



Welcome
to the

TCI
**Learning
Lab**

Teacher Guide

Adapting Learning Labs For Elementary Classrooms

Overview

TCI's Learning Lab modules are designed to teach middle and high school students about a number of climate and climate change topics. However, these lesson plans, activities, and resources, are meant to be adaptable to your classroom, regardless of subject or grade level. While we welcome educators to utilize the lab in its entirety, we understand that's not always feasible! Instead, we encourage you to take the lessons, skills, and activities that work for you and your students, and adapt them to meet your classroom standards and needs. We recognize this could be an additional challenge for elementary educators, so we're here to help! Below, you'll find a guide, teaching tools, and resources for adapting Learning Labs for your students. As always, if you have any questions or want additional guidance, please reach out to us at info@theclimateinitiative.org.

Understanding The Learning Labs

- **Each portion of the [Learning Lab](#) is organized into three frameworks- educate, empower, and activate.**
 - Educate: The Science; Lessons 1-3
 - Empower: Lessons 4-5
 - Activate: Lesson 6
- **The Science-** This lesson introduces students to the topic at hand. It provides an overview into the background or science of the climate change topic being discussed, and offers a digestible overview of the scientific causes, effects, and outcomes of the topic.
- **Lesson 1-** Introduces the Three Lenses and encourages students to examine the topic utilizing the social, economic, and ecological lenses.
 - Includes the Bitmoji Classroom activity that encourages students to explore a series of resources on the topic to gain a better understanding.
- **Lesson 2-** Introduces students to different types of case studies and provides examples of case studies on the topic at hand. After analyzing case studies, students are prompted to research and write their own brief case study on the module's topic.
- **Lesson 3-** Introduces the importance of data in understanding climate change. Rather than focusing strictly on the numbers, this lesson is designed to teach students how to read data in order to understand the story it's trying to tell.
- **Lesson 4-** This lesson asks students to examine how the module's topic might be impacting their school, community, and/or state. It prompts them to explore their community in a new way through a project.
- **Lesson 5-** Introduces the Community Conversation and asks students to engage with their community members and stakeholders. In this way, students better understand perspectives on climate change and it how it might be impacting their community. In talking with community members, students can spark climate action and/or mitigation.
- **Lesson 6-** Asks students to take action. This can be done individually, in groups, or as a class. It is student designed and led and is meant to show students they can take action, no matter how big or small.

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Adaptations

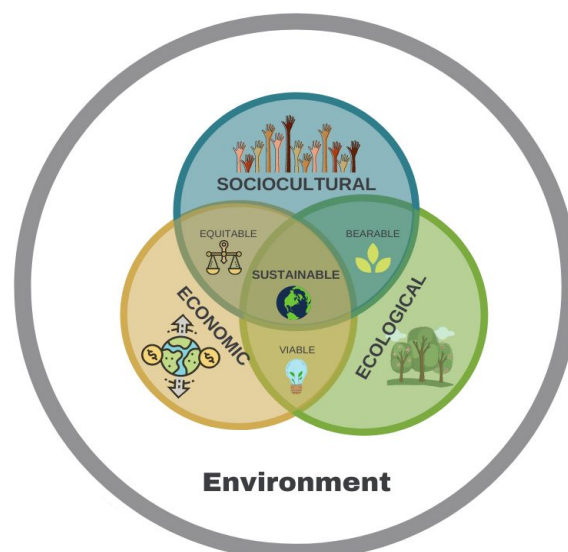
The Science Behind

When introducing elementary school students to climate change, it is especially important to instill a sense of climate hope in your students. When discussing climate change and its impacts, be sure to conclude conversations with examples of climate action being taken to reverse the issues being discussed.

