ACTIVITY TITLE: Sustainable Spaces: Designing Eco-Friendly Learning Environments

Activity code: ncCTA03

DURATION	120 minutes
AGE RANGE	13-14
TOPICS	Sustainability DesignThinking Architecture InclusiveDesign

Description of the project

What makes a space sustainable—not just structurally, but socially and emotionally? In this hands-on activity, students take on the role of inclusive eco-designers to reimagine their learning environment using principles of sustainability, well-being, and equity.

Through collaborative teamwork, they will explore how layout, materials, lighting, airflow, and cultural expression can influence environmental impact and student experience. By studying real-world examples and using both analog and digital tools (sketches, moodboards, and Tinkercad or Canva models), teams will redesign a classroom, hallway, or courtyard to make it more inclusive, green, and inspiring.

By the end of the project, students will produce a visual redesign proposal (poster, model, or slide deck) that demonstrates their sustainable choices, honors a female or gender-diverse design role model, and reflects how their space fosters comfort, equity, and environmental awareness for all.

Objectives: What will I learn?

- **Understand how layout, materials, and design impact sustainability** by observing and analyzing learning environments using guided checklists and real-world examples, in order to recognize how physical space influences environmental performance and well-being.
- **Explore cultural, traditional, and inclusive approaches to spatial design** through collaborative research, visual inspiration boards, and case studies from diverse architectural traditions, to

develop design ideas that reflect equity, identity, and global perspectives.

- **Apply design thinking and engineering strategies to a real-world space** by identifying needs, brainstorming improvements, and creating a prototype or visual redesign, so that students can propose practical and innovative environmental solutions for their school.
- **Use digital and artistic tools to communicate a spatial solution** through digital platforms (e.g., Canva, Tinkercad) and hand-drawn or crafted models, in order to effectively present their ideas and inspire others through creative visual storytelling.
- **Reflect on their own capacity as problem-solvers and changemakers** using group discussion, peer feedback, and guided questions, so that students recognize their role in shaping more sustainable, inclusive futures through design.

Materials: What do I need?

1. **Provided by the teacher/institution:**
   - Printed templates: Eco-Principles, Space Survey, Role Models
   - Recycled materials for physical modelling
   - Photo gallery printouts (eco-schools, green spaces). Example: https://unsplash.com/es/s/fotos/green-school-architecture
2. **Provided by students (computer, internet access, notebook, pencils).**
   - Sketchbook or notebook
   - Laptop/tablet with Canva, Tinkercad, or Google Slides access
   - Markers, scissors, glue, rulers
3. **Downloadable resources**
   - Template cards: Eco-Principles, Design Prompts, People to Inspire Us
   - Role Model Worksheet

Previous preparation

Before beginning the activity, the following steps should be taken to ensure a smooth and impactful session:

Print and prepare key resources:

- Distribute the “Eco-Principles” cards, “Space Survey” checklist, and “Role Model Bios” for student teams.
- These will guide students in evaluating their current space and inspire inclusive redesign.

Set up digital tools:

- Ensure all laptops/tablets have access to Canva, Google Slides, or Tinkercad.

- Test logins or shared folders if students will work collaboratively online.

Organize students into diverse teams:

- Create groups of 3–4 students with mixed abilities and perspectives.
- Assign rotating roles (e.g., Researcher, Visual Designer, Presenter, Feedback Lead) to ensure equitable participation.

Review sustainable and inclusive design concepts:

- Show a short slideshow or gallery of sustainable learning environments from different cultures.
- Discuss how features like natural light, greenery, flexible furniture, and quiet zones improve well-being.

Prepare modeling and design materials:

- Set up workstations with recycled materials, sketching supplies, and digital device access. Include optional items like cardboard, fabric scraps, or glue for physical prototypes.

RESEARCH

Have a look at these resources

We spend most of our day inside classrooms, hallways, and school spaces—yet we rarely stop to ask how these environments affect how we feel, learn, or connect with others.

From the flow of natural light to the type of chairs we sit on, every design choice leaves a mark—on both our bodies and the planet. Around the world, architects and designers are rethinking learning environments through sustainability and inclusion. They ask: **How can we create spaces that are healthier, more inspiring, and more respectful of people and nature?**

In this project, you will take a fresh look at your school through this same lens. You'll walk through the spaces you already know, observe them with new eyes, and explore what could change—if you had the tools to redesign them. By combining art, engineering, and empathy, you'll shape your own vision of a better learning space.

Why is this activity important?

The design of a space affects your mood, your health, your ability to concentrate—and even your sense of belonging. At the same time, buildings and materials have environmental footprints. They use energy, produce waste, and either support or damage the ecosystems around them.

Through this activity, you will learn to think like a sustainable designer: someone who makes decisions that are better for people and better for the planet. You'll explore what makes a space feel welcoming, inclusive, and functional—and what doesn't.

