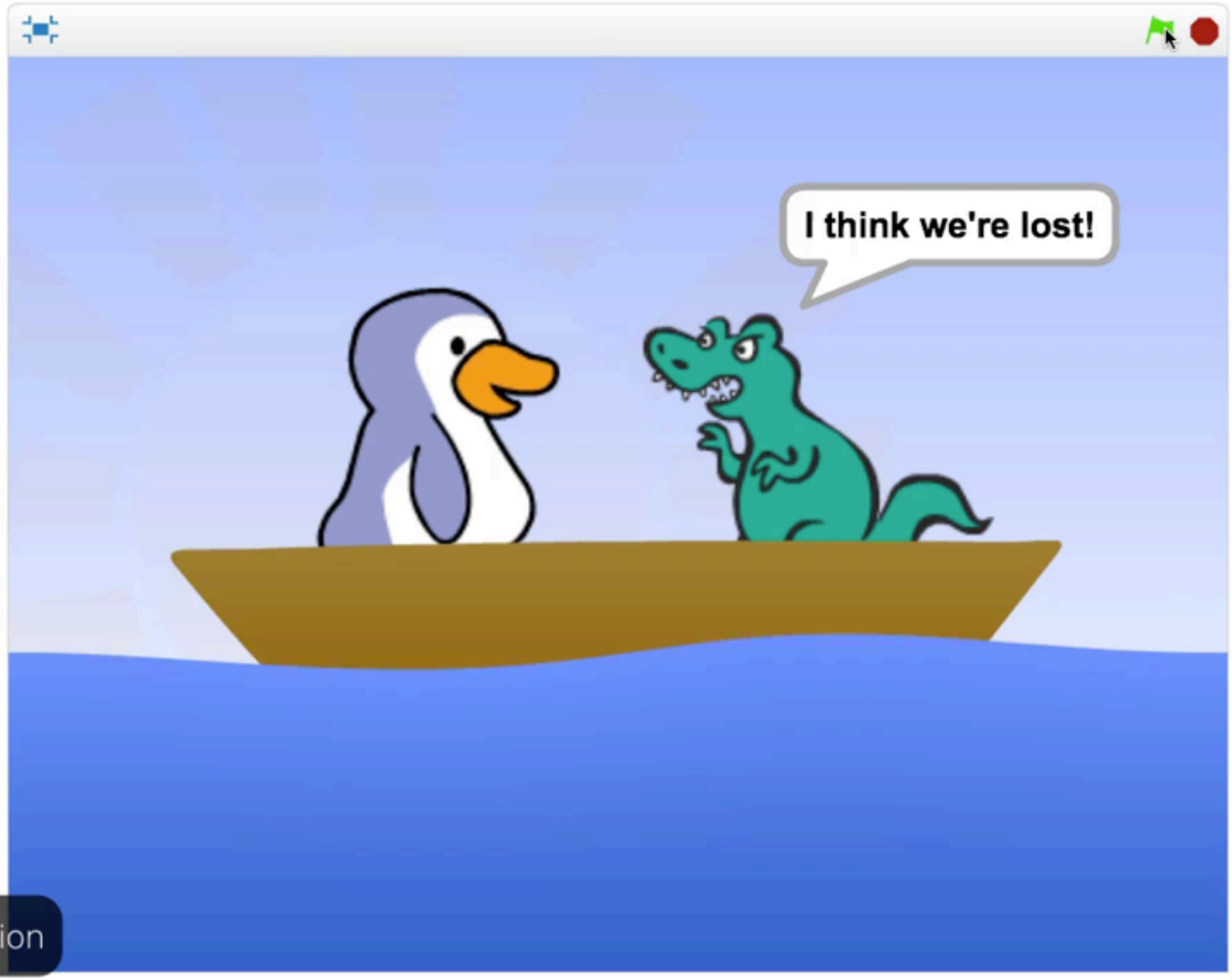


Sea Sounds



Sea Sounds

Sun Ray Animation

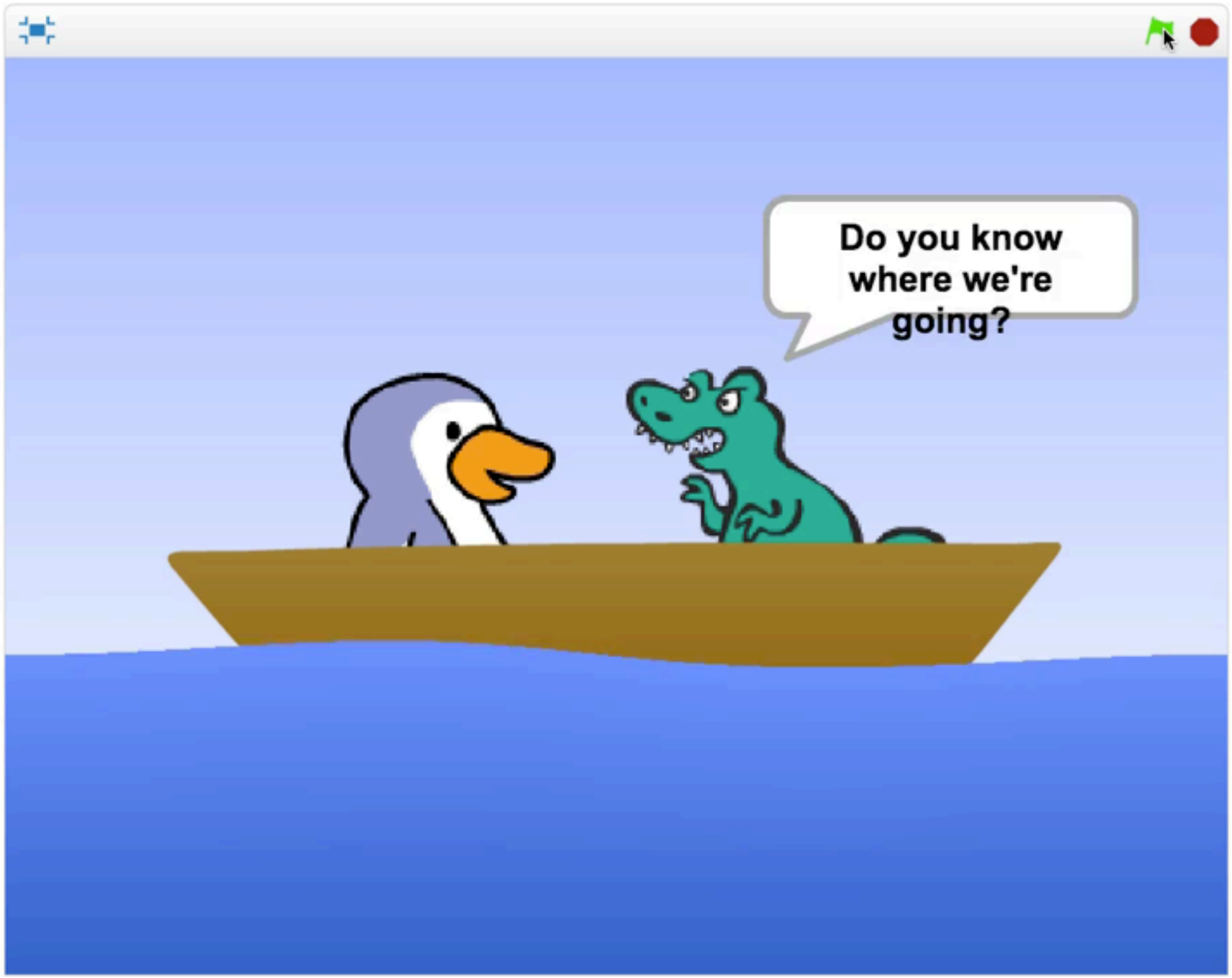


