13 CLIMATE ACTION

CONNECTING STUDENTS TO THE SUSTAINABLE DEVELOPMENT GOALS

National Wildlife Federation

Alcoa Foundation

FOUNDATION FOR ENVIRONMENTAL EDUCATION
FEE

Subject

Science and Math

Focus

Goal 13: Climate Action

Unit Duration

10 days + ongoing opportunities for climate action

Materials

computer, internet connectivity, notebook, pen/pencil, chart/butcher paper, art supplies

Time Recommendation

- Using 50 minutes as a class period see the lesson summaries for time recommendations.
- (+) Some activities require research and actions to be taken outside of the school day

Summary

This guide assumes three things:

- Student's hope for an equitable and just future is affirmed;
- Student's solutions are boundary-free and ambitious, and
- Students are given the agency to explore, investigate, model, and implement climate actions.

Students will identify how our climate is changing and the effects of a changing climate, and define climate adaptations. Use the school grounds as a laboratory for learning small groups will choose a climate adaptation to investigate, model, and implement where possible.

Big Ideas

- The climate is changing.
- Humans are adapting their environments to a changing climate.

Academic Vocabulary

advocate, cause and effect, climate, climate adaptation, equity, infrastructure, justice, resilience

Activity 1: Redacted | 1-2 periods or 1 period + homework

Students will read an article on climate change, covering answers to questions like "Why is the Earth Warming?" and "What Can I Do?". Next students will learn about redaction poetry and use redaction to create poetry using their climate change article.

Activity 2: Illustrating Goal 13 | 1-2 periods or 1 period + homework

Students will read the Sustainable Development Goal 13, Climate Action, and illustrate it based on their interpretation. Their illustration can be a physical drawing or take any form of art or written narrative.

Activity 3: How Might We... | 1 period

Students will work in small groups to brainstorm current climate issues locally or that they have prior knowledge of. Then they will choose one problem to rewrite as a question and brainstorm solutions. This practice will be used again in Activity 4: Climate Adaptations for a Resilient Schoolyard and will be used as the foundation for each group's project.

Activity 4: Climate Adaptations Bingo | 5 periods + time to finish model

This activity is divided into five parts. Each day has students work in groups to complete a task.

- Day 1: Defining academic vocabulary and setting the table for the week.
- Day 2: Identify the problem. This will be each group's focus for the during of the project.
- Day 3: Idea Beetle. Students will use this strategy to define their project and flesh out its parts.
- Day 4: Storyboard. Students will use this activity to generate sketches and some draft language that will further reveal their project plans and prepare them for creating their model.
- Day 5: Create a model that best represents their climate adaption in action and together, speak to whom the adaptation benefits and why the adaptation is needed.

Activity 5: Hope | 1-2 periods or 1 period + homework

Students will learn about and view observational art. Then using the previous activities, they will each create a piece of observational art. The message in this art is one of hope., a hopeful climate message for the not-so-distant future.

GOAL 13 GUIDE

OVERVIEW

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The Sustainable Development GOALS

LEAVE NO ONE BEHIND

There are two aspects to learning sustainability – learning about the issue and engaging with the issue. Hands-on engagement with the issue helps develop the skills to take up a given problem and attempt to solve it with a positive growth mindset. ~Handprints: Positive Actions for the SDGs

What are the Sustainable Development Goals (SDGs)?

The Global Goals are the blueprint for achieving a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, and peace and justice.[1] They aim to secure a sustainable, peaceful, prosperous, and equitable life on Earth for everyone now and in the future. The Goals are linked to each other and are interdependent in one or more ways.

This guide focuses on Goal 4 Quality Education and Target 4.7 and Goal 13 Climate Action and Target 3.3.

Goal 4 | Ensure inclusive and equitable quality education and promote lifelong opportunities for all.
Target 4.7 | By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development

Goal 13 | Take urgent action to combat climate change and its impacts
Target 3.3 | Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

1 | https://www.un.org/sustainabledevelopment/sustainable-development-goals/
Source: https://sdgs.un.org/goals

LEAVE NO ONE BEHIND

Why Teach the SDGs?

