

Title: *Programming with SCRATCH – Make It Fly*

Subject Area: Computer Science

Grade Level: 2 (suitable for 8 and older)

Related Standards of Learning:

CSTA K-12 Computer Science Standards

CPP - Computing Practice & Programming
CT - Computational Thinking

ISTE Standards for Students

1 - Creativity and Innovation
2 - Communication and Collaboration
4 - Critical Thinking, Problem Solving, and Decision Making
6 - Technology Operations and Concepts

Common Core English Language Arts Standards

L – Language
SL - Speaking & Listening

Common Core Math Standards

G – Geometry
MP - Math Practices

Classroom Set-up:

1. Students need a computer or tablet with Internet connection.
2. Students need accounts for SCRATCH. Instructor needs Teacher account and student accounts can be established under Teacher account. Accounts can be obtained at SCRATCH.MIT.EDU
3. Projector for Powerpoint slides and videos

Objective:

Animate the Scratch Cat, The Powerpuff Girls, or even a taco, and make it fly!

Scratch is a programming language and online community where you can create your own interactive stories, games, and animations -- and share your creations with others around the world. In the process of designing and programming Scratch projects, young people learn to think creatively, reason systematically, and work collaboratively. To learn more about Scratch, check out the [About Scratch](#) page.

The ability to code computer programs is an important part of literacy in today's society. When people learn to code in Scratch, they learn important strategies for solving problems, designing projects, and communicating ideas. Scratch is designed especially for ages 8 to 16.

Summary:

Please refer to <https://resources.scratch.mit.edu/www/guides/en/FlyGuide.pdf> for the Educator's Guide for this lesson. The guide is also pasted below in the Description section.

Vocabulary:

This lesson has two vocabulary word that are important to review:

- Al-go-ri-thm is a list of steps that you can follow to finish a task
- Pro-gram is an algorithm that has been coded into something that can be run by a machine

Materials:

Computers/laptops and power point slides.

Procedure:


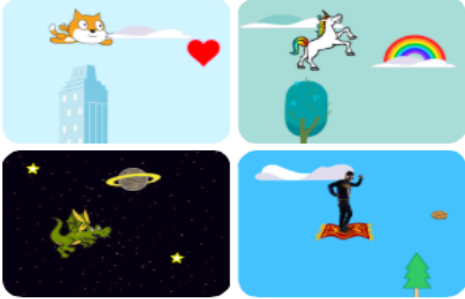




Play introductory Computer Science videos. See Slides below for useful links. Play video of the Lesson at <https://scratch.mit.edu/projects/171030263/#editor>





Project on screen and demonstrate step by step instruction. See steps below.


Use Educator resources at <https://scratch.mit.edu/tips>.


Programming Steps: Make It Fly

1. [Choose a Character](#)
2. [Prepare to Fly](#)
3. [Add Scenery](#)
4. [Make It Move](#)
5. [Switch Looks](#)
6. [Paint the Sky](#)
7. [Make It Interactive](#)
8. [Add Things in the Sky](#)
9. [Customize and Enhance](#)
10. [Share Your Project](#)

<p>MAKE IT FLY / EDUCATOR GUIDE </p> <h2>EDUCATOR GUIDE</h2> <h1>Make It Fly</h1> <p>With this guide, you can plan and lead a one-hour workshop using Scratch. Participants will choose a character and program it to fly.</p>  <p>SCRATCH EDUCATOR GUIDE • scratch.mit.edu/go 1</p>	<p>MAKE IT FLY / EDUCATOR GUIDE </p> <h2>Workshop Overview</h2> <p>Here's a suggested agenda for a one-hour workshop:</p> <p> IMAGINE 10 minutes</p> <p>First, gather as a group to introduce the theme and spark ideas.</p> <p> CREATE 40 minutes</p> <p>Next, help participants as they animate their names, working at their own pace.</p> <p> SHARE 10 minutes</p> <p>At the end of the session, gather together to share and reflect.</p> <p>SCRATCH EDUCATOR GUIDE • scratch.mit.edu/go 2</p>
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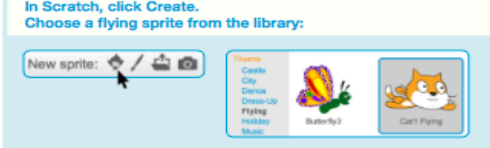
<p>MAKE IT FLY / EDUCATOR GUIDE </p> <h2>Get Ready for the Workshop</h2> <p>Use this checklist to prepare for the workshop.</p> <p><input type="checkbox"/> Preview the Tutorial The <i>Make It Fly</i> tutorial shows participants how to create their own projects. Preview the tutorial before your workshop and try the first few steps: scratch.mit.edu/fly</p> <p><input type="checkbox"/> Print the Activity Cards Print a few sets of <i>Make It Fly</i> cards to have available for participants during the workshop. scratch.mit.edu/fly/cards</p> <p><input type="checkbox"/> Make sure participants have Scratch accounts Participants can sign up for their own Scratch accounts at scratch.mit.edu, or you can set up student accounts if you have a Teacher Account. To request a Teacher Account, go to: scratch.mit.edu/educators</p> <p><input type="checkbox"/> Set up computers or laptops Arrange computers so that participants can work individually or in pairs.</p> <p><input type="checkbox"/> Set up a computer with projector or large monitor You can use a projector to show examples and demonstrate how to get started.</p> <p>SCRATCH EDUCATOR GUIDE • scratch.mit.edu/go 3</p>	<p>MAKE IT FLY / EDUCATOR GUIDE </p> <h2>Imagine</h2> <p> IMAGINE</p> <p>Begin by gathering the participants to introduce the theme and spark ideas for projects.</p> <p>Warm-up Activity: If I Could Fly...</p> <p>Gather the group in a circle and ask, "If you could fly, where would you want to go?" Suggest that they close their eyes and imagine flying through their favorite place. Ask, "Where are you? What kinds of things do you see below you?" If there's time, have each person say where they imagined flying or something they saw on their flight.</p> <p>Provide Ideas and Inspiration</p> <p>Show the introductory video for the <i>Make It Fly</i> tutorial. The video shows a variety of projects for ideas and inspiration.</p>  <p>View at scratch.mit.edu/fly or vimeo.com/ilk/fly</p> <p>SCRATCH EDUCATOR GUIDE • scratch.mit.edu/go 4</p>
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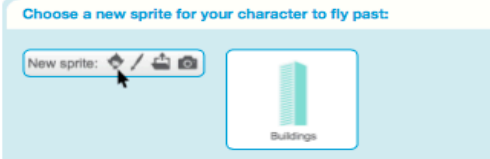
Demonstrate the First Steps 

