



Yinta

We are the land and the
land is us...

Graham Cocksedge & Erika Simonson

Inspiring Climate Action in BC Secondary Schools, October 2023

Biodiversity is the foundation of resilient ecosystems, and I can contribute to its health

CONNECTION

How does climate change affect biodiversity? How does diversity promote resilience?

BIODIVERSITY

What is Biodiversity? How does maintaining biodiversity contribute to ecosystem health?
Measuring biodiversity field experience.

CLIMATE CHANGE

Introduction to the science



ASSESSMENT

Personal action project
Written product
Presentation of learning story

TAKE ACTION

Field experience to support biodiversity. Individual actions by students.

HUMAN IMPACTS

How do human activities, policy and economics affect biodiversity?
How does biodiversity support functioning systems and societies?

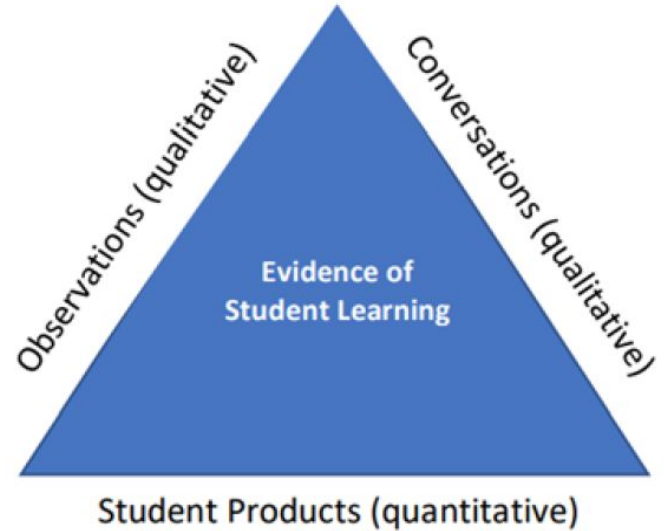
Project takeaways

Emphasis on learning story & personal reflection



Emphasis on active participation and skill development

Assessment strategies



Science 10: Earth's Energy Systems

How do our energy choices affect Earth's energy and climate systems?

Earth's Energy Budget

How does energy get to Earth?
Solar Radiation
Earth's Energy Budget
The Greenhouse Effect

Part 1

Thermal Energy Transfer

How does energy move around Earth?
Conduction, Convection and Radiation
Save the Penguins Design Lab
Extreme Weather Jigsaw activity

Human Energy Use

How do humans transform energy into usable forms?
Hydropower
Electricity Generation Jigsaw

Part 2

Part 3

Climate Change Action

How do our decisions contribute to or mitigate climate change?
Mock UN climate conference with stakeholder groups

