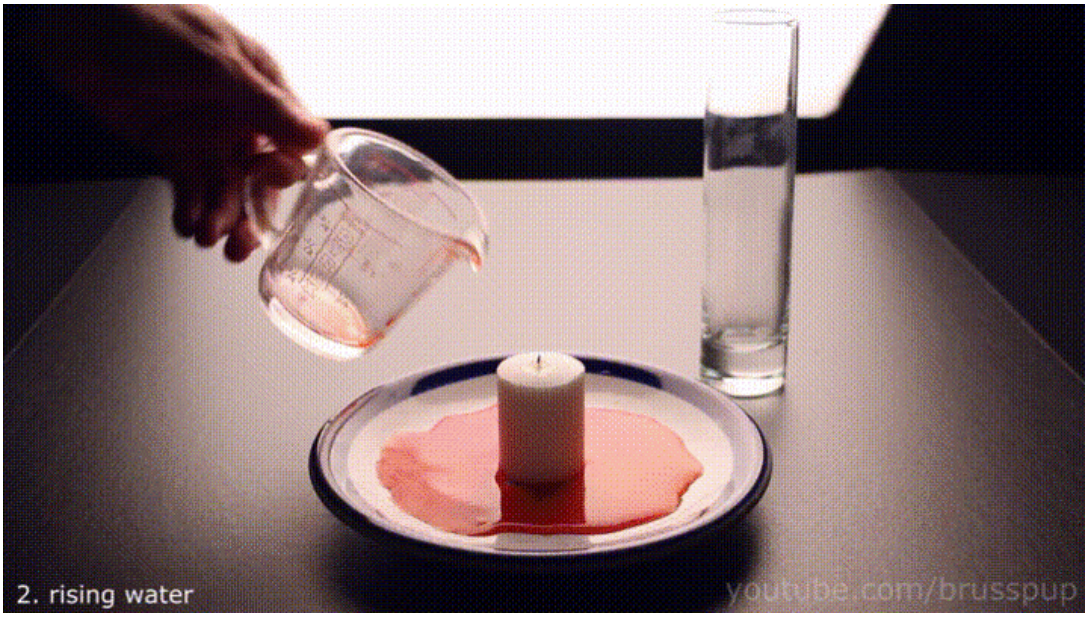
STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS

CGI

Climate Change Lesson Plan Part 1 — Ages 11 to 18 years old



The lesson plan provides basic instructions for educators and CGI STEM Champions who are executing the Climate Change virtual lesson for students who are ages 11-18. This is a high-level overview that will require adjusting to the unique needs of your students.

High Level Overview

- **Time Needed**

  This plan is designed for a course that has a total of three (3) parts. This lesson plan is focused on Part 1. This lesson is 60 minutes in length. With student welcome, organization and movement required across teams, we have structured this content to be 55 minutes in length to add some padding. Note: this course can be expanded to more time based on the age group of the students.

- **Student Learning Objectives**

  Given the duration of this course, we expect the students to focus on:

  - Understanding the basic differences between climate change and weather
  - How scientists measure climate change
  - Conducting a virtual trip on a research vessel
  - Observe the calving of icebergs and how icebergs release debris as they melt.

- **Instructors needed**
  - A minimum of 2 instructors is needed to run this course. One to present the slide deck and one to watch and respond to the chat and the presenter.

❖ **Materials needed**

Student preparation in advance of lesson:

- Have computer capable of running the video conferencing platform you'll be using.
- Showcase the "Candle Trick" (Mckenna and Zieminski 2021) climate change phenomena.
- Review the *JOIDES Resolution (JR)* research vessel (Observatory 2021) lesson.
- Have 3 small paper cups prepared with dirt, grass, and gravel and 1 clear drinking glass filled with water.
- Have experiment prepared and frozen for demonstration.
- Timer
- Printable storyboard template

Climate Change Part 1

High level Task	Time (mins)	Description
Welcome	5 min	This is the time for the instructors to introduce themselves, including their credentials for teaching the course. If there is something they can say to connect with the participants at this point, this would be a good time to do it. Review group norms and agenda.
Introduction to Climate Change	5 min	Present the "Candle Trick" phenomenon. Remember not to explain what is happening in the image at this point. Prompt students about what is happening in the gif. candle+.gif (720×404) (squarespace-cdn.com)
What is the difference between climate change and weather?	5 min	Show the TEDEd Weather vs. Climate: Crash Course Kids #28.1 (TEDEd 2021) video link shown in the title. When the video has ended, review the differences between climate change and weather and how scientists measure climate change.
Be the Scientist!	40 min	Guide students to the *JOIDES Resolution (JR)* exploration and allow them to develop some understanding of how climate change affects the rise in sea levels around Antarctica. Instructor to present and demo previously prepared calving activity. Students will observe calving of icebergs and how icebergs release debris as they melt. (NOTE: this portion will need about 2-3hrs if students are doing this on the experiment on their own)
Closing	5 min	Have students draw and present a storyboard of what they have witnessed before and after the ice melts explaining the candle trick phenomenon presented at the beginning of the lesson. See the supplemental materials for the printable storyboard template.
Total Time	**60 min**	

Supplemental materials for this lesson can be found in the STEM@CGI at Home Activity Pack.

Citations

The following sources were used as a reference to create the work for this course:

Mckenna, T., & Zieminski, C. (2021, February 12). *Phenomena for NGSS*. Retrieved from Creating the Next Generation of Student Engagement: https://www.ngssphenomena.com/

Observatory, U. S.-D. (2021, February 12). *About the JR -- Joides Resolution*. Retrieved from International Ocean Discovery Program: https://joidesresolution.org/about-the-jr/

TEDEd. (2021, 02 18). Retrieved from What's the difference between weather and climate?: https://ed.ted.com/best_of_web/jyOdrQUt