Sun Ray Animation

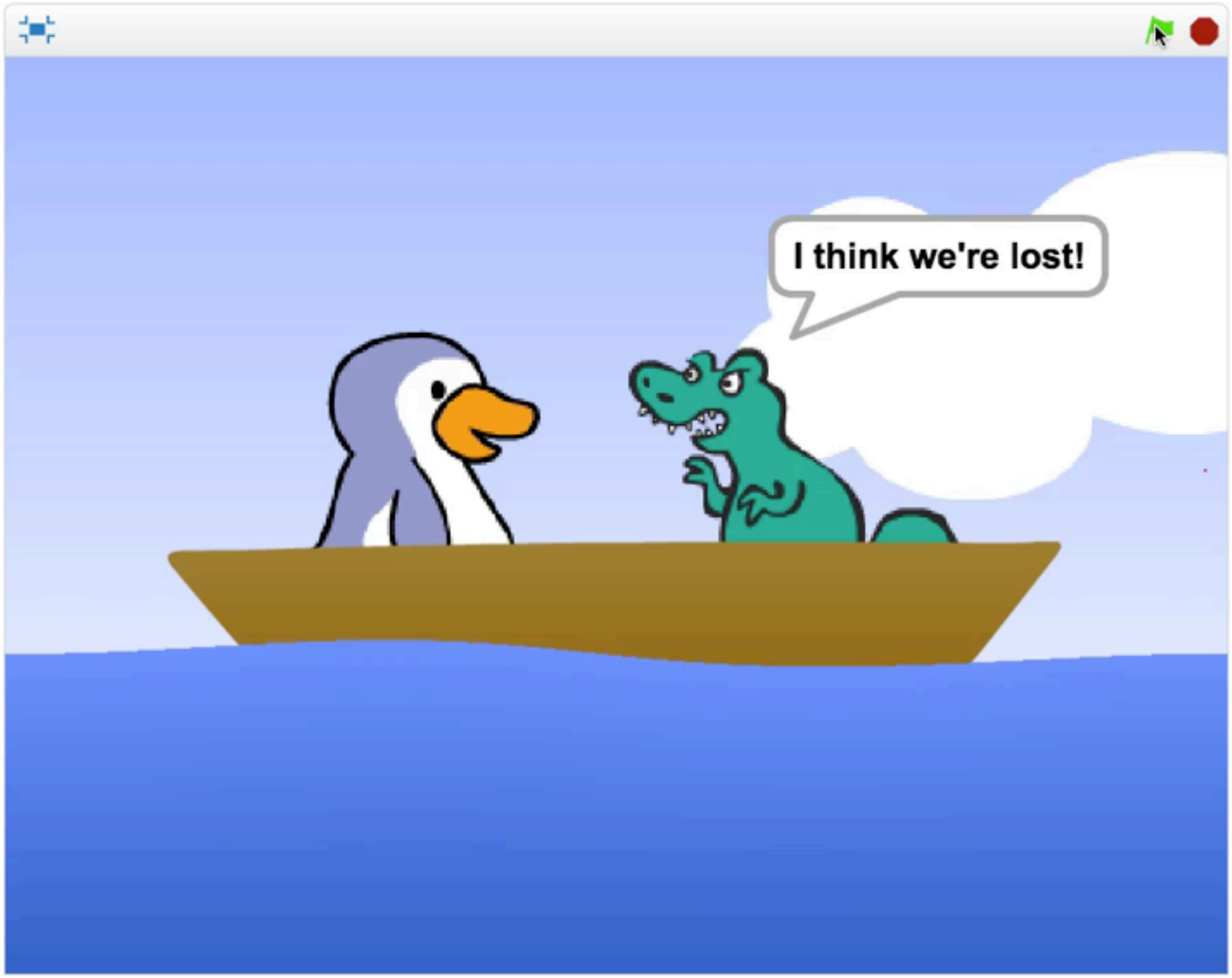
Sink the Ship

Sink the Ship!

