CODING FOR CLIMATE

Minecraft Playbook

2024

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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 and EarthDay.org
- 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 11 - April 22

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

Supporting Resources
TAG website: www.takeactionglobal.org
EarthProject App: www.earthproject.org
EDO: www.earthday.org/campaign/climate-environmental-literacy/

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 to use Minecraft. Let's jump in!

Minecraft as your Tech Tool of Choice

This lesson focuses on climate and sustainability as it introduces students to coding in Minecraft. As students work together to solve various climate issues such as Biodiversity Loss, Deforestation, Ocean Pollution, Drought and Water Scarcity, as well as Climate Change, students will be introduced to coding (Block or Python) in Minecraft to help them come up solutions to solve specific climate issues.

Objectives
- Understand the impact of climate change locally, nationally, and globally
- Learn basic navigation in Minecraft Education to mine and build climate friendly sustainable solutions
- Become familiar with Code Builder and Makecode (blocks)
- Use coding concepts to complete tasks

Get inspired: Grow your own hydroponics gardens in Minecraft

Get Started

Discuss climate and sustainability

- Briefly discuss the impact of climate change on our planet
- Highlight individual and collective efforts to combat climate change (reduce energy consumption, conserve water, sustainable transportation, sustainable eating, recycle, plant trees)

Discuss coding as a solution

- Discuss what coding is and why it's important
- Types of coding (block/text)

Introduction to Minecraft

Try Minecraft for FREE

- Free Trial (contains all the features of the paid version)
- Limited by the number of logins (25 for teachers with an Office 365 Education account and 10 for students)
- Must have either an Office 365 Education account or a Microsoft 365 Education account
- Start the FREE Minecraft Trial (download based on your device)
- Demo Lesson – No account or login needed
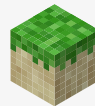
Get started with Minecraft

- Ensure that students have access to Minecraft Education
- Minecraft Education can be installed on a Chromebook, iPad, Mac, and PC
- Check if your Device supports Minecraft Education (System Requirements)
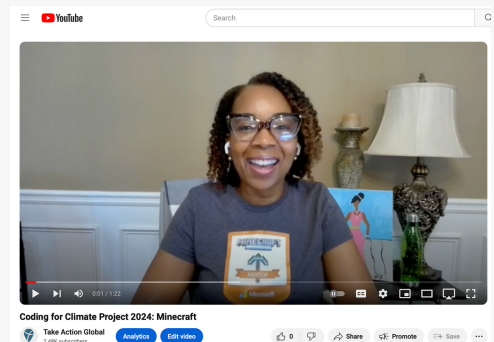- Explain how Minecraft can be used for both gaming and coding

Minecraft Support

- Play in creative mode to have access to a full inventory
1. Escape
2. Settings
3. Creative

- E – to add items to your inventory
1. Camera (take pics of your builds)
2. Book and quill (add your pics and make notes)

Welcome Message

Coding for Climate Project 2024: Minecraft
Take Action Global
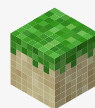
On YouTube

Coding in Minecraft

- Prerequisite: Minecraft Coding Tutorial
- Prerequisite (Practice): Code.org's Minecraft Hour of Code Tutorials
- Explore the "Code Builder" feature

Coding Cheats

C	Summons the Agent (Code Builder) and open MakeCode in Minecraft
T	Open the chat panel in Minecraft to type commands
ESC	Allows you to close the chat, pause the game, or leave the game

Coding Blocks

	On chat command Runs the code when the student types the chosen text in the chat window
	Spawn Summons a creature at a given location
	Repeat Runs part of the program the number of times you say

Meet the Agent

- Introduce the Minecraft Agent (robot) that can execute commands on your behalf
- Students can write code to instruct the Agent to build, mine, or interact with the environment

Debugging/ Problem-solving your Code

- Let students know it's ok to fail forward, these are opportunities to learn and grow from their coding mistakes.
- Emphasize the importance of patience and persistence.
- Encourage students to troubleshoot their code.

Climate and Sustainability in Minecraft

Explore

Explore the Minecraft Climate and Sustainability kit for examples of what's possible to create in Minecraft

Sustainable City

- Sustainability City
- Recycling
- Alternative Energy
- Sustainable Home
- Sustainable Food Production
- Waste Management
- Sustainable Building
- Sustainable Forest
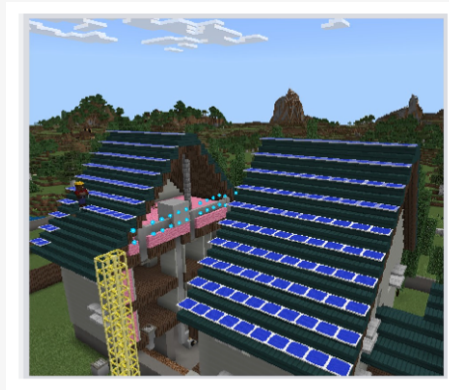
Get inspired: Sustainable Home with Solar Panels

Instructional Tip

Let students explore this Minecraft world for sustainable ideas. Be sure to talk to the NPCs in the Sustainable Worlds, they will give the students information on sustainable practices.

