

Welcome to Envision by WorldStrides Family Labs!

For over 35 years, Envision by WorldStrides has empowered extraordinary students to become their best selves through programs that enable them to discover their passion, explore a career, and positively impact their world. In 2018, Envision became part of the WorldStrides family. The largest provider of educational travel and experiences in the United States, WorldStrides works with over 50,000 educators each year to help more than 550,000 students see the world—and themselves—in new ways.

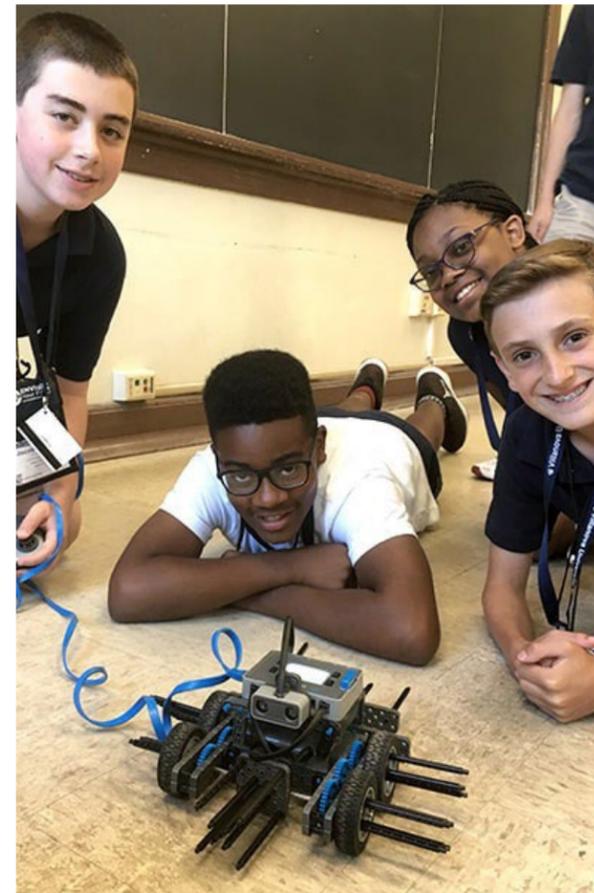
Recently, students, families, and teachers have been challenged to quickly shift to new ways of learning and interacting. At Envision, we believe in providing hands-on educational experiences to foster critical thinking and innovation. We created Family Labs to share our instructional philosophies with you and your students at home.

The Family Labs provide student-guided activities that can be completed independently or as a family. These activities enhance creativity and critical thinking and are fun! The goal is to safely transform your home into an innovation lab, allowing your child the opportunity to learn, grow, and explore their power of potential as they navigate through the activities. While the Family Lab is designed for certain grade levels, each lab can be enjoyed by most age groups.

While participating in Family Labs, encourage your child to embrace challenge, think outside of the box, and most importantly, have fun!

Yolanda Golden

Yolanda Golden
Vice President, Educational Experience
National Youth Leadership Forum: Explore STEM



Family Lab: Scratch Coding Challenge

Lesson Plan Introduction

In the Scratch Coding Challenge Family Lab, your child will dive into the world of coding and use their creativity to develop an autonomous animation or game. Your child will learn coding language and put that knowledge to use in MIT's Scratch coding platform. The materials below will guide you through how to help them be successful as they complete the challenge. There are resources for your child to read and videos for them to watch that will give them the knowledge that they need to complete the challenge.

[Scratch](https://scratch.mit.edu) is a coding language and online community where young people can create their own interactive stories, games, and animations -- and share their creations with others around the world. As young people create and share Scratch projects, they learn to think creatively, reason systematically, and work collaboratively. Scratch is a project of the [Scratch Foundation](https://scratch.mit.edu), in collaboration with the Lifelong Kindergarten Group at the MIT Media Lab. It is available for free at <https://scratch.mit.edu>.

Click on the Scratch logo below to view a short overview video about Scratch.



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Why Learn to Code? Learning to code can enhance your child's problem solving, critical thinking, creativity, analytical, math, and literacy skills, among many others.

Uses for Code... Today most electronic devices and processes require some level of coding to perform their tasks, including computers, smartphones, tablets, even household appliances and cars as well as software, mobile apps, and websites.