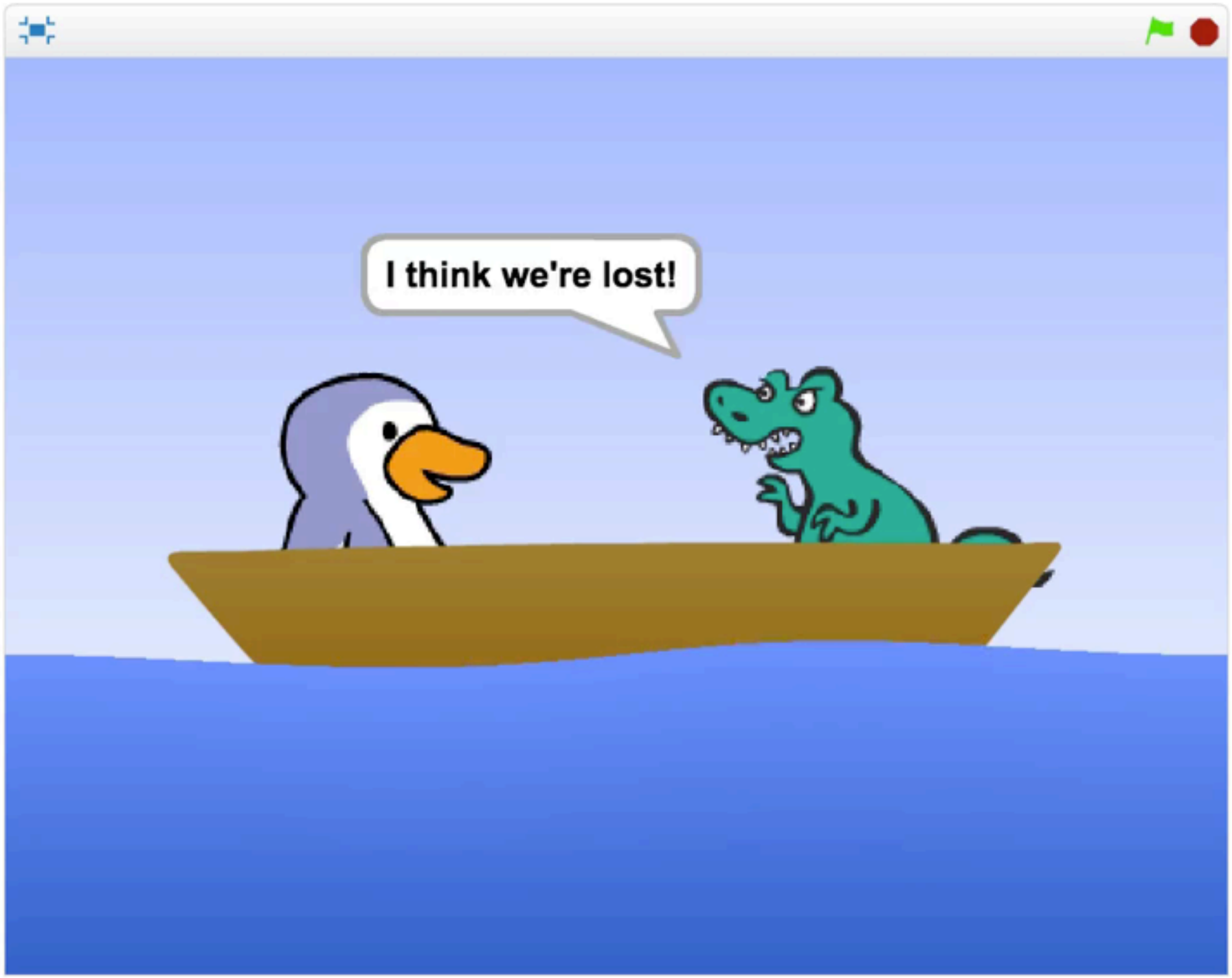
Second Scene



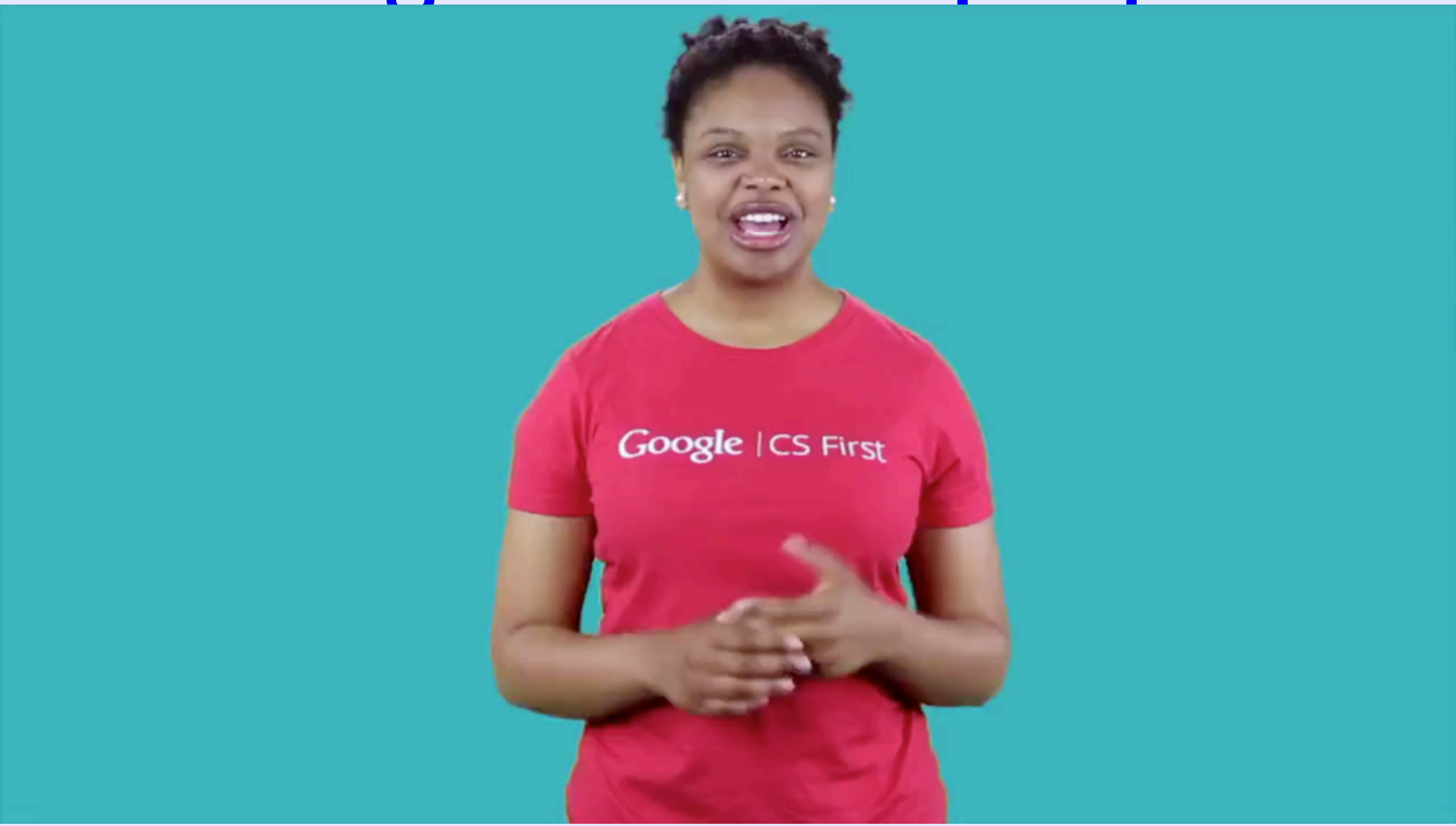
Clouds



Gamify



High Seas Wrap Up



Guide your students' interests

- Learn more about Scratch so you can

- Explore Scratch teaching materials so you can

Explore Scratch

- Explore the Scratch editor

- Explore https://scratch.mit.edu/

Explore Scratch Teaching

- Explore CS First: https://www.cs-first.com/materials

Google CS First

Students: Try Now! Sign in

About Start a Club Volunteer Advocate View Materials Resources Help

View Materials

High Seas Activity

Sample CS First with "High Seas," an introductory activity designed for use in a classroom setting or at a conference, hackathon, or other event. "High Seas" is a one-time, standalone activity and not part of a regular CS First theme or club, so it does not use or provide printed materials, usernames, or passwords.