Teaching the goals will support the knowledge, skills, attitudes and values necessary to address sustainable development challenges. And educating for sustainable development empowers everyone to make informed decisions in favor of environmental integrity, economic viability and a just society for present and future generations. [2]

Handprints: Leading with Hope [3]

The way environmental issues are often projected can generate anxiety that makes problems hard for many people, particularly children, to ponder and lead to despair. The messages of catastrophic and frequent adverse global events attributed to an issue like climate change often create a sense of helplessness and apathy (Box 1). The issues generate feelings of guilt intent to act, but the overwhelming scale of the problems creates doubts of self-efficacy and leaves little room to get involved in problem-solving. This results in people often leaving the action at the doors of governments and corporations to manage.

Sustainability problems should not be presented to youth in a way that causes worry and anxiety. It should not lead to children feeling helpless to find solutions. There is a great need to create and center hope, courage, and commitment, uplifting the belief that every action matters. One way to ease anxiety is to show prospects for a future that is possible given achievable actions at the individual level. There is a need to empower youth to go beyond personal consumer decisions and strive for genuine social responsibility – transforming individual decisions into practical outcomes.

A child's personality is shaped when their vision of the future is built on the foundation of a positive attitude growth mindset towards themselves and the world around them. Children have an innate ability to explore the world and love engaging in life's experiences. A culture of positive thinking for students should be the ultimate goal for any educational institution. The importance of positive action is also emphasized by Jeffrey (2011), "the ability to be constructive in the change process at a societal level determines an individual's action competence." Action competence is defined as "an individual's capacity to critically select and conduct possible actions that may solve societal problems through democratic mechanisms" (Odabaşı, Kurt, et al., 2011). Developing this skill set stops one from dwelling on bad things in life.

The other aspect of positive action is an appreciative inquiry that looks at finding a solution using the resources at hand instead of focusing on the things that are not working well. Consistent exploration of new possibilities creates confident attitudes that better support meeting uncertain challenges. This is consistent with a growing body of research on the constructive effects of positive thinking and a growth mindset. Positive emotions, like all emotions, arise from how we interpret events and ideas as they unfold. Another practical consequence of positive thinking is enhanced creativity and innovations.

2| https://en.unesco.org/themes/education/sdgs/material
3| Handprints: Positive Actions for the SDGs https://bit.ly/FEEHandprints

Activities are not simplistic or superficial ideas but profound learning opportunities reflecting real problems. These opportunities help develop problem-solving skills that are an amalgamated outcome of being able to make an inquiry or ask critical questions, critical analysis, reflection, and a vision for a future shaped through individual and collective action. SDGs as an aspirational concept and the belief in positive actions (through self-efficacy and student funds of knowledge) bring in engagement – a better alternative to using fear and moral imperative to act, which draws attention, but can demotivate people to participate.

The handprint is a concept that is being used to symbolize positive action. Environmental issues have become part of daily life, and there is a critical need to practice positive, sustainable actions. Actions are intentional, and so is a handprint. Experiences and actions are very closely linked. Without action competence, one cannot become rich in experiences, which can help to qualify action competence. Launched in 2007 by Centre for Environment Education (CEE) at UNESCO's 4th International Conference on Environmental Education held at Ahmedabad, India, the handprint represents the belief that we can make a difference through individual and collective action to solve the environmental problems. The handprint concept captures the energy young people see in themselves and their desire to do things for a better future.

Teaching about the environment and sustainability has to be forward-looking, focused on helping students embrace the positive while engaging with the challenges the planet faces now and preparing for the future. The importance of a positive growth mindset for students lies in the fact that they are the future of any nation. Their thinking towards life must be built on the grounds of a positive spirit where there is only hope for the best and no despair for the worst. A positive growth mindset is essential for laying the foundation of a prosperous and peaceful life.

Box 1. Gaining Public Attention But With Negative Consequences

- First, individuals are likely to become desensitized to the message like any stimulus. The public has a limited carrying capacity and a finite pool of worry, especially when confronted with extreme and immediate economic threats and risks.

- Second, dramatizing climate change, in terms of the most extreme impacts and using exaggerated imagery, risks damaging trust in the messenger, be it environmentalists, scientists, political leaders, or the media.

- Third, and perhaps most importantly, when individuals are confronted with messages that present risks perceived beyond their control, they cope psychologically with that risk by engaging in self-denial and exhibiting defeatist and apathetic behaviors. For example, "The impacts of climate change won't affect me" or "Nothing I do will make a difference," or "Climate change is so bad there's nothing we can do, so we should just live our lives."