Get inspired: Climate Futures, The Farm (Chemical Fertilizer causes problems to the climate)

Lesson Activities

Working in teams, identify one of the climate issues to solve.

Coding: Beginners/ Intermediate
Code your agent in Minecraft to solve one of the issues you identify. For example, to solve the issue of pollution and plastics in the oceans which harm ocean life, use block coding to code your agent to remove the plastic pollution in the ocean.

Coding: Advanced
Program your agent in Minecraft to solve one of the climate issues. Use text coding (Java/Python) to solve the climate issue. For example, use coding to program your agent to plant seedlings to address deforestation or pick up any plastic in the ocean.
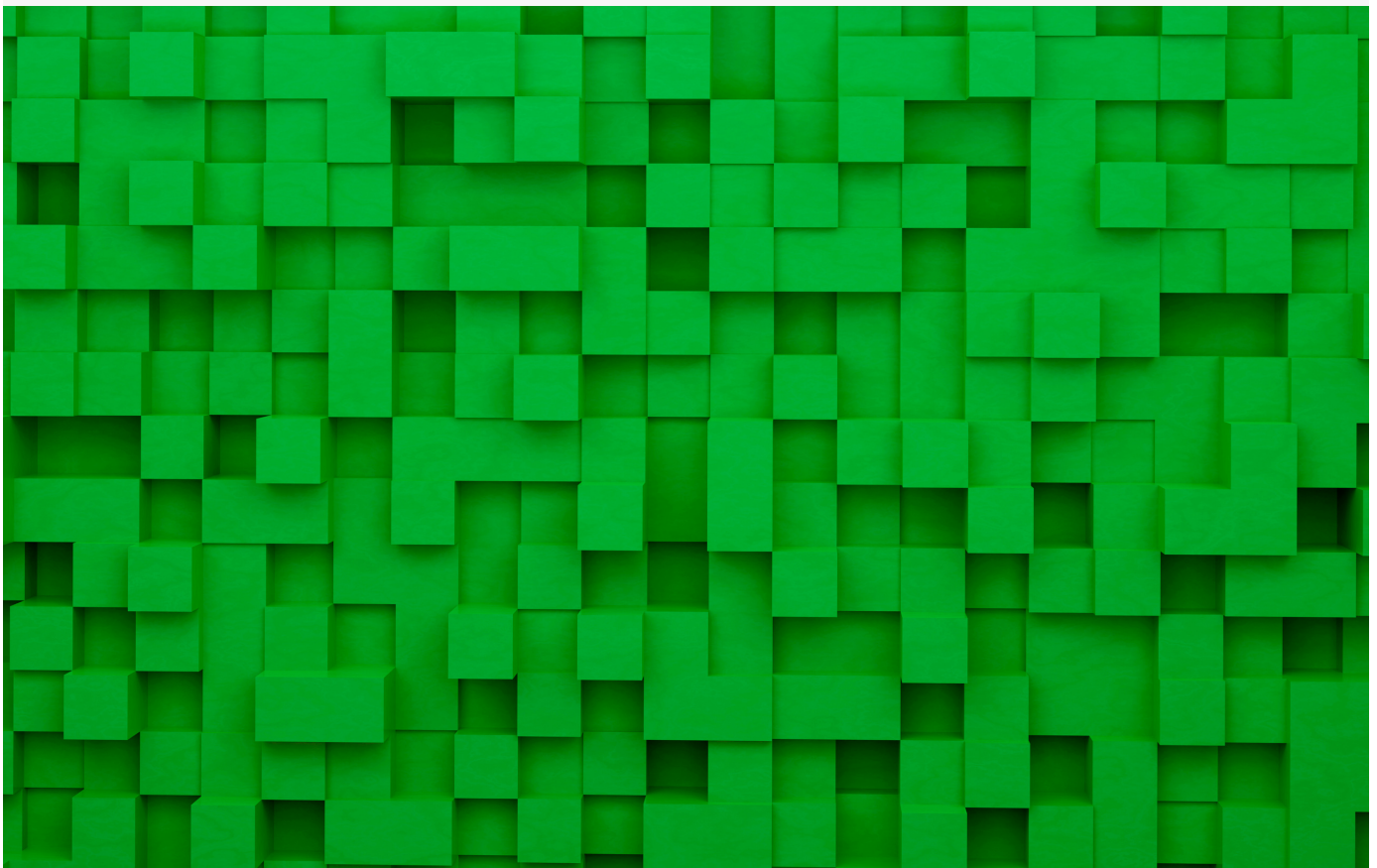
Instructional Tip
Students can use any of the Climate and Sustainability Worlds for their builds.