Assessment Pieces

Content quiz/test
Formal Lab Report
Climate Autobiography Project

Part 4

Assess

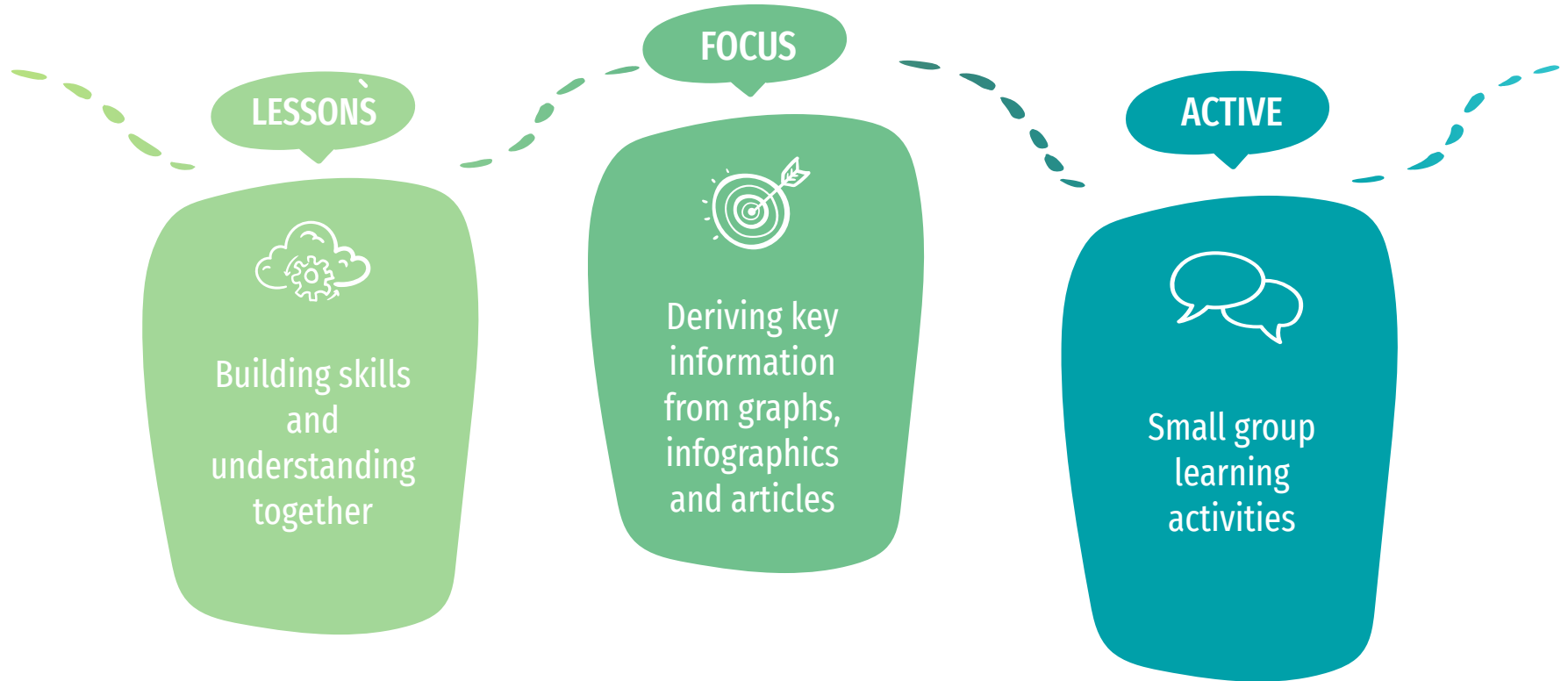
hishuk'ish
tsawalk
EVERY
THING
IS ONE



Image credit: David Stanley, CC-BY-2.0

[https://commons.wikimedia.org/wiki/File:Brady%27s_Beach_\(50209914551\).jpg](https://commons.wikimedia.org/wiki/File:Brady%27s_Beach_(50209914551).jpg)

Goal: To actively and collaboratively build understanding, as well as the skills to produce and consume scientific knowledge