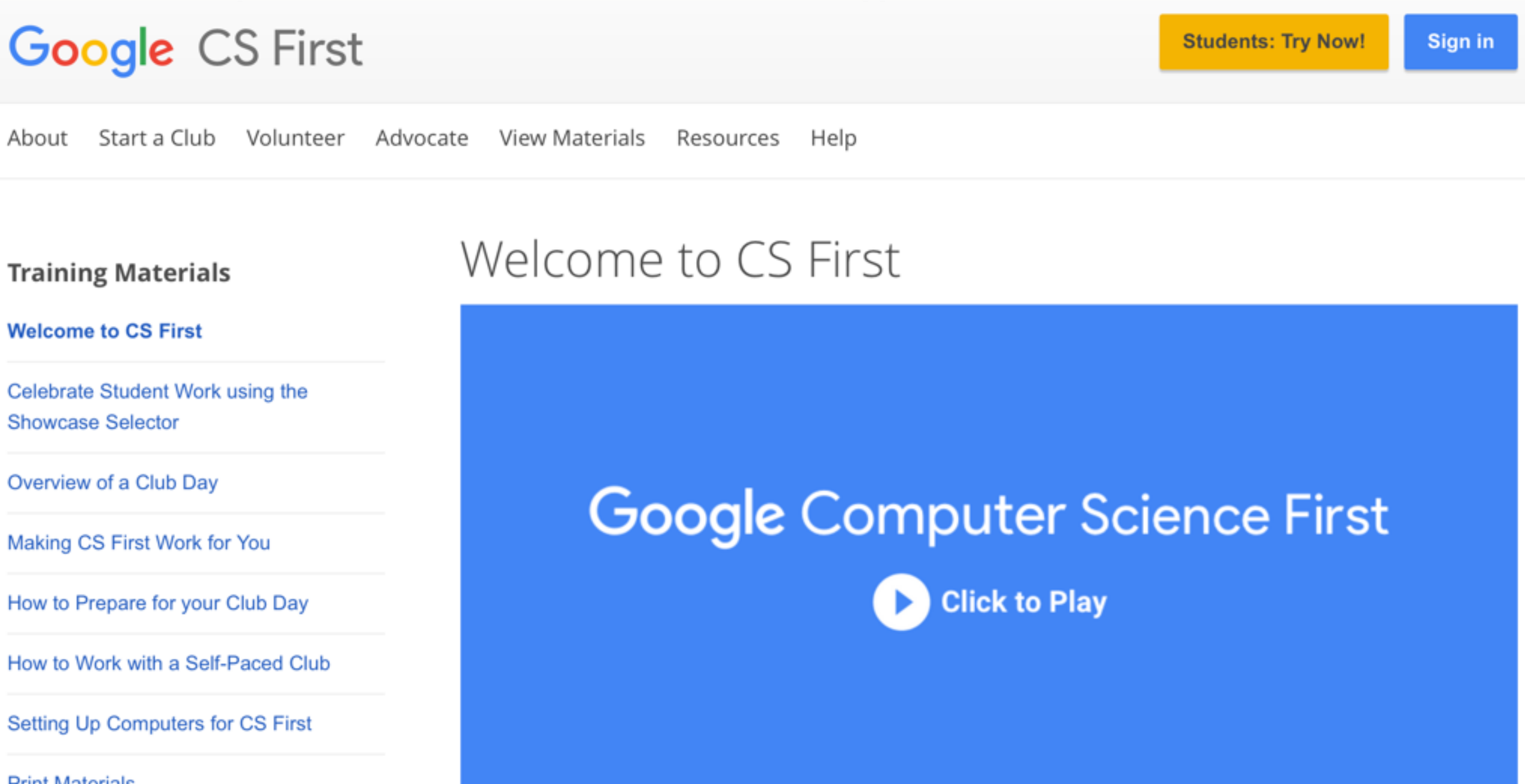
Try Now View Club Plans

Storytelling

In Storytelling, students use computer science to tell fun and interactive stories. Storytelling emphasizes creativity by encouraging club members to tell a unique story each day.