1 | FEE: Handprints-Positive Actions for the SDGs https://bit.ly/FEEHandprints

Source: "Fear Won't Do It": Promoting Positive Engagement With Climate Change Through Visual and Iconic Representations, Saffron O'Neill and Sophie Nicholson-Cole, Science Communication, Vol 30, Issue 3, pp. 355 – 379 First Published January 7, 2009 | Source: Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World. Katherine Hayhoe. 2021 | Source: Curriculum and Learning for Climate Action: Toward an SDG4.7 Roadmap for Systems Change. Radhika Iyengar and Christin T. Kwauk (eds.). 2021 | Source: All We Can Save: Truth, Courage, and Solutions for the Climate Crisis. Ayan Elizabeth Johnson and Katharine K. Wilkinson (eds.). 2021

Activity 1

REDACTED

Name:

MATERIALS

- pencil
- black marker
- a copy of NASA's A Guide to Climate Change for Kids https://climatekids.nasa.gov/kids-guide-to-climate-change/kids-guide-to-climate-change.pdf

NEED TO KNOW

- Part of this activity can be completed with a partner and some will be completed alone.
- Goal: Use the article to create a climate-themed poem.
- Definitions
  - redact: (verb) to hide or remove parts of a text before publication or distribution.
  - redacted or blackout poetry: is a method of composing poetry where you narrow down the words you don't want, leaving behind only the words that make up your poem.

WHAT TO DO

- Read NASA's A Guide to Climate Change for Kids to yourself or aloud with or without a partner. WRITE YOUR NAME ON IT.
- Go to Google images and search redacted or blackout poetry for examples of the activity you are about to complete.
- With a pencil underline the words you are considering for your poem. Write down those words on paper in the order they are underlined in the article. Ask yourself. Does this make sense? Are their words missing or words I need to take out?
- Once you are happy with your word choice, pick up your black marker and carefully redact the words that do not make up your poem.
- Find a space where you can practice your poem.
- Share your poem during your class's climate-themed poetry hour.

Activity 2

ILLUSTRATING GOAL 13: CLIMATE ACTION

Name:

MATERIALS

- scratch paper
- timer or 5-minute hourglass
- Once you understand the assignment gather art materials that will express your thoughts.

NEED TO KNOW

- Work by yourself.
- Goal: Read goal 13. What would this goal look like illustrated or as other art?
- Share your work with a small group or the whole class and share its meaning.

WHAT TO DO

GOAL 13 CLIMATE ACTION
TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS.

- As you read Goal 13 above think about the people and communities that are most impacted.

- Brain Dump: Set your timer for 5 minutes and use your scratch paper to free form write or draw or both, anything that comes to your mind.

- After the five minutes, reflect on what you see. Either at the bottom of your scratch paper or on the back, respond to this question -- How will you organize and illustrate your thoughts?

- Illustrate your understanding of Goal 13 using the art supplies you gathered or those available to you in class.

- Connect with three other students. In your small group make space for each person to share their work and their responses to the questions below.
  - Describe how your work connects to Goal 13.
  - What feelings came up for you during the brain dump?

Activity 3

HOW MIGHT WE...

Names:

MATERIALS

- sticky notes or scraps of paper (1 per person)
- pen/pencil

NEED TO KNOW

- Work in groups of three or four.
- Goal: Rewrite a problem as a question and brainstorm solutions.
- Place a checkmark by each bullet as it is completed.

WHAT TO DO

PROBLEM: THE CLIMATE IS CHANGING AND HUMANS PLAY A ROLE IN THIS CHANGE.

- Give each group member one sticky note or small scrap of paper.

- Using the problem above, rewrite it as a question so that solutions can be suggested. Start your question with, "How might we...".
  - *For example.*
    Problem: There is a lot of waste at the end of lunch.
    Question: How might we reduce the amount of waste at the end of lunch?

- Place all the questions in the center of the group or place where everyone can see them and take turns reading each one. As a group, choose one question to use in the next bullet.

- A changing climate is a big deal. The changes have big impacts and require big ideas. Using the agreed-upon question, write a list of possible solutions. Write down all suggestions on sticky notes and post them where the group can see them. Draw a star by no more than five suggestions the group would consider investigating.