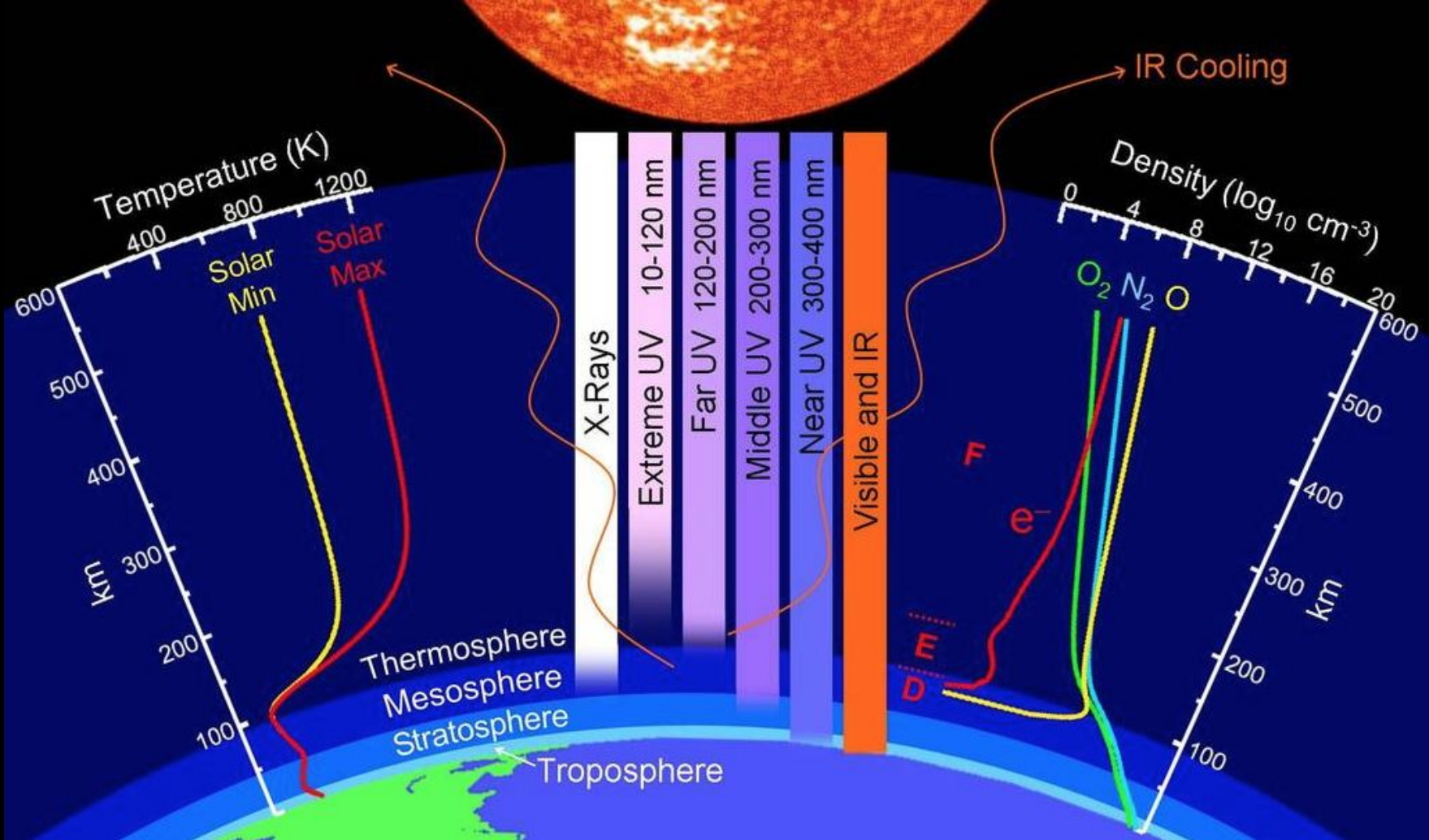
Daily Agenda

Where does Earth's energy come from?

- 1) Interpreting infographics: Earth's atmosphere
- 2) Introduction to solar radiation: video
- 3) Solar radiation and the electromagnetic spectrum:
interpreting graphs and diagrams

Evaluation

- ❑ I can describe what happens to solar radiation as it meets the atmosphere or the earth, for different parts of the electromagnetic spectrum and compare emission spectra of the sun and Earth.
- ❑ I can derive key information or trends from graphs or infographics and use them to draw conclusions



What's coming at us?