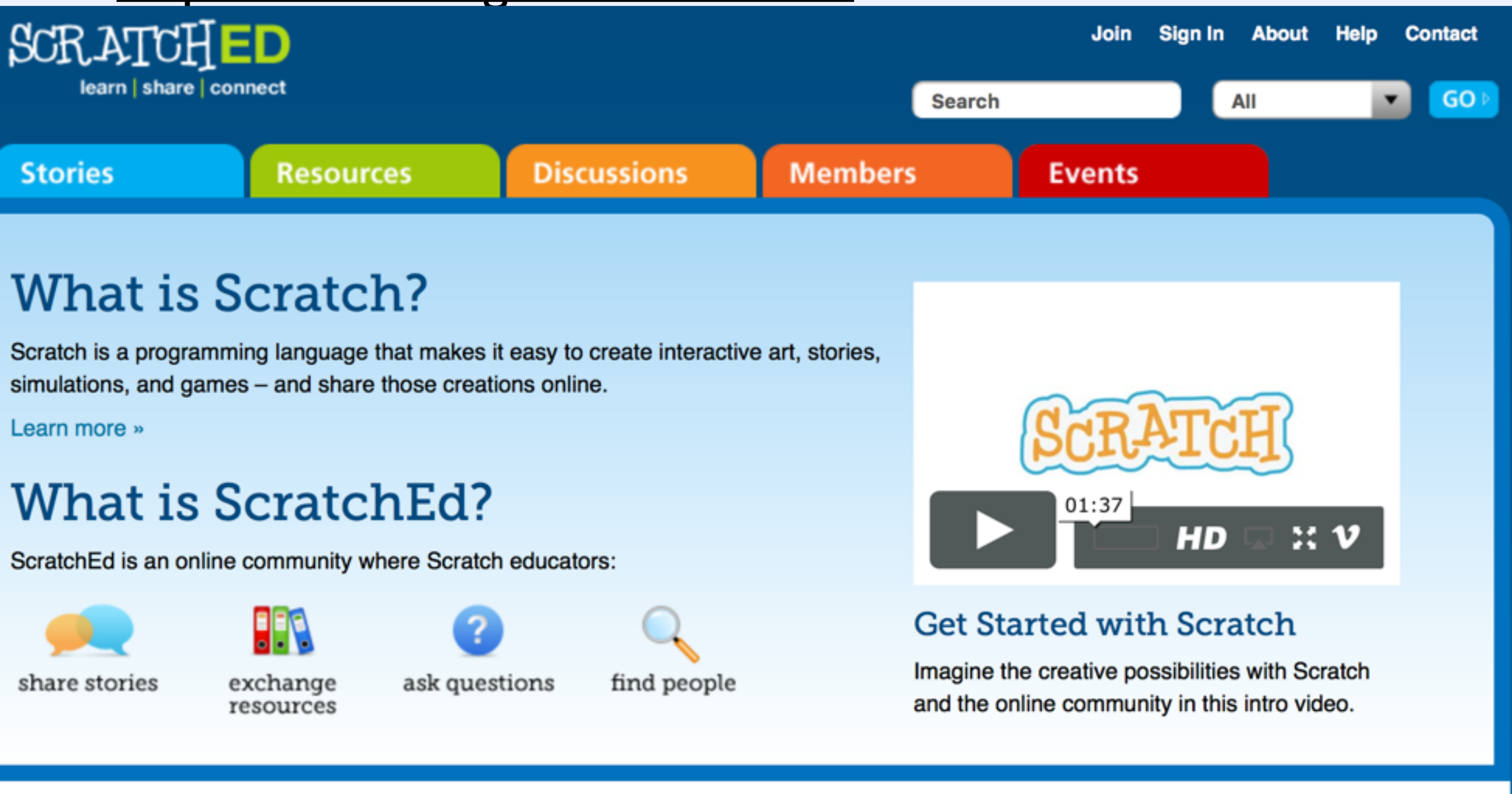
Explore Scratch Teaching

- https://www.cs-first.com/training/welcome-cs-first



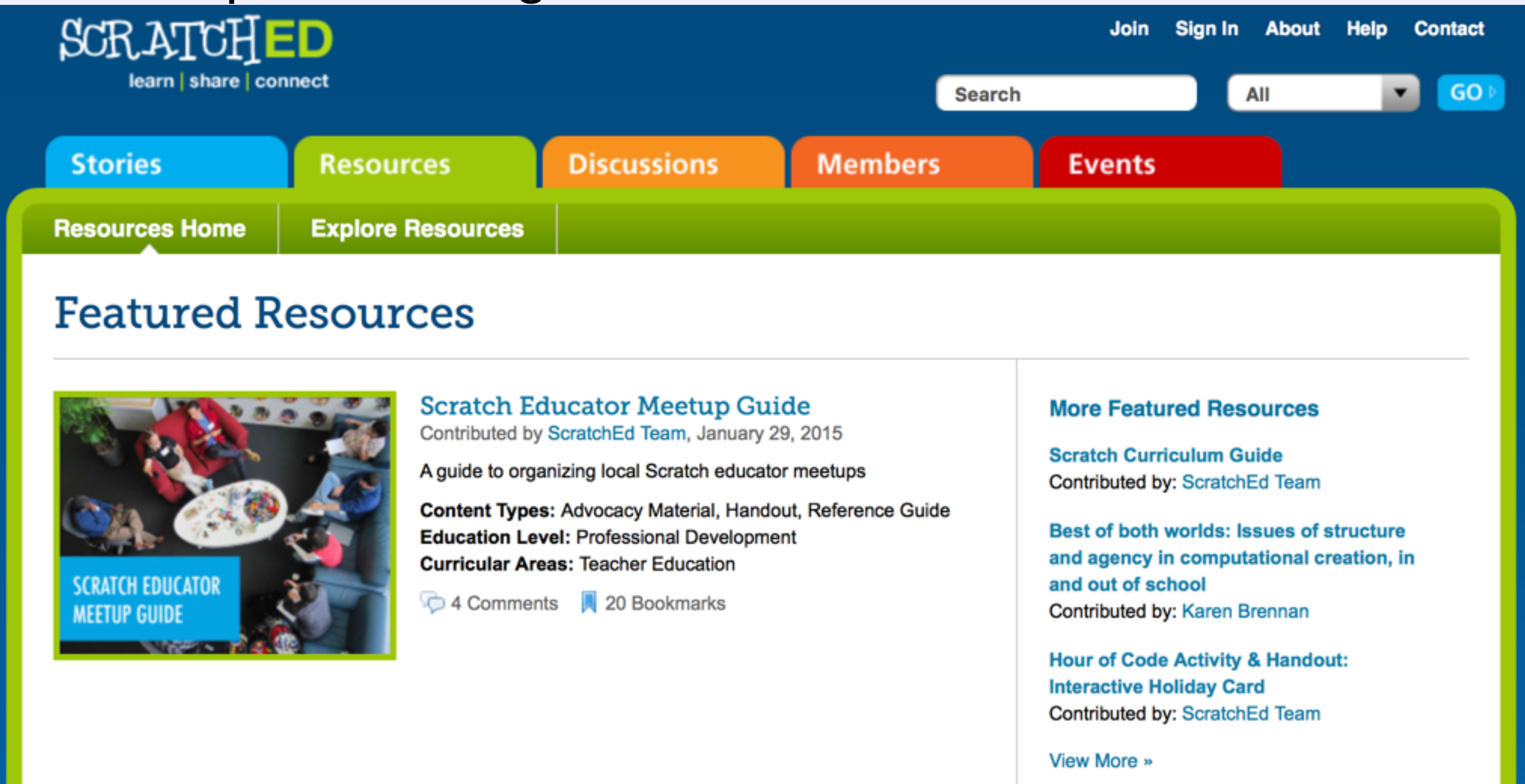
Explore ScratchEd

- http://scratched.gse.harvard.edu/



Explore ScratchEd Resources

- http://scratched.gse.harvard.edu/resources



Explore ScratchEd Resources

Search Resources

Education Level

- Preschool and Kindergarten (262)
- Elementary School (517)
- Middle School (478)
- High School (370)
- College and University (319)
- Professional Development (355)
- Other (253)

Content type

- Activity (338)
- Advocacy Material (54)
- Assessment (86)
- Audio and Video (158)
- Curriculum (111)
- Handout (210)
- Lesson Plan (187)
- Presentation (107)
- Reference Guide (51)
- Research (67)
- Sample Scratch Project (249)
- Textbook (40)
- Tool (50)
- Tutorial (187)
- Website (253)
- Other (54)