| Scratch Coding Challenge | |
|--------------------------|--|
| Lesson Overview | <p>Grade Levels: 5th – 8th</p> <p>Essential Questions: How can the key components of the Scratch Coding platform and the design thinking process be used to design and create an autonomous animation or computer game?</p> <p>Objectives: By the end of the challenge, your child will be able to:</p> <ul style="list-style-type: none"> • Explain the importance of coding • Understand and apply the Design Thinking Process • Code an animation or computer game using the Scratch platform <p>How to measure success: Your child is successful if they design and code an animation or game meeting the required guidelines of the challenge.</p> |

| Materials & Resources | Item | Quantity/Link |
|--|--|---|
| | Scratch Coding Challenge Lab Manual | 1 per child |
| | Device | Computer, iPad, tablet |
| | Scratch Platform | https://scratch.mit.edu/ |
| Online Resources (see resources page for video names and URLs) | <p>‘Let’s Teach Kids to Code’ TED Talk</p> <p>Scratch Platform Resources</p> <ul style="list-style-type: none"> • Frequently Asked Questions • Parent Page • Scratch Tutorial • Scratch Wiki | |

| | |
|--------------------|---|
| Preparation | To prepare for this lesson: |
| | <ul style="list-style-type: none"> • Get your child set up with a device that they can use to access the Scratch Coding web-based platform to complete their project. • Review the parent resource page on the Scratch website. • We encourage you to review the student materials to get an idea of what your child will be creating. • Ensure that your child follows the steps of the <i>Scratch Coding Challenge Lab Manual</i> to successfully complete the challenge. |

| Standards Addressed | This family lab was created based on the following national engineering standards: | |
|----------------------------|---|--|
| | Abbreviation | Standard |
| | MS-ETS1-1 | Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. |
| | MS-ETS1-2 | Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. |
| | MS-ETS1-3 | Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. |
| | MS-ETS1-4 | Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. |

Challenge Guidelines

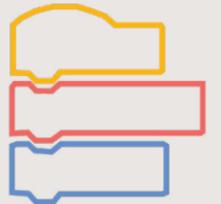
Your child will be challenged to create and code an original animation or game using the MIT Scratch coding platform based on the guidelines below.

Original Characters - Your child's project should include original characters that fit into their storyline. The characters should have names and introduce themselves in the beginning of the animation or game. The costume feature can be used to aid in originality.



Entertainment Factor - Your child's project should be a new and exciting idea. You can help them gauge the entertainment level.

Complex Coding - Your child's project must include Move Blocks, Sound Blocks, and Event Blocks. For additional complexity your child can create a code block that contains all three types. If they would like to challenge themselves further they can add an If Block and a When Block to their project.



Product Creativity - Your child's project should offer dynamic components of game design or animation that captures the user's interest.

Product Completion - Your child's project is fully complete. All portions of the product have a beginning, middle, and end with a continuous flow.



Product Effectiveness - Your child's project performs the intended actions and does not need a lot of support or instruction for it to work.

Getting Started

Print out or pull up the *Scratch Coding Challenge Lab Manual* for your child to use. The interactive PDF is optimized to be used on a tablet or computer. You will also see video links to help your child understand the challenge that you can pull up before they get started.

Scratch is a web-based platform and your child will need to be set up at a device that is connected to the internet. The Scratch interface is best used on a computer, however, it can easily be used on an iPad or tablet that can access the internet. For additional support, paper and pencil can be used to help your child plan out their project.



Supporting Your Child

This challenge is guided by the Design Thinking Process; you can view the steps of the Design Thinking Process in the *Scratch Coding Challenge Lab Manual*. Work with your child to ensure they understand and follow the Design Thinking Process as they work through the challenge. Scratch offers a [resource page](#) for families to support student learning.

Evaluate your child's progress and give a helpful tip or suggestion to help them move forward. You want them to complete the challenge independently as much as possible, but this is a family lab and family participation is encouraged!

Extend the Learning

Challenge your child to make their game more complex or create a different type of game on Scratch. Ideas for additional Scratch challenges can be found [here](#). Your child can practice coding on other platforms listed in the *More Coding* section of the *Scratch Coding Challenge Lab Manual*.

Tell Us What You Think

We hope you enjoyed this Family Lab! We encourage you to share it with friends and family. We would love to get your feedback! Please complete this optional two-minute survey and provide us your thoughts. Thank you!

[Click here to complete the survey!](#)

Resources Page

Scratch Resources

Scratch FAQs

<https://scratch.mit.edu/info/faq>

Scratch Parents Page

<https://scratch.mit.edu/parents>

Scratch Getting Started Tutorial

<https://scratch.mit.edu/projects/editor/?tutorial=getStarted>

Scratch Ideas Page

<https://scratch.mit.edu/ideas>

Scratch Wiki

<https://en.scratch-wiki.info/>

Videos

Scratch Overview Video

ScratchEd. (2013 May 6). Scratch Overview. [Video]. Vimeo. <https://vimeo.com/65583694>

TED Talk Video

Resnick, Mitch. (November 2012). Let's teach kids to code [Video]. https://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code?utm_campaign=tedsread&utm_medium=referral&utm_source=tedcomshare

Design Thinking Process Video

Crash Course Kids. (2015 May 29). The Engineering Process: Crash Course Kids #12.2 [Video]. YouTube. <https://www.youtube.com/watch?v=fxJWin195kU>

Note: *These videos are created and owned by third parties and this is only a curated set of examples that your child can use to build background knowledge. They are subject to be removed without notice at any time. Need help finding other resources? Reach out to Envision for help.*

Answer Key

Crossword Puzzle - Page 8

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