

OUR FOOTPRINT, OUR FORESTS, OUR FUTURE

A lesson in carbon sequestration for Grades 6-8

When Felix Finkbeiner was 9-years old, he was assigned a school project to research the climate crisis. He discovered the story of Wangari Maathai, who planted 30 million trees in Africa in 30 years. To Felix, Wangari was a superhero who fought for climate justice by acting on change, rather than simply talking about it. Through his inspiration, he started Plant for Planet and made a commitment to planet 1 trillion trees with children around the world. In partnership with the United Nations Environment Program, Felix has become a role model for children and adults alike in his campaign to plant a healthier planet.



"Children can do something. They can change a lot, and they can make a difference."

"Plant for Planet" is the perfect story to share with 6-8th grade students during a science unit on climate change and carbon sequestration. In a three-part structure, the lesson begins with an examination of the relationship between climate change and disruptions in the carbon cycle. Next, students will explore Felix's story in contrast to an interactive deforestation map to see how youth have the power to counteract these disruptions. Finally, students will gather data on their own carbon footprints and develop an "A.C.T.I.O.N" plan that outlines how they will strive towards greener footprints, forests, and futures.

Link to film: <https://www.youngvoicesfortheplanet.com/youth-climate-videos/plant-for-planet/>

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Lesson Plan Instructions



ESSENTIAL QUESTION:

What actions can we take as individuals to sequester carbon?

OBJECTIVES:

Students will examine the relationship between climate change and the carbon cycle. Students will identify trends in deforestation and methods of carbon sequestration. Students will estimate their carbon footprints and identify methods to reduce them.

DIRECTIONS (suggested lesson time of...)

1. Warm-Up activity: "Viewpoints on the Line". Begin the lesson with an activity that has students on their feet. Depending on the layout of your room, create a spectrum, designating one end of the classroom as the "Disagree" and the other as "Agree", with space in between for students to stand (including a neutral/unsure space in the middle). Share with students that you will read aloud the following statements about climate change, and students will stand on the spectrum according to their viewpoints. Use the following statements:

- *Global warming is a problem facing the world today.*
- *Global warming is a problem cause by humans.*
- *Temperature increases seen as global warming are part of the Earth's natural cycle.*
- *Humans can solve global warming issues.*
- *Humans have an ethical responsibility to mitigate global warming.*
- *Drought and extreme weather conditions blamed on global warming are really a part of the natural cycles of the global climate systems*
- *By utilizing alternative energy sources other than fossil fuels, we can mitigate climate change.*

Depending on time allowance, prompt students to share why they chose to stand where they did after each question and build discussion. Many students may stand in the neutral territory either due to uncertainty or lack of knowledge on the topic.

2. Introduce topic: After returning to seats, distribute the handout to students and pull up the TedEd video, "Climate Change: Earth's Giant Game of Tetris."

(<https://www.youtube.com/watch?v=ztWHqUFJRTs>) This video explains the carbon cycle and its relationship to climate change, and answers many of the questions students may have from the warm-up activity. Pause intermittently to allow students to answer questions on the handout and review their answers afterward. It may be beneficial to watch the video twice.

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Lesson Plan Instructions (continued)

3. Interactive map activity: Have students use tablets, laptops, or computers to access the interactive map developed by the University of Maryland (<http://earthenginepartners.appspot.com/science-2013-global-forest>). It is suggested that teachers familiarize themselves with components of this page before delivering the lesson. Students are prompted to answer questions about deforestation around the world on the handout, using various features of the interactive map. You may want to demonstrate an example on the projector first, then walk around and assist students.

4. Show YVFP film, "Plant for the Planet": Use this video to show students how young people, such as Felix, are capable of doing extraordinary things to sequester carbon and mitigate the effects of climate change. Pause intermittently throughout to allow students to answer questions on handout - share responses when done. (link on cover page)

5. Carbon footprint calculator: Students will likely need to complete this part of the lesson at home with parents or guardians, as the task requires data about their home expenses, consumer habits, etc. If time does not allow, you may have students estimate or take an educated guess. After filling out the required parts of the activity, students should record their findings on the handout. (<https://www.nature.org/en-us/get-involved/how-to-help/consider-your-impact/carbon-calculator/>)

6. A.C.T.I.O.N plan: The lesson concludes with students creating an "A.C.T.I.O.N" plan that empowers students to participate in Felix's efforts in their own ways. Students can use examples from the Nature Conservancy's "Take Action" page at the end of their carbon footprint calculator for ideas to get started.

MATERIALS:

- Student handout
- Writing utensils
- Tablets, laptops, or computers
- Projector, A/V equipment, and internet connection
- "Agree"/ "Disagree" signs

SUGGESTED MODIFICATIONS:

- **For ELD Students:** use captions during films and provide written transcripts, illustrate action plan rather than write responses
- **For Differentiated Instruction (DI):** Allow students to record answers to viewpoint activity on sheet rather than walking, to re-watch films at own pace, provide limited options & extra guidance for interactive map, provide estimated averages for carbon footprint survey.