Instructional Tip
Have students document their work in Minecraft by using the camera and book and quill. Students can export the book and quill when they are finished and share it with you or present their work to the class.

Student Reflections and Discussion

1. Ask students about their experience coding in Minecraft.
2. Discuss how coding enhances their gameplay and creativity.
3. Highlight real-world applications of coding skills.

Get inspired: Recycling

Vocabulary

Computer Science: the study of computers and algorithmic processes (hardware and software) and impact on society

Minecraft: game-based learning platform with endless creativity possibilities

NPC: None Player Character that provides information, direction, and guidance for students (students need to talk to NPCS)

Boards: Signs in Minecraft that provide important information (students need to read boards)

Makecode: the coding program used in-game to create algorithms

[Minecraft Visual Glossary](#)

[Computer Science Glossary](#)

Resources

🔗 Educator Resources

[Get Started with Minecraft (access/install)](#)

Minecraft Coding Progression Tutorials: Introduce Students to Computer Science with [Minecraft Hour of Code Lessons](#)

Prepare to Teach with Minecraft Coding: You don't need prior computer science or Minecraft experience, just a basic understanding of Minecraft Education:
1. [Minecraft Education Teacher Academy](#) (asynchronous)
2. [Minecraft Education Webinar Series (asynchronous)](#)

[Climate and Sustainability in Minecraft: A photo tour](#)

🔗 Student Resources

[Minecraft Hour of Code: AI for Good](#)

[Coding Tutorials – Learn more about block/python coding.](#)
1. [Code Builder Tutorial](#)
2. [Coding Fundamentals](#)
3. [Coding in Minecraft Introduction](#)
4. [Python 101 - Makecode](#)

Note: more tutorials are available through the Minecraft Computer Science Library

🔗 Minecraft Resources

[Minecraft | Code.org](#)

[Coding Fundamentals and more! | Minecraft Education](#)

[Coding with Minecraft | Minecraft Education](#)

[Anyone can teach coding with Minecraft | Microsoft EDU](#)

🟩 **Always Remember:**
Coding in Minecraft is about building, exploring, and having fun while developing computational thinking skills.
#PlayCraftLearn

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Coding for Climate Resources

The Coding for Climate Minecraft 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 Minecraft Playbook is authored by the team at Take Action Global independent of Minecraft Education or Microsoft.
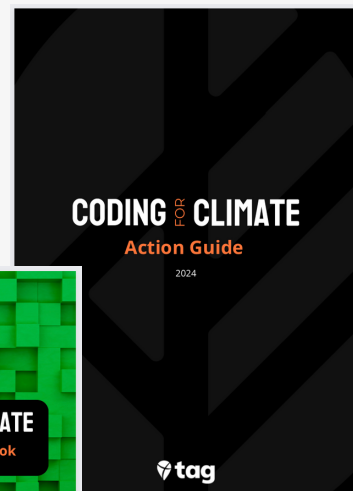
Authors

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Felisa serves as an AI and Innovation Specialist at Take Action Global. She is a retired educator with over 30 years of classroom, leadership, and edtech experience. While at Atlanta Public Schools, Felisa was a Digital Learning Specialist. Felisa is a Co-Author of the *Microsoft Infused Classroom: A Guidebook to Making Thinking Visible and Amplifying Student Voice*. Felisa is also a Co-Creator of the *Minecraft Good Trouble Lesson Series* which is now the most downloaded world across all Minecraft platforms. Felisa was named a TIME Innovative Educator for 2022 for her Minecraft Good Trouble work.

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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 over 4.8 million students and educators from 160 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, 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.

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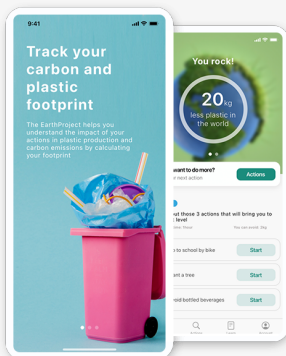
Explore our free EarthProject app.

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