Demonstrate the first few steps of the tutorial so participants can see how to get started.

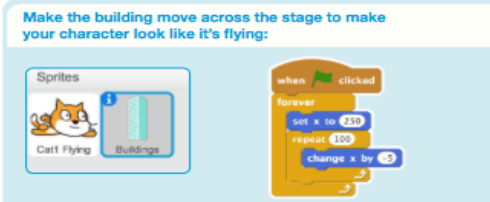
In Scratch, click Create. Choose a flying sprite from the library:



Choose a new sprite for your character to fly past:



Make the building move across the stage to make your character look like it's flying:



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Create 

Support participants as they make a flying animation.

Start with Prompts
Ask participants questions to get started

What character would you like to make fly? Where will your character go flying?

Provide Resources
Offer options for getting started




Some participants may want to follow the online tutorial: scratch.mit.edu/fly


Others may want to explore using the printed activity cards.

Suggest Ideas for Starting

- Choose a character
- Make the character say something
- Choose buildings or other scenery
- Make the scenery move


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More Things to Try

- Switch costumes to change the scenery.
- Make your character move when you press a key.
- Add clouds and other floating objects.
- Collect points when touching an object.



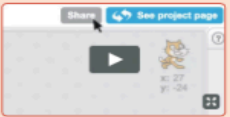
Encourage Debugging

Here are some strategies to suggest to help participants fix any bugs or difficulties they encounter:

- When stuck, talk out what you're working on with someone.
- Try out small bits of code at a time to figure out what's happening at each step.
- Look closely at the blocks on the tutorial or activity cards to see if they are the same or different from the blocks you're using.
- Remember that bugs always arise when creating a computer program. Debugging is a helpful skill to know not just in coding, but throughout life.


Prepare to Share


To add instructions and credits to a project, click the button: "See project page".



This video shows how to share a project on the Scratch website: vimeo.com/ilk/share

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Share


Share projects with others in the room. Organize a flying character showcase. Ask half the room show their projects, while the others view them. Then switch.

Suggest that they ask each other questions, such as:


What do you like best about the project you made? What might you like to change or make next?

What's Next?

Participants can use the ideas and concepts from this workshop to create other projects. Here are a couple of variations on the flying character project you could suggest.



Flying Game
Make a game where you avoid some objects and try to catch others. Add or subtract points based on what your character touches.



Flying Stories
Tell a story about your flying characters. You can record your voice and play sound clips. Or, use say blocks to make voice bubbles.

Scratch is a project of the Lifelong Kindergarten Group at the MIT Media Lab.

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Slides to go along with lesson.

Algorithms and Programs

- Al-go-ri-thm is a list of steps that you can follow to finish a task
- Pro-gram is an algorithm that has been coded into something that can be run by a machine

SCRATCH

- SCRATCH is a programming language
- You can use it to program your own interactive stories, games, and animations — and share your creations with others in the online community.
- <https://vimeo.com/144905435>
- <http://scratch.mit.edu/classes/29970/register/e47b5eb90b9d4761a53cb89d3a4da348>

Make it Fly!!

- **Choose any character and make it fly!**
- **Tutorial: scratch.mit.edu/fly**
- **Video: vimeo.com/llk/fly**

Discussion:

- What was your favorite part about this activity?

Note: Most of the programming classes are very tight on time because of the hands-on help that is needed for the students so we had very little time for discussions after the lesson. Also, the teacher was very helpful with hands-on assistance. Depending on the number of students you might need additional help.

References/Sources:

Activity was adapted from Scratch.mit.edu at
<https://resources.scratch.mit.edu/www/guides/en/FlyGuide.pdf>