
CODING FOR CLIMATE
MakeCode: Arcade
2025
ENDLESS
Learning
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Welcome to Coding for Climate

We are thrilled to welcome you and your class to the Coding for Climate Global Challenge! Over the next few weeks, you will join classrooms from around the world to take action on climate change. Classrooms will be introduced to computer science foundations then will use skills of problem-solving, computational thinking, creativity, and digital literacy to create solutions for our planet.

Overview

- Brought to you by Take Action Global
- 3-6 week project (flexibility for holidays, school schedules, and testing)
- all ages, all content areas
- free, open to all
- 3 phases of action to be completed from March 17 - April 27

Primary Resources
Website: www.coding4climate.org
Hashtag: #Coding4Climate

Supporting Resources
TAG website: www.takeactionglobal.org
EarthProject App: www.earthproject.org

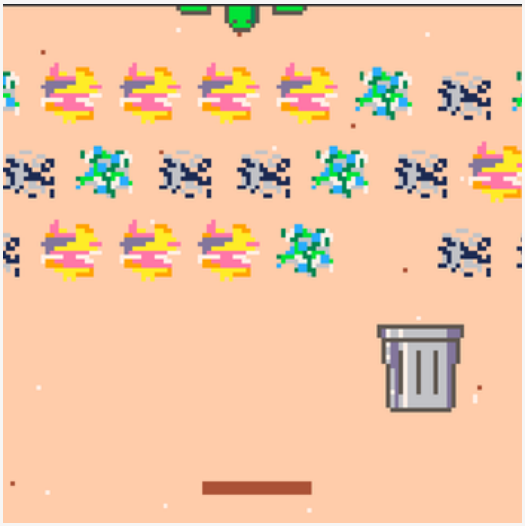
As part of the coding experience in Phase II of the project, students will be able to select their top tool for coding as their coding solution. This playbook is designed to support classrooms, teachers, and students who select MakeCode: Arcade as their coding solution to explore.

Explore MakeCode: Arcade

This workshop introduces students to coding through MakeCode: Arcade while exploring climate and sustainability challenges. As students design and develop their own games, they tackle real-world environmental issues such as biodiversity loss, deforestation, ocean pollution, drought, and climate change. Using block-based coding, students will learn fundamental programming concepts while creating interactive experiences that inspire awareness and action. Through hands-on game development, they will enhance their problem-solving skills, think critically about sustainability, and craft engaging solutions to environmental challenges.

Objectives

- Understand the impact of climate change locally, nationally, and globally
- Learn basic navigation and game development in MakeCode Arcade
- Use block-based coding to create climate-conscious game mechanics
- Explore sustainability themes and design solutions through gameplay
- Apply coding concepts to complete challenges related to real-world environmental issues



Get inspired! Make a video game about protecting animals & the environment.

Getting Started

Discuss

Games are fun! But can they also make a positive impact?

You will explore how games can be used to raise awareness of environmental issues and inspire action. As a game-making Eco Guardian, you will mix creativity with technology to teach players about biodiversity threats faced by the islands of the Seychelles.

Brainstorm

With a partner or small group, brainstorm ideas for games that could educate players about the threats facing the Seychelles' ecosystem.

You can use the following sites for research:

- Seychelles Islands Foundation
- Seychelles Coastal Management Plan
- New study shows that most plastic debris on Seychelles beaches comes from far-off sources
- Expedition removes 25 tons of waste from remote Aldabra Atoll
- Seychelles takes action on marine plastic pollution

Elements of a Game

Now that you have some ideas for games, let's review what needs to be in a game. After you watch the video, choose one of your game ideas to discuss with your partner or small group. Identify your game's **Goal, Challenge, Core mechanics, Components, Rules,** and **Space**.

Getting Started with MakeCode: Arcade

We will be using a game-making tool called MakeCode: Arcade.

Watch this video to learn about this tool before beginning your project.

Choosing a Project Type

There are two types of projects you can pick from:

- Tutorial Projects
- Modding Projects

If you want to follow a step-by-step tutorial that shows you how to build a game, continue to the Tutorials section. If you want to open an existing game and mod it to fit your team's Eco Guardian vision, continue to the Modding section.

One More Thing Before You Start!

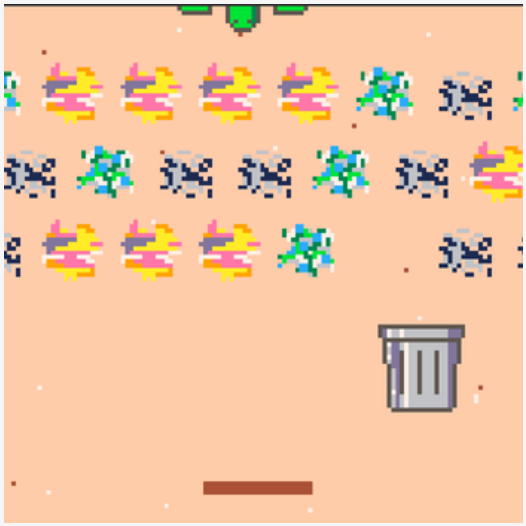
Don't forget to get peer feedback as you work on your game! Ask another group to playtest your game. Are there areas for improvement? Reflect on and refine your work as you go.

