



in partnership with SCRATCH



Facilitator Guide

Create building solutions to real-world sustainability challenges using the objects you have around you! This lesson is made up of three activities that scaffold learners' understanding of sustainability: (1) discussion to (2) building models with reusable materials to (3) creating a Scratch project that incorporates the model, bringing to life ideas on how to integrate sustainable elements. Learners follow the Creative Learning Spiral and imagine, create, play, share, and reflect throughout the lesson.

The idea comes from the LEGO Group's Build the Change social impact program, "Immerse, Create, and Share." Learn more here: lego.com/sustainability/children/build-the-change.

Audience: Classroom Teachers, Instructional Technology Specialists, Library Media Specialists, Informal Learning Environments

Time: Approx 2 hours total

- [Part 1: Sustainability Discussion](#) - 30 minutes
- [Part 2: Create Your Build](#) - 30 minutes
- [Part 3: Bring Your Build to Life](#) - 60 minutes

Necessary Supplies:

- recyclable materials and craft materials found in your home or office (i.e., boxes, small sticks, paper, scissors, play doh, tape, etc.) and LEGOs; consider remixing our [Creative Learning Materials List](#)
- a device with a camera to take pictures
- a computing device that can access the [online version of Scratch](#) (or alternately has the [downloadable version of Scratch](#))

Objectives (Learners Will):

- Explore environmental sustainability and understand differences in building design in different locations
- Create models of sustainable buildings to address real-world concerns in their local communities
- Increase computational fluency and creation with the Scratch programming environment
- Transition from analog to digital through further ideation in Scratch while building on creativity and personal interests
- Reflect on what they learned and the process of both building and creating Scratch projects
- Communicate and share their projects

Resources for Learners (*additional throughout*):

- [Scratch Build the Change Slidedeck](#)
- [Build the Change Coding Cards](#)
- [Scratch has teamed up with Take Action Global \(TAG\)](#) on a student-facing [Coding4Climate playbook](#) that introduces our Build the Change activity

Part 1: Sustainability Discussion

Imagine (30 minutes)

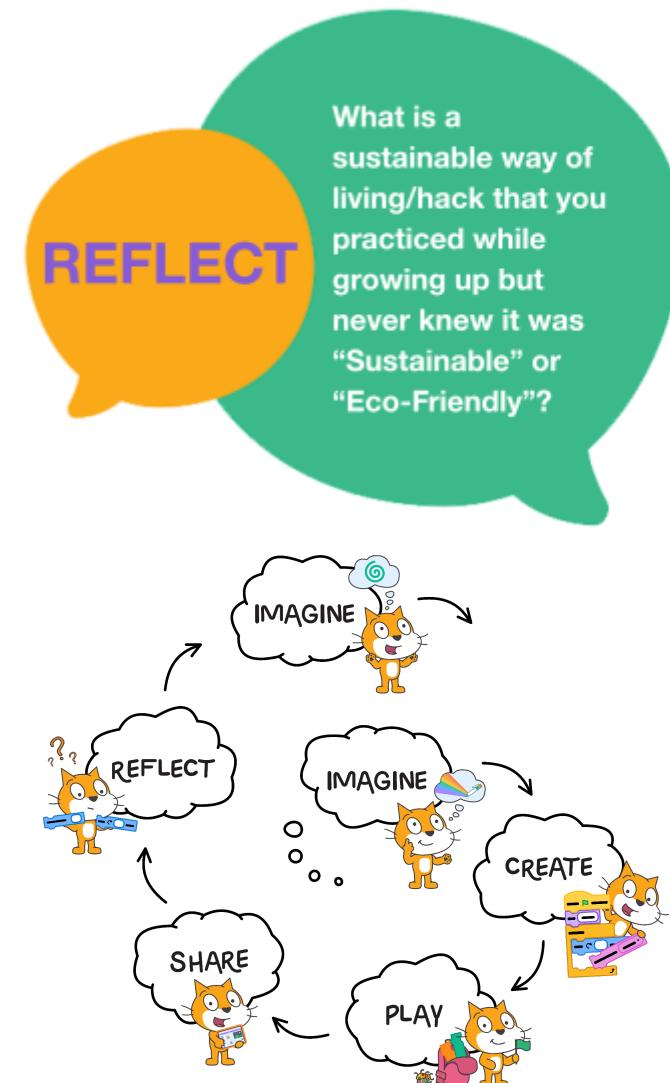
Buildings can tell a lot about a community and the people who created it, such as: what technology was available to help, what skills were needed to build it, and what materials were available and necessary to construct the building. But as time goes on, buildings can fall apart or need significant repair because they cannot withstand the environmental conditions. It is not sustainable.