- Save these solutions in a safe place. They might be used in another activity for future projects.

Activity 4 | Day 1

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

NEED TO KNOW-ENTIRE PROJECT

- This activity is to be completed in a small group of 2-4 people.
- Goal: Complete group research on a climate adaptation topic, model a climate adaptation in your schoolyard, and share your recommendations.
- Before sharing, consider inviting your district's facilities staff, environmental coordinators, or other decision-makers to hear your ideas and to discuss how to bring everyone's ideas to life.

TODAY'S NEED TO KNOW

- Goal: Define terms. Agree upon shared language. Consider what it looks like to adapt to climate change globally and locally.
- Place a checkmark by each bullet as it is completed.

MATERIALS

- pen/pencil
- notebook
- internet access

WHAT TO DO

- Get seated with your group.

- Together define these terms. They are important to your group's work.
  climate | adaptation | resilient

- Come up with a definition for climate adaptation and climate resilience. Do not look it up. Share and compare your definitions with two other groups. What are similar and what are different?

- Now, look up the definition for climate adaptation and climate resilience. How close were you to the dictionary definition? Ensure all group members have the agreed-upon definition of climate adaptation written down in their notebooks.

- Watch: *How Can We Adapt to Climate Change All Over the World?* https://www.youtube.com/watch?v=SLIuDOD8HL0. After watching discuss these questions with your group.
  - What impacts from climate change have you observed at school, at home, or on the local news?
  - If we want the school to be better prepared for a changing climate, what adaptations or solutions could be of benefit?

Activity 4 | Day 2: Identify the Problem

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

TODAY'S NEED TO KNOW

- Complete this activity with your group.
- Goal: With your group, choose and research a climate adaptation. Your teacher will provide instructions on choosing an adaptation. Then develop a problem statement.
- Place a checkmark by each bullet as it is completed.

MATERIALS

- pen/pencil
- notebook

WHAT TO DO

- Get seated with your group.

- Pick your topic, according to the instructions your teacher provides, and define what the adaptation is, and its purpose.

- **IDENTIFY THE PROBLEM:** This statement will give your group a foundation to complete this project and will help your group stay on topic. It can be easy to get off topic when discussing a complex problem like climate change.
  - As the climate changes what are the impacts on the schoolyard? You may see some impacts now or can expect them in the near future. Being proactive instead of reactive helps us make more mindful and informed decisions.
  - What will success look like when we complete this project?
  - Each group member, in their notebook, needs to agree on how to complete the next three statements and write the response to question three. Remember these statements will be used to set the table for your project and help keep you on topic.

    1. Using [*insert adaptation*] is designed to [*insert how it will work*].
    2. We have observed that our schoolyard is [*insert one: currently impacted by a changing climate OR is vulnerable to a changing climate*] and impacts look like [insert impact(s), like flooding or drought].
    3. How might we use [insert adaptation], a climate adaptation, so that our schoolyard is more climate resilient?

Activity 4 | Adaptation Card for Day 2

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

	A	B	C
1	RAIN WATER COLLECTION	PERMEABLE PAVEMENT	TREES
2	NATIVE PLANT GARDENS	CHOOSE YOUR OWN ADVENTURE	SOIL HEALTH
3	CAMPAIGN	RAIN GARDENS	RETENTION AND DETENTION PONDS

Activity 4 | Day 3: Idea Insect

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

TODAY'S NEED TO KNOW

- Complete this activity with your group.
- Goal: Develop your project idea by evaluating it against a set of questions.
- Place a checkmark by each bullet as it is completed.

MATERIALS

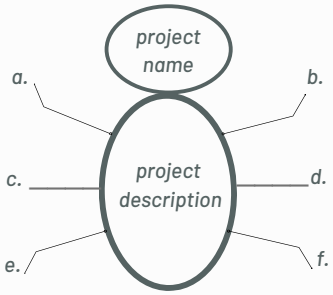
- pen/pencil

WHAT TO DO

- Get seated with your group.

- Before you can think more deeply about your idea, who in the community should you consult (interview), e.g. community members most impacted by a changing climate, civic leaders, district facilities staff, Indigenous leaders and elders, organizations in your community who work on climate adaptions?