Tips and Tricks for using MakeCode: Arcade

- Customizing Your Space
- Customizing Sprite Movement
- Customizing Your Game's Sound Design
- Customizing Your Game's Goal and Player Feedback System
- Customizing Your Game's Challenge

Tutorial Projects

Watch the tutorial videos linked below to learn how to make the Plastic Pick-Up and Erosion Evasion games, step-by-step!



Plastic Pick-Up

Marine plastic is a threat to nesting turtles. Can you clear the way?

Part 1: Sprites

Part 2: Blocks

Part 3: Interactions

Part 4: Finishing Touches

Erosion Evasion

Coastal flooding damages the shoreline. Stop the flooding in time!

Part 1: Sprites

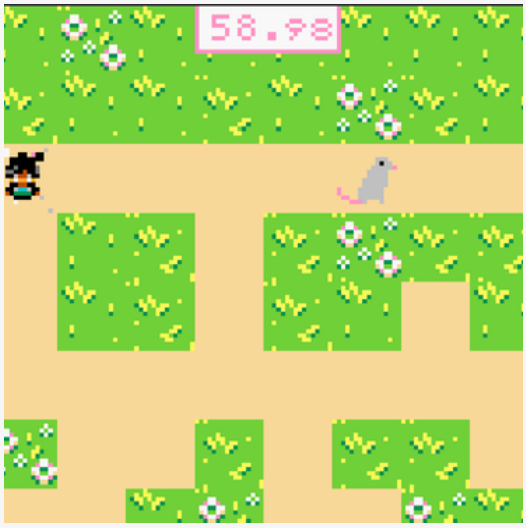
Part 2: Animation

Part 3: Mechanics

Part 4: Collisions

Modding Projects

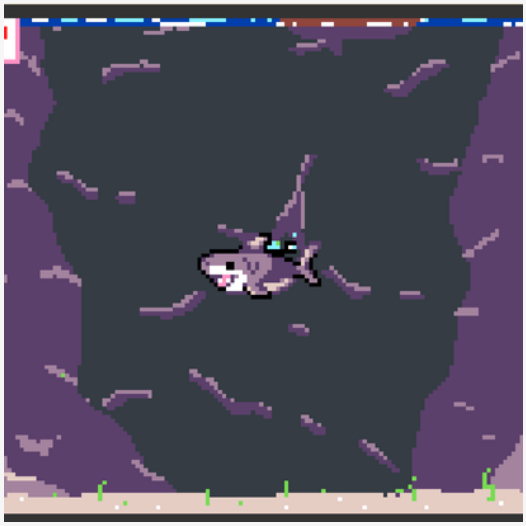
Open the game projects by clicking on the links below. Then, click “Edit Code” to mod the project and make it your own!



Protect the Parrot

The endangered Black Parrots need to build nests, but the trees are gone. Build nest boxes before the rats come! Can you mod this game to teach others about an endangered species where you live?

Click here to play and mod **Protect the Parrot.**



Coral Creation

Can you help restore the coral reef and increase the fish population before the shark attacks? See if you can mod this game to include other dangers to the coral reef besides sharks.

Click here to play and mod **Coral Creation.**

Share your Solutions

As students create their coding solutions (using MakeCode or any other tool), be sure to share on social media tagging in @TakeActionEdu and using #Coding4Climate and #EndlessLearning hashtags.

Share solutions in the Whatsapp group and with your Coding for Climate League.

Coding for Climate Resources

The Coding for Climate MakeCode: Arcade Playbook is part of a collection of resources in the Coding for Climate Global Project. All resources are open access and available for preview and free download at www.coding4climate.org.

K-12 classrooms can participate in the#Coding4Climate project. Free registration is available at www.coding4climate.org.

The Coding for Climate MakeCode: Arcade activity is authored by Endless Learning and Take Action Global.

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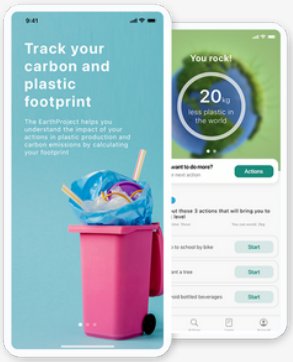
Take Action Global

#TakeActionEdu

Take Action Global (TAG) is a leading education non-profit 501(c)3 organization committed to climate education for all and equitable educational learning opportunities for global educators and PreK-grade 12 students. Since 2019, TAG has served nearly 6 million students and educators from 170+ countries through online learning programs and has supported over 2 million tree plantings.

Take Action Global brings communities together in online spaces for authentic learning experiences, including Climate Action Project, Climate Action Day, and Climate Action Schools.

TAG partners include international experts and world leaders, including the UN, UN Environmental Programme, Earth Day Organization, NASA, LEGO Group, the NYC Mayor's Office, Fridays for Future, the U.S. Department of State, FHI360, and the Jane Goodall Institute. Event speakers have included Prince William, Dr. Jane Goodall, Rick Davis (Mars Expedition, NASA), and Sir David Attenborough. Learn more: www.takeactionglobal.org.



Explore our free EarthProject app.

Available for iOS and Android.
https://www.earthproject.org