Imagine a physical place that is important to you and people in your family or community. This can be a real building, your home or the home of someone you know, or even a place in your imagination that makes people feel welcomed and safe when they are inside. Now, imagine how you can design a more sustainable, energy-efficient, and nature-friendly building? Consider renewable energy, eco-friendly materials, and making spaces accessible for everyone.

See our slides below to lead a discussion on buildings and sustainability. Then, take learners through the creative learning spiral to imagine building solutions.

Resources:

- [Scratch Build the Change Slidedeck](#)
- [Build The Change - LEGO.com](#)
- For more on the Creative Learning Spiral, see [Lifelong Kindergarten](#) by Mitchel Resnick (or see the [LCL site](#) to read a free excerpt of chapter 1)



The [Creative Learning Spiral](#) - a mindset for learning.

Research (optional)

LEGO's Build the Change initiative aligns with Scratch Foundation's commitment to equity by empowering young people to creatively address real-world challenges that matter to them. Both emphasize that innovation thrives when shaped by diverse perspectives, cultural knowledge, and lived experiences. The co-designed Scratch and Build the Change lesson further encourages localization, prompting participants to tackle issues relevant to their communities using Scratch, LEGO bricks, or locally available materials.

[Goal 11 of the UN Global Goals for Sustainable Development: Sustainable Cities and Communities](#) explores how we can design more resilient, inclusive, and environmentally friendly spaces. We encourage you to explore the UN Global Goals to connect learning to real-world challenges. By aligning projects with issues that are scientifically, socially, or politically meaningful to your communities, you empower young people to build the change they want to see in the world.

Resources:

- [UN Global Goals](#)
- [UN World's Largest Lesson](#)
- [Kiddle Safe Search](#)
- [Global Goals Project Podcast](#)
- [Interview a Community Member](#)



ABOUT US RESOURCES COLLECTIONS IMPACT PARTNERS LANGUAGE

UNDERSTANDING SUSTAINABLE LIVING

Students will:

- Explain the concept of sustainability
- Evaluate various lifestyle choices for sustainability using an online ecological footprint calculator to real-life data
- Identify actions students can take to make their lifestyle more sustainable

- Activities
 English
 Protecting Planet Earth
 <1 hour



Part 2: Create Your Build

Construction Time (30 minutes)

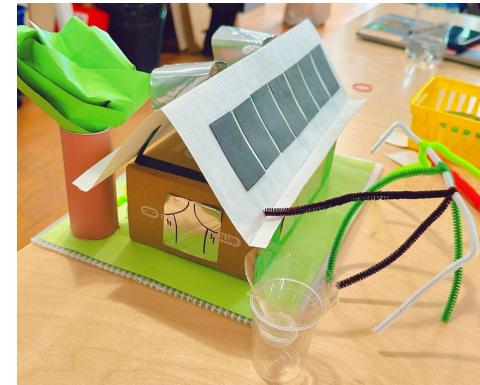
Use materials you have around you to imagine, design, and build the change you want to see! Construct the building, community space, and surrounding areas you imagined using recyclable and craft materials (i.e., boxes, small sticks, paper, scissors, play doh, tape, etc.) and LEGOs.

Take time after the build to reflect on the design choices. How did you make your building or space more:

- accessible for all
- energy efficient
- nature friendly and less harmful to the environment around it (such as building materials, layout, add-ons)

Resources:

- [Scratch Build the Change Slidedeck](#)
- [Creative Learning Materials List](#) - you may want to remix our list to share with attendees beforehand (if requesting donated supplies) or use as a reference to gather materials
- [Scratch Design Journal](#) (Worksheet) - imagine, plan, iterate, and reflect throughout all of the phases of your project's development; in this section participants can use the brainstorming sheet on the opening page to list ideas of elements to include or draw pictures of how they imagine the build will look



Part 3: Bring Your Build to Life

Transitioning from Unplugged Activity to Scratch (45 minutes)

When thinking about the types of activities to bring into Scratch, you might ask: How does Scratch enhance/transform the learning experience? What affordances does Scratch offer?