- Climate science can be confusing to young learners, so it's important to keep it simple-focus primarily on the fact that the climate is changing.
- Explain the causes and effects of the climate topic at hand by connecting to local or easily understood examples.
 - EX: If utilizing the [wildfires lab](#), you can explain that changes to the climate are making some areas of the world hotter and drier. Without adequate rainfall, forests in these areas then become at risk for wildfires. Dried out trees, shrubs, and vegetation allow wildfires to spread further. This can destroy forests and their surrounding ecosystems. You can conclude by reassuring students that some wildfires are natural and beneficial to forest health. But, remind them that they and their families can help prevent wildfires by practicing fire safety when doing things like camping or having bonfires.

Lesson One

- When introducing the Three Lenses, ask students to brainstorm how they think climate change (the Learning Lab topic at hand) might impact:
 - Ecological: animals, forests, beaches, plants, weather patterns, temperatures, etc.
 - Social: their town/community, people's homes, their health, etc.
 - Economic: the costs of response/recovery, the costs of lost land/crops, costs to tourism, costs to local businesses, etc.
- It is important to connect the Three Lenses to things students already know in their community. Be sure to lead the discussion and prompt students through the different lenses with guiding questions. Include plenty of examples!
- The bitmoji classroom [student activity](#) can be scaled down to a handful of resources that students explore in groups. It will be best to find interactive, easily followed resources that introduce the topic to the students at their grade level.



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Lesson Two

[Case studies](#) are an important part of the Learning Lab, as they strengthen students critical thinking and analytical skills. That being said, case studies can be complicated for young learners! For this lesson, you can choose to break down one specific case study with students as a class.

- Find a case study that suits your student's grade level and reading skills.
 - The case study can be non traditional as well! If teaching younger students, you can opt for a Youtube video, documentary, or storybook. No matter which type of media you choose, the important part will be teaching your students how to analyze the media and identify the pieces of a case study (problem, context, solution & implementation, and evaluation & results).
 - As you walk students through the case study, help them analyze the context through the Three Lenses.
 - While this lesson asks students to write their own case studies, you can opt to skip this activity. Alternatively, you can complete this activity as a class and at a smaller scale. Rather than writing a case study, ask students to identify a climate issue, its effects, potential solutions, and how it relates to the Learning Lab topic at hand.
 - This can be as simple as the following:
 - Climate Issue: Our community has an extensive population of an invasive species.
 - Causes/Effects: Due to climate change (*fill in specifics with your class*), this invasive is hurting our local ecosystems, minimizing species habitat, and eliminating food sources.
 - Solutions: Community education campaigns, natural deterrents of the species, volunteer groups/action days for species removal.
 - How it relates to the Learning Lab: This example relates directly to the Invasive Species lab, but it also correlates with the agriculture, floods & droughts, sea level rise, and wildfires labs.

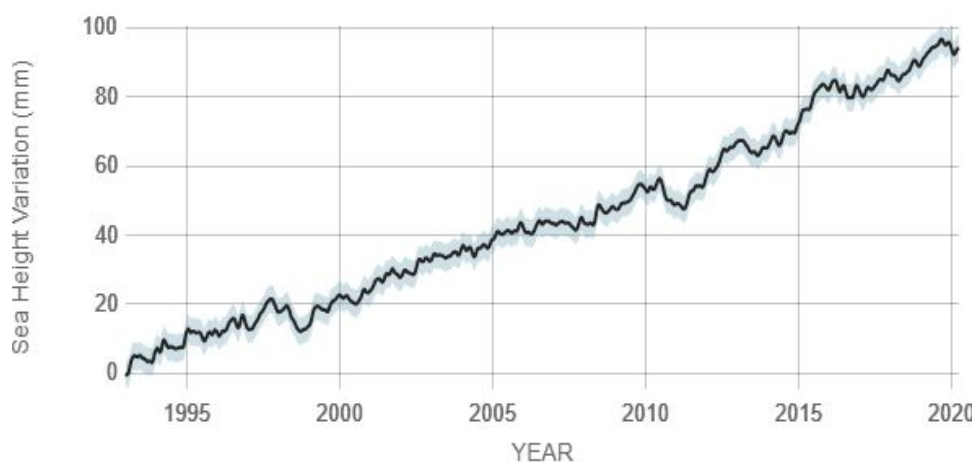
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Lesson Three

Data is an important part of understanding climate change, causes, and effects. However, if students are just learning about data and how to read it, it can be complicated. If your students are at a level (or you teach a related subject) to read and interpret data, help them work through some data sets! Or, if your students are not quite yet there, be sure to focus the conversation less on the numbers and graphs, and more on the story they represent.