Your redesign might start as a sketch or a slide. But your ideas could inspire real improvements in your school, community, or future career.

Real-World Inspiration

- Anna Heringer uses mud, bamboo, and local materials to build schools that are safe, beautiful, and rooted in tradition.
- Yasmeen Lari, Pakistan's first female architect, designs low-cost, climate-resilient shelters using community-led methods.
- In Singapore, school buildings are designed to channel natural airflows and light, reducing energy use while supporting student well-being.
- A primary school in Denmark features curved reading nooks, rooftop gardens, and wooden structures that invite calm and creativity.

These spaces—and these changemakers—all began with the same question: What if learning could happen in a space that feels just right—for everyone?

CREATE

Some things you need before beginning

Designing a Better Learning Space: Where Creativity Meets Impact

Have you ever noticed how a room can change the way you feel? Natural light can sharpen focus. Soft colors and good airflow can ease stress. Inclusive layouts—like quiet zones or flexible seating—can make everyone feel welcome.

That's the power of design. It's not just about walls, windows, or furniture—it's about shaping human experience. Around the world, architects and engineers are using **eco-innovation** to rethink how we build and learn. They're designing classrooms that are not only beautiful, but also energy-efficient, culturally inclusive, and emotionally supportive.

In this phase of the activity, you'll take everything you've explored—about light, air, culture, accessibility, and comfort—and begin turning those ideas into a space that works better for everyone. You'll mix engineering logic with artistic intuition to create your vision of a learning environment that is kind to people and kind to the planet.

Now, follow these steps

Step 1: Choose a space to redesign

- Select a real location in your school that you interact with daily—your classroom, a hallway, the library entrance, or a quiet reading nook, and ask yourself: Who uses this space? Who avoids it? Why?

Step 2: Observe and measure the current environment

- Map and sketch your chosen space as it is today.
- Use the Space Needs Checklist to assess:
  - Natural light levels (morning vs. afternoon)
  - Airflow and temperatura

- Noise levels at different times
- Accessibility features or barriers

- Collect data where possible (e.g., estimated light intensity, noise levels in dB using a phone app). Take photos or videos to document the current state in order to make informed design choices based on real environmental and user-based evidence.

Step 3: Identify problems and ask tough questions

- Work in your team to reflect on key issues:
  - Who is this space designed for? Who is excluded?
  - How does the layout affect students with mobility, sensory, or attention needs?
  - Are there signs of environmental waste or inefficiency?
  - Are cultural or emotional needs reflected in the space?

Use sticky notes or a whiteboard to map out social and environmental injustices connected to the current design.

Step 4: Brainstorm and redesign with purpose

- Using your analysis, redesign the space with sustainability, inclusivity, and equity in mind.
  - Add natural elements like plants, textures, or eco-friendly materials.
  - Design quiet corners, soft lighting zones, or movable furniture.
  - Use recycled materials and propose renewable alternatives.
  - Reimagine the layout to invite collaboration and comfort.
- Choose your tool:
  - Sketch by hand
  - Create a model in Tinkercad or Canva
  - Build a 3D prototype from recycled materials

- Label your key features and decisions.

Bonus: Highlight how your design helps reduce waste, save energy, or increase comfort.

Step 5: Add emotional, artistic, and cultural layers

- Design isn't just visual—it's emotional.
- Choose a color palette, shapes, and textures to express the feelings you want people to experience calm, focus, energy, safety.
- Include references to local cultural traditions or global influences (e.g., natural patterns like waves, leaves, animals…, regional architecture like arched doorways like in Moroccan design,).
- Think: How does this space tell a story?

Step 6: Honor a changemaker

- Choose a woman or gender-diverse leader in design, architecture, or sustainability. Incorporate their story into your project visually—through a quote, illustrated portrait, or symbol. Explain: How does their work inspire your space? What values do you share? Why have you chosen that woman? Have you ever heard of her before?

Step 7: Assess your redesign's impact

- Before presenting, evaluate your own design: use the Impact Rubric provided to score your project on:
  - Environmental Sustainability
  - Social Inclusion
  - Emotional Well-being
  - Aesthetic Communication
- Create a simple chart, graph, or icon-based scorecard to show how your design performs. Reflect as a team: What worked well? What could be improved?

Step 8: Share your message—be a design activist

Prepare a visual campaign element (poster, symbol, or slogan) to raise awareness about the need for sustainable, inclusive school spaces.