By bringing your unplugged build into Scratch you can:

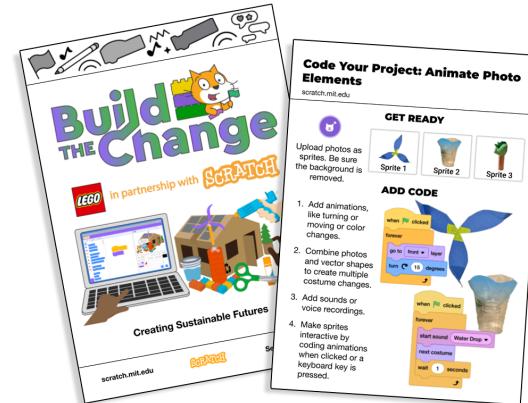
- Migrate knowledge between the physical and digital worlds (How can you share what you've learned and your solution ideas asynchronously with others using a Scratch project?)
- Utilize an interactive and expressive canvas to share ideas (Add sound, animation, and digital elements to enhance your project and add additional context and missing elements to your build.)
- Publish to an authentic audience of peers (Spread the word and your ideas to the global Scratch community, far extending your reach outside the classroom.)
- Cultivate digital citizenship in a safe, guided environment (Provide feedback and support on the builds and Scratch projects of others participating in Build the Change through comments and remixes.)

Resources:

- [Build the Change Coding Cards](#) (Student-Facing Cards) - tips and tricks for bringing your build into Scratch
- [Scratch Design Journal](#) (Worksheet) - imagine, plan, iterate, and reflect



Example project by Scratcher algorithmar.



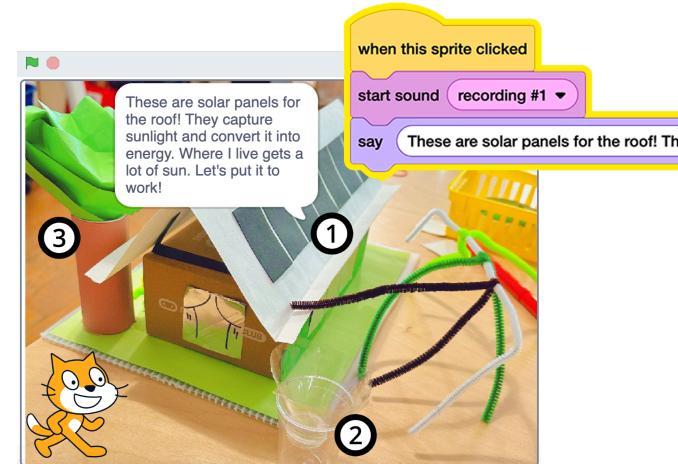
"Build the Change" Scratch coding cards for students.

Multiple Pathways

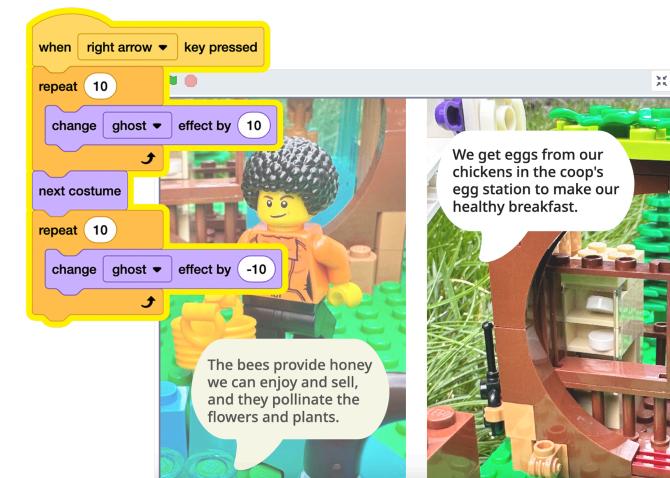
When designing for creative learning, we want to allow for a wide diversity of projects and room for Scratchers of different experience levels to engage with the activity and discover something new. We describe this as “Low Floors, Wide Walls, High Ceilings” (for more information, read the blog post [“Designing for Wide Walls”](#) by Mitchel Resnick, Professor of Learning Research at MIT Media Lab, director of Lifelong Kindergarten research group, and co-founder of Scratch).

Here are a few examples of the multiple pathways learners might take to bring their project to life in Scratch (and see the Resources below for project examples and cards with more):

- **LOW FLOOR:** Upload a photo of your build as a backdrop (no need to remove the background) and add clickable sprites. When users click on each sprite, play a recording or display text on the screen to describe your scene.
- **LOW FLOOR to HIGH CEILING** (depending on the complexity and code used): Create an informational slideshow. Upload a series of photos of your build (photos could include closeups of individual items, different views of the build, etc.). Text could be overlaid via the costume editor, a recording could play as each slide shows, etc. A “low floor” version could simply change costumes when a keyboard key is clicked, while a “high ceiling” version might involve a more complex transition animation.