Curricular Area

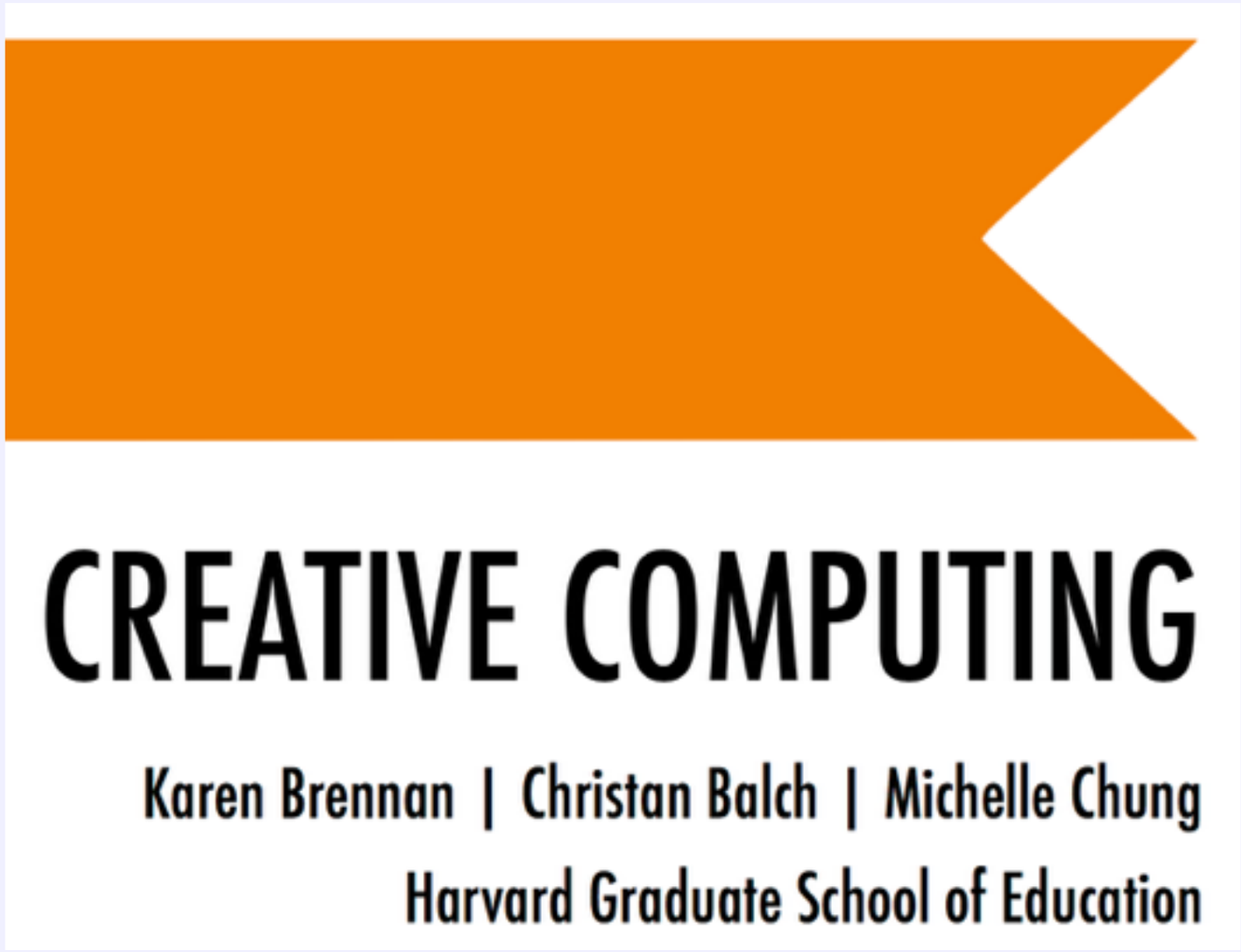
- Computer Science (539)
- Engineering (241)
- Language Arts (273)
- Mathematics (268)
- Music (212)
- Science (244)
- Social Studies (222)
- Teacher Education (305)
- Technology (386)
- Visual Arts (248)
- Other (271)

Language

- English (532)
- Español (128)
- Français (22)
- Deutsch (9)
- Português (12)
- Ελληνικά (3)
- Nederlands (Dutch) (7)
- 日本語 (1)
- 正體中文 (3)
- Other (35)

Explore ScratchEd Resources

- http://scratched.gse.harvard.edu/guide/files/CreativeComputing20141015.pdf



Guide your students' interests

- You may want to use other tools; where to go from Scratch
- What to consider when choosing

Where to go from Scratch

How Scratch compares to other programming languages

- Scratch is a graphical block language

- Several languages for young students use graphical blocks

- Several are more specialized (less general)

How Scratch compares to other programming languages

- Traditional computer languages are text based
  - Require precision
  - Can require patience for beginners
  - Are used by professionals
  - Are used in high school and college computer science

Which programming environment(s)?

- Is it suitable for your students (interests, age, and stage of development)
- Will it work well on computing equipment (at school, home, personal)
- How easy is it to learn compared to how much learning is possible (or likely)
- How much does it and teaching materials cost

Which programming environment(s)?

- Is it under active development
- Who is the developer
- How widely is it being used
- How "professional" is it

Hour of Code tutorials
https://code.org/educate/allhourofcode

Tutorials for Grades K-8

Tynker

Ages 5-13. Moder web browsers, iPad, Android. Learn to code by solving fun puzzles and build your own games.

- The Tynker Visual Programming Language is based on Open Web standards (HTML5, JavaScript, CSS) and works seamlessly across Web browsers and natively on mobile platforms (Android, iOS).

Scratch

Ages 8+. Desktop-only web browsers. Create your own interactive games, stories, and animations with Scratch!

- Offline editor runs on desktops and requires Adobe AIR. (Older version runs on older computers. ScratchJr runs on iPads.)

Lightbot

Ages 5-13. ALL browsers and iOS, Android, or Game Console. Program Lightbot to solve puzzles using procedures and loops!

- Solve Puzzles using Programming Logic

The Foos

Elementary (Pre-readers welcome). Modern web-browsers, iOS, Android. A fun game to learn about programming.

- Concepts: Problem Recognition, Conditionals, Critical Thinking, Perseverance, Sequencing, Algorithms, Loops, Commands/Parameters

Hour of Code tutorials

https://code.org/educate/allhourofcode

Tutorials for Grades K-8

Kodable

Elementary (Pre-readers welcome). Modern web-browsers, iPad. A fun iPad game to teach computer programming concepts.