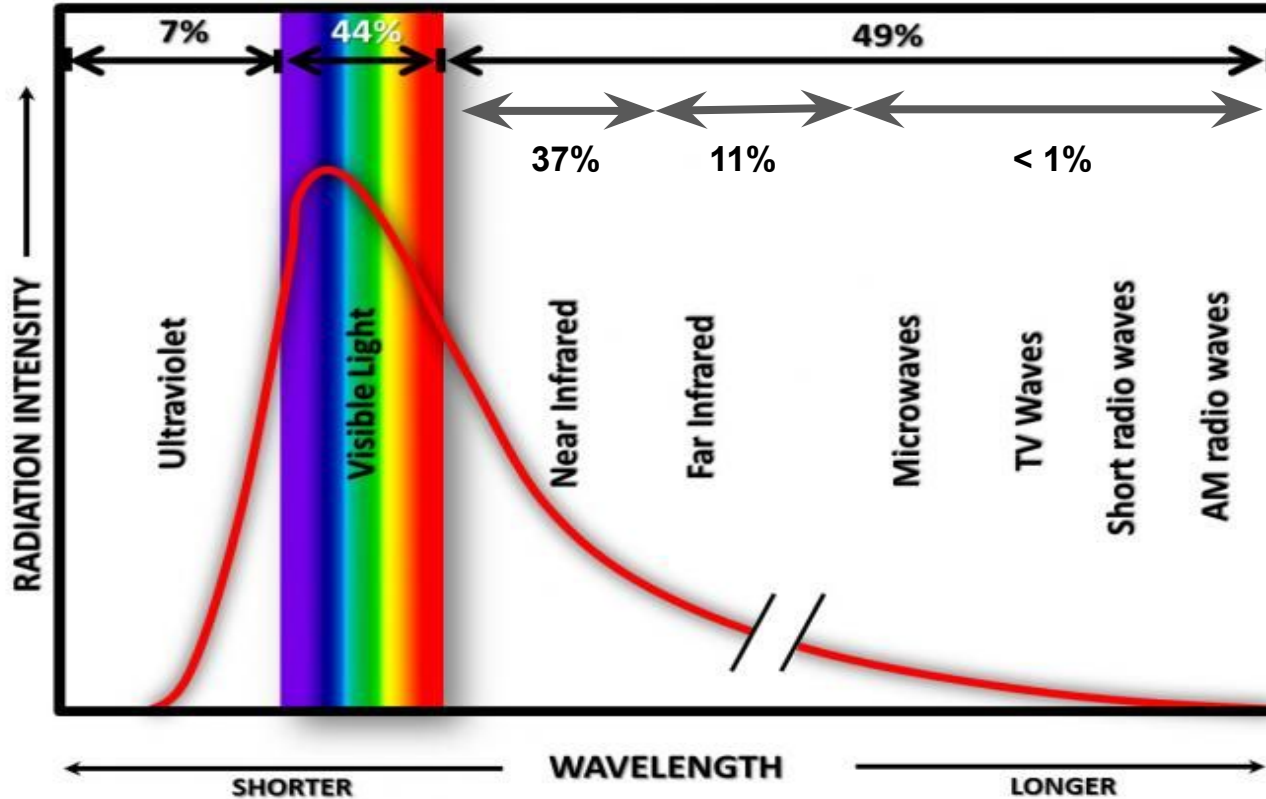
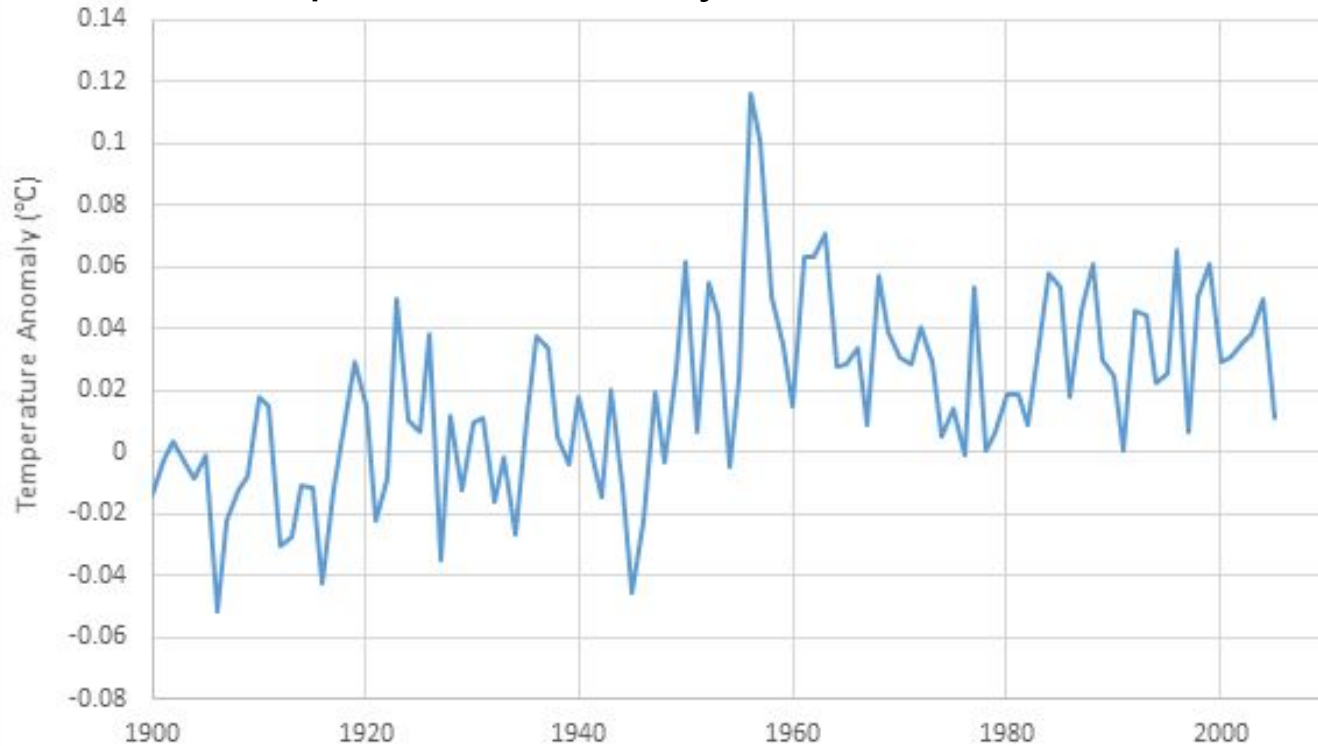