  - What message does your space send?
  - What change do you want to inspire in your school?
- Use creative storytelling to advocate for implementation. Present your full project:
  - Redesign visuals or model
  - Inspiration story
  - Impact assessment
  - Advocacy message

COMMUNICATE

You've reimagined the spaces where learning happens—now it's time to bring others into your vision. Transform your classroom into a **"Design Gallery Walk"**, where each team sets up a mini-exhibit of their redesigned space. Invite classmates, teachers, or even families to explore your ideas—just like walking through an architecture fair or design studio. Each team's space should feature:

- A title for your redesigned space (e.g., "The Breathing Room," "The Calm Corner")
- A visual representation of your design—this could be a physical model, a digital layout, or a large-format poster
- Callouts or labels showing your key sustainable and inclusive features

- A quote or visual tribute to the designer or changemaker who inspired your team
- A short team video, audio message, or live pitch explaining what you changed and why (1–2 minutes max)
- In small groups, take turns giving a guided tour of your space redesign. Focus on:
  - What didn't work in the original space—and who was affected
  - How your redesign improves learning, comfort, and the environment
  - The story behind one key design decision you're proud of
  - Your "design statement" — the message your space sends to the world

- Each group should present the visual campaign advocating for better learning spaces. Think of it as your team's "call to action." What change would you want your school (or city!) to make based on your design.
  - Would this design work for students with different needs?
  - How did you decide on materials?
  - What would your design look like in another country?

It is time to share!

Share your amazing work and inspire others!

#DesignecoenvironmentsSTEAMbrace

- LinkedIn: https://www.linkedin.com/company/steambrace-project/posts/?feedView=all
- Instagram: https://www.instagram.com/steambrace_eu/
- X: https://www.instagram.com/steambrace_eu/

KEEP ON LEARNING

How can I make a similar project by myself?

- What was the most surprising thing you discovered about your learning environment? *(Was it something you never noticed before? Something missing that everyone had accepted as "normal"?)*

- What challenges did your team face while redesigning the space—and how did you overcome them?
  (Think about creative disagreements, technical limits, or unexpected feedback.)

- How did your design choices promote both sustainability and inclusion? *(Who benefits from your ideas? Who might still be left out?)*

- If you had more time, more tools, or no space limitations—what would you add or improve? *(Would you expand it outdoors? Use smart lighting? Add sensory features?)*

- How has this experience changed how you see school spaces—or your own role as someone who can improve them? *(What will you notice differently now when you walk into a room?)*

Ideas to keep your learning and impact going:

- **Test your vision**: Try building a small version of your space using cardboard, LEGOs, or Tinkercad. Share it with your class and ask for feedback.
- **Make it digital**: Turn your redesign into an interactive map, animation, or short video pitch using free online tools.
- **Share your voice**: Create a mini awareness campaign in your school—use posters, reels, or QR codes to showcase your team's ideas and message.
- **Get inspired locally**: Visit a museum, park, or eco-building in your city. What design ideas could you bring back to your school?
- **Explore careers**: Research jobs like environmental architect, sustainable designer, or education space planner. Could your redesign be a glimpse into your future?

Which are other connected projects?

Here are a few creative ways to extend thinking, skills, and impact beyond this project:

- **Redesign with a new purpose**
  Choose another space at school and imagine it transformed. Could you create a calm-down corner, an outdoor science station, or a gender-inclusive bathroom? Think about who it serves and how it makes them feel.
- **Explore passive energy design**
  Research how buildings can work with nature instead of against it. Try designing a space that uses natural light, cross-ventilation, solar heating, or even a rainwater collection system. Can your design work without plugging anything in?
- **Go digital or virtual**
  Build your redesigned classroom or courtyard in a game or digital platform like Minecraft Education, The Sims, CoSpaces, or Tinkercad. Share it as a virtual tour or walk-through with

your classmates or school leaders.

- **Design for a different location or climate**
  What if your classroom were in the Arctic? Or in a rainforest? Redesign the same space for a completely different place in the world. Think about how the environment, weather, and culture would influence your materials, layout, and features.
- **Create a Zero-Waste School Kit**
  Design a set of tools and changes your school could adopt to reduce waste and energy use—from refill stations to green roofs. Use data and creativity to support your ideas.
- **Launch a space audit campaign**
  Work with your class to evaluate real school spaces using checklists and interviews. Write a proposal to your principal or local council with ideas for low-cost, high-impact changes.

LINKS FOR FURTHER INFORMATION

Green Schools Alliance – Inspiring real-world examples of eco-friendly school design
https://www.greenschoolsalliance.org

• Yasmeen Lari (Heritage Foundation of Pakistan) – Pioneer in low-cost, climate-resilient architecture
https://www.heritagefoundationpak.org

• Anna Heringer (BASEhabitat) – Works on sustainable architecture using local materials and community knowledge https://www.basehabitat.org

• Earthship Global – Learn how recycled materials and passive design create self-sustaining schools and homes https://www.earthshipglobal.com

• YouTube: "Green Schools Around the World" – Visual inspiration for sustainable classroom design
https://youtu.be/HEiMWxVEAxE?si=718LpQpkbRNQVuV3

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