- Grab and Go K-5 Solution. No programming experience needed

Monster Coding

Ages 5-13. Modern web browsers, iOS, Android. A colorful self-guided programming adventure for children.

- We think coding is a great way to learn many things, not just programming. So we've incorporated a lot of cool math learning blocks, as well as shapes and patterns.

AllCanCode

Ages 5-10. Modern web browsers, iOS. An immersive game to guide Marco with a visual programming language.

- Run Marco! A coding adventure around the world.

CS First

Ages 9-14. Modern web-browsers. Animate a story about two characters on the ocean. Add your own style!

- Theme-Based Clubs
- Each CS First club is based on a real-world theme and offers about 10 hours worth of lessons and activities. The different club themes aim to attract and engage students of varying backgrounds and interests. All materials are targeted at students in 4th - 8th grades (or between the ages of 9 - 14) and are free and easy to use.
- CS First is a free program that increases student access and exposure to computer science (CS) education through after-school, in-school, and summer programs. All clubs are run by teachers and/or community volunteers.
- Our materials: Are completely free and available online, are targeted at students in grades 4th-8th (ages 9-14), can be tailored to fit your schedule and needs, involve block-based coding using Scratch and are themed to attract students with varied interests

Hour of Code tutorials

https://code.org/educate/allhourofcode

Tutorials for Grades K-8

Inside Out - Made With Code

Ages 9-14. Modern web-browsers. Help Riley from the Pixar animated movie Inside Out, write code to help her make it past some of the life challenges she experiences during the movie.

- Less than 1% of girls study Computer Science. Let's change that.

NCLab: Karel the Robot

Elementary. Web-based. Learn basic concepts of Computer Science by typing programs for a robot.

- NCLab's mission to bring access and equity in STEM education to all learners, especially the under served, by providing them with technological opportunities that engage them, ignite their curiosity, and personalize & tailor their learning. NCLab makes sure that its users achieve their STEM education goals through the use of innovative self-paced online courses in computer programming, 3D modeling, and other essential STEM subjects. NCLab is passionate about training and supporting teachers who are and will remain an indivisible part of the educational process.

Alice Project

Elementary. Desktop or Game Console. Create an Alice animation with Garfield the Cat using two tutorials: Tutorial 1 sets up the scene. Tutorial 2 writes the program code.

- Alice is an innovative 3D programming environment that makes it easy to create an animation for telling a story, playing an interactive game, or a video to share on the web. Alice is a freely available teaching tool designed to be a student's first exposure to object-oriented programming. It allows students to learn fundamental programming concepts in the context of creating animated movies and simple video games. In Alice, 3-D objects (e.g., people, animals, and vehicles) populate a virtual world and students create a program to animate the objects.

Hour of Code tutorials
https://code.org/educate/allhourofcode

Tutorials for Grades K-8

Coding Pirates
Elementary. Web-based, Android, iOS. Learn to code with Captain Hack by visually programming with blocks.

- Requires app or unity webplayer-mini plugin.

- **Thimble** is an online code editor that makes it easy to create and publish your own web pages while learning HTML, CSS & JavaScript.

Acknowledgments

- Scratch: https://scratch.mit.edu/
- ScratchEd: http://scratched.gse.harvard.edu/
- CS First: https://www.cs-first.com/
- Code . org: https://code.org/
- Hour of code tutorials: https://code.org/educate/allhourofcode

Links

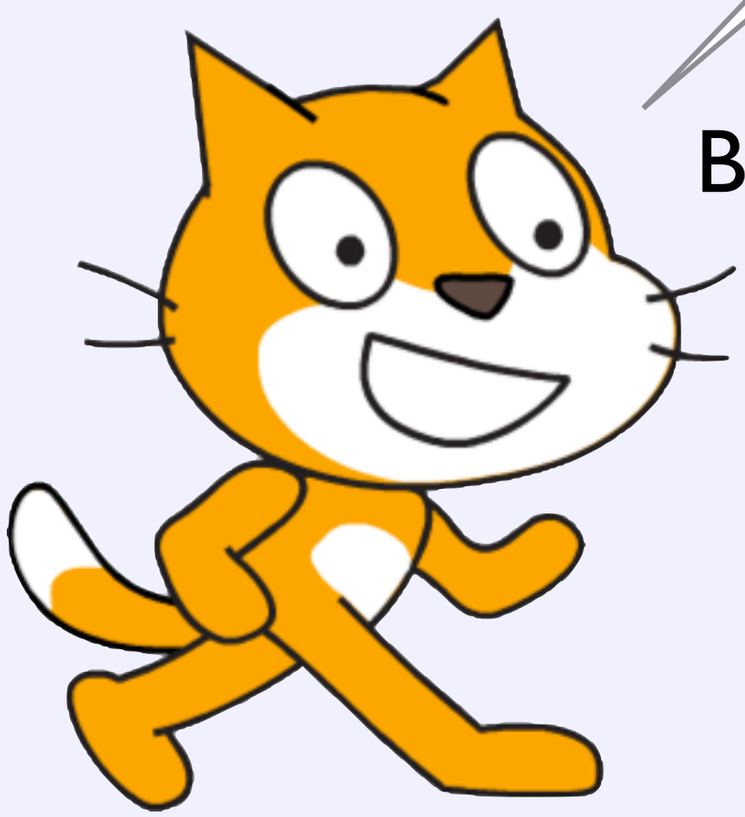
- MACUL SIGCS (Special Interest Group for Computer Science): http://www.macul.org/sigs/sigcs/

- MiCSTA (Michigan Computer Science Teachers Association): http://barrywebster.com/micsta.html

- CSTA: (Computer Science Teachers Association): https://csta.acm.org/

- My website: http://barrywebster.com/

Thank you for participating!



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