- Data ultimately uses numbers and graphs to tell a certain story.
- Data is very important for providing context, evidence, and visual representation of a given phenomenon.
 - It is important for students to be able to visualize this data, but even more important for them to understand the story it is telling and the greater context it fits into.
 - EX: consider the graph below.
 - The axes of the graph track sea height and year. The graph shows a clear trend that as the years progress, the height of the sea continues to increase. As a result, the graph is demonstrating a clear trend in global sea level rise.
 - This is the important part of the lesson and conversation. Based on what the graph is symbolizing, you can ask students to start thinking about why sea level rise might be increasing so dramatically, and the causes behind this trend.
 - While a graph can help frame these conversations, it is not entirely necessary. If you're teaching young learners, have them focus on the thematics, rather than the numbers.



Source: climate.nasa.gov

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Lesson Four

A critical piece of TCI's Learning Labs is student empowerment. As an educator, this means enabling your students with the knowledge, tools, and skills to analyze and communicate about the climate topic at hand.

- Student empowerment can look different between grade levels. As young learners, the most important thing for your students will be learning how to communicate climate change and science (at their skill level).
- For younger elementary students, this could include artwork, short stories or essays, or brief reports.
- For older elementary students, this can include creating PSA posters, hosting a 'learning fair' where other classes can learn about climate change from your students, citizen science data contributions, or documenting climate changes in their community (via photos, video, journaling, etc.).
- No matter what age group, let students get creative!
- [Additional activities and projects](#)

Lesson Five

Another critical piece of the Learning Labs is the [community conversation](#). Community conversations bring students, community members, and stakeholders together for a discussion about a climate change topic and how it's impacting their community. They are meant to help document changes in the community over time, and to empower students to lead discussions about climate change.

- In an elementary school setting, a community conversation can be amended.
- Identify relevant stakeholders, partners, or community members to come speak to the class, encouraging discussion with students.
- Partner with other teachers and classes to host a larger discussion with other students.
- Host a school-wide assembly or event where your students can help teach others about climate change and what they've learned.

Lesson 6

The most important component of the Learning Lab is the Action Project. Action projects are student led and directed, allowing them to take action in a way that feels meaningful to them. Regardless of subject or student age, action projects can be as small or big as you and the students want it to be.

- If you're interested in doing an action project with your students, consider working together as a class, assigning each student to a group and a role.
- Your action project should introduce students to the types of projects and actions they can take to help mitigate a climate issue.
- See some examples of TCI elementary educators' action projects on our [Climate Action Map!](#)

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Additional Resources

- [Climate Change For Kids | A Fun Engaging Introduction To Climate Change For Kids](#)
- [The Environment for Kids - Climate Change, Greenhouse Effect, Looking after the Planet and Energy](#)
- [Climate Resources](#)
- [Teaching About Climate Change Elementary School](#)
- [Climate Change Connections- Resources for Teachers](#)
- [Teaching Climate Change To Grades K-2](#)
- [NSTA Climate Change Resources](#)
- [Climate Change Live- Lesson Plans](#)
- [7 Tips for Teaching Climate Change in the Classroom](#)
- [A Guide to Climate Change for Kids](#)
- [Bringing Climate Change Into the Elementary Classroom](#)
- [Elementary & Middle School Earth Day Resources](#)

Activities

- [Climate Kids- Activities](#)
- [UCAR Classroom Activities](#)
- [10 Climate Change Games for the Classroom](#)
- [10 Climate Change Activities for Kindergarten](#)
- [Climate Change Actions Elementary School Students Can Take?](#)
- [7 Climate Change Hands-On Activities to Keep Kids Engaged](#)