Example of a “low floor” project option with clickable sprites that display information.



Example of a slideshow project.

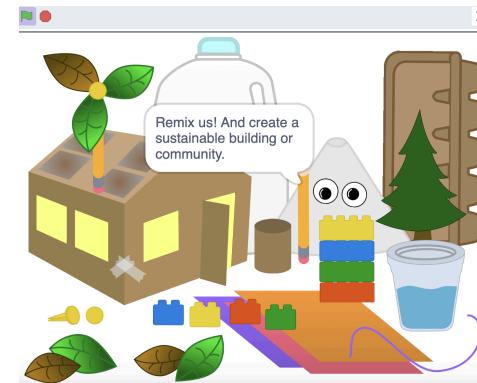
- WIDE WALLS: Animate items on your build using stop motion techniques. Upload a series of photos of your build, moving pieces a bit at a time.
- HIGH CEILING: Upload a photo or series of photos of your build. Create additional sprites using the Scratch paint editor that, when triggered, animate an element and provide additional context.
- HIGH CEILING: Take individual pictures of different elements of your build, remove the background, then animate with code blocks to turn or change color, etc.
- WIDE WALLS: Use a Makey Makey to bring your project to life by triggering recordings, animations, etc.
- ALTERNATE OPTION: If uploading photos isn't possible, re-create digital versions of elements to animate.

Resources:

- [Build the Change Coding Cards](#) (Student-Facing Cards)
- [Build the Change Scratch Studio](#) (Example Studio)
- scratchlycaterton's "[How to Create a Tutorial Slideshow](#)" (Scratch Project) - remixable slideshow template
- Example Projects:
 - algorithmar's "[Build the Change Example - Animated](#)"
 - pixelmoth's "[Build the Change](#)"
 - algorithmar's "[Build the Change Example - Slideshow](#)"
 - algorithmar's "[Build the Change - Unplugged Materials Examples](#)"
 - algorithmar's "[Stop Motion - Making Faces](#)" - while not made for Build the Change, an example of using stop motion to communicate information



Examples of projects that combine photos with digital elements.



Example of an alternative project using vector drawing recreations.

Reflect (15 minutes)

Learners can reflect on their project creation and process as they complete a Sharing Sheet. Next, their peers are encouraged to leave feedback or comments on the sheet for the creator as they view the shared projects.

Resources:

- [Build the Change: Sharing Sheet](#) (Worksheet)

Extension Ideas

Sustainability goes beyond individual buildings—it's about how spaces connect to create thriving communities! Consider these extension activities to deepen learning and engagement:

Community Mapping

Bring your sustainable buildings together to **design a connected, eco-friendly community**. Use Scratch to animate how people interact with these spaces.

Collaborative Storytelling

Create an **interactive story** in Scratch that **showcases how your redesigned space positively impacts the community**.

Local Action Plan

Research challenges in your area and **propose a plan to advocate for sustainable changes inspired by your design**.

Global Connections

Compare your ideas with sustainable projects from around the world. What solutions can be adapted to your own community?

Resources:

- [Designing for Creative Learning Prototype to Scratch Cards](#) (Student-Facing Cards)
- [Sprite Creation Cards](#) (Student-Facing Cards)
- [Create a Story Cards](#) (Student-Facing Cards)
- You may also find these cards helpful for more experienced coders: [Conditional Statements Coding Cards](#) and [Variables and Lists Coding Cards](#) (Student-Facing Cards)

Share Option #1: Create a Class Studio to Gather Shared Projects

Studios are a space on Scratch where users can come together to make, share, and collect projects related to a particular theme, idea, or prompt. Set up a class studio* for your learners and add their Build the Change Scratch projects. Learners are encouraged to take time to look at projects and read/listen/interact with them to learn more.

Resources:

- [Teacher Account Guide](#) (Written Guide) - This resource contains information on setting up teacher accounts and student accounts, managing classes, and class studios.
- [Scratch Studios Guide](#) (Written Guide) - General information on setting up and managing.

*Note: Learners need a Scratch account and access to the online editor to participate in this option.

Share Option #2: Gallery Walk

Have each participant's project open on their computer or other device.* Participants can walk around a room, or take turns sharing their screen in a virtual space, to experience each other's creations. Or display one project at a time on a large screen. Learners are encouraged to take time to look at projects and read/listen/interact with them.

Resources:

- [How to Replicate an Event Studio in an Offline Scratch Environment](#) (Written Guide)

*This option can work for both users of online Scratch or users of offline/downloadable Scratch.