- Does your idea have strong legs? You might think you have a great idea, but when you evaluate the idea against a set of questions, you can quickly realize you might need to think again. Draw the design on your large surface (poster/butcher paper/sticky note). Write the actual project name and description your group has agreed upon.



- Answer each question a. through f. Consider answering the questions in your notebook before adding them to your insect. Don't forget to share.

  a. Who is the project for, and how does it help them?
  b. What makes it different than what already exists?
  c. Is the idea concrete? Can you visualize it in your mind?
  d. Is the idea realistic? Can it be achieved?
  e. How would you explain it clearly in one sentence.
  f. What is the story? How do you tell others about the idea?

This activity is adapted from Pip Decks-Chxrles Ltd | WorkshopTactics.com | Origin BBC, 2013/Chip & Dan Heath, 2007

Activity 4 | Day 4: Storyboard

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

TODAY'S NEED TO KNOW

- Complete this activity with your group.
- Goal: Create a storyboard that takes your project through real interactions to understand better how your idea will work, and the project will unfold.
- Definition
  - storyboard: a sequence of drawings, typically with some directions and dialogue, representing the shots planned for a movie, show, or project.
- Place a checkmark by each bullet as it is completed.

MATERIALS

- pen/pencil
- storyboard outline

WHAT TO DO

- Get seated with your group, and use the storyboard on the back to sequence your project. **If you run out of room use notebook, scratch, or computer paper to create more spaces.**

- **Note:** If you'd like examples, Google "storyboards" and choose images.

Activity 4 | Day 4: Storyboard Outline

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

Activity 4 | Day 5: Make A Model

CLIMATE ADAPTATIONS FOR A RESILIENT SCHOOLYARD

Names:

TODAY'S NEED TO KNOW

- Complete this activity with your group.
- Goal: Create a model showing where your climate adaptations will be located. Be able to explain what the adaption is and how it works.
- Invite the people you interviewed to hear about your final plan and project.
- Who are the decision-makers who can bring your plan and model to life? Invite them to learn about your climate adaptation recommendations.
- Place a checkmark by each bullet as it is completed.

MATERIALS

- Your group's model can be built or be a digital representation of your project. Gather materials accordingly.

WHAT TO DO

- Get seated with your group.

- Using your storyboard, create a visualization of your project--a model--a 3D representation of what your group's solution will look like. You will present your model to the class and potentially others in the community who can help bring your solution to life.

- REMEMBER: Use the previous activities (see below) to inform whom the climate adaptation benefits (who is it for/who does it help) and provide evidence for why the climate adaptation is needed.
  - Activity 1: Redacted
  - Activity 2: Goal 13
  - Activity 3: How Might We
  - Activity 4: Days 1-4 | Climate Resilient Schoolyards

- Gather your materials and follow your teacher's directions for progress and completion dates.

Activity 5

HOPE

Name:

MATERIALS

- internet access
- white cardstock or computer paper
- colors of your choice-colored pencils, crayons, watercolors, colored pens, etc.

NEED TO KNOW

- Complete this activity on your own.
- Goal: Create an observational art piece that shares a hopeful climate message for the future.
- Definition
  - observational art: drawing what you see, experience, feel, hope for.
- Place a checkmark by each bullet as it is completed.

WHAT TO DO

- On a scratch piece of paper, in the center of the page write the words climate and future. Around those words write down words, sentence fragments, and sentences that express your feelings, ideas, and hopes for the climate future. There are no right or wrong responses. This is a brain dump and free-writing activity.

- Mari (said like starry) Andrew is an observational artist. Review how she illustrates her emotions, lived experiences, and ideas. Go to My Modern Met, https://mymodernmet.com/mari-andrew-empowering-illustrations/.

- Using your reflection from bullet one and inspiration from Mari Andrew's artwork create an observational art piece that conveys a hopeful climate future.

- As a class, host an art show. Together, determine:
  - where it will be hosted, e.g. library, classroom, etc.;
  - what time it will be hosted or how long art will be on exhibit;
  - who will be invited; and
  - how will the information get out?

National Wildlife Federation

Uniting all Americans to ensure wildlife thrive in a rapidly changing world.

contact: eco-schoolsusa@nwf.org

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