Image credit: Dr. Julie Lambert & Alana Edwards, NASA Climate Science Investigations, Public Domain.

<https://www.ces.fau.edu/nasa/module-2/radiation-sun.php>

What is the big idea of this graph?

Temperature anomaly due to solar variation



Graph © Perimeter Institute. Data from [NASA GISS](#); using a baseline relative to 1850–1859. Reproduced with permission.

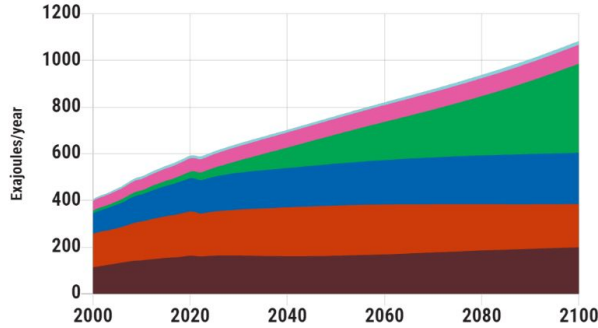
Climate Action Simulation Game



English Simulation Graphs View Help

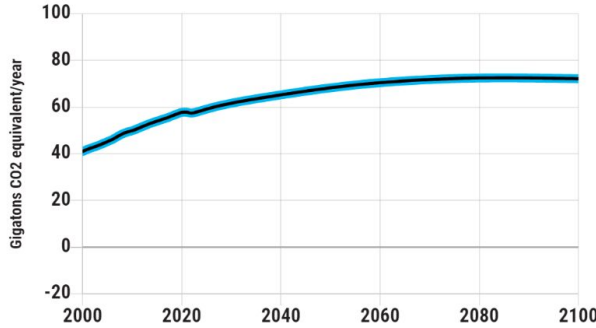
Share Your Scenario

Global Sources of Primary Energy



COAL OIL GAS RENEWABLES BIOENERGY NUCLEAR NEW ZERO

Greenhouse Gas Net Emissions



BASELINE CURRENT SCENARIO

+3.3°C

+6.0°F

Temperature Increase by 2100

Energy Supply

Coal Renewables

Oil Nuclear

Natural Gas New Zero-Carbon

Bioenergy Carbon Price

Transport

Energy Efficiency Electrification

Buildings and Industry

Energy Efficiency Electrification

Growth

Population Economic Growth

Land, Food, and Industry Emissions

Deforestation Methane & Other Gases

Carbon Removal

Afforestation Technological



Register Your En-ROADS Event

Climate Autobiography Project



How do you feel about climate change?

First day of class begins with personal reflection on current knowledge and emotions around climate change.



What have you learned?

Students choose three artifacts that represent their key learnings from the unit.



How do our energy choices affect Earth's energy and climate systems?

Written reflection on the unit's driving question at the end of the unit.



What is your place in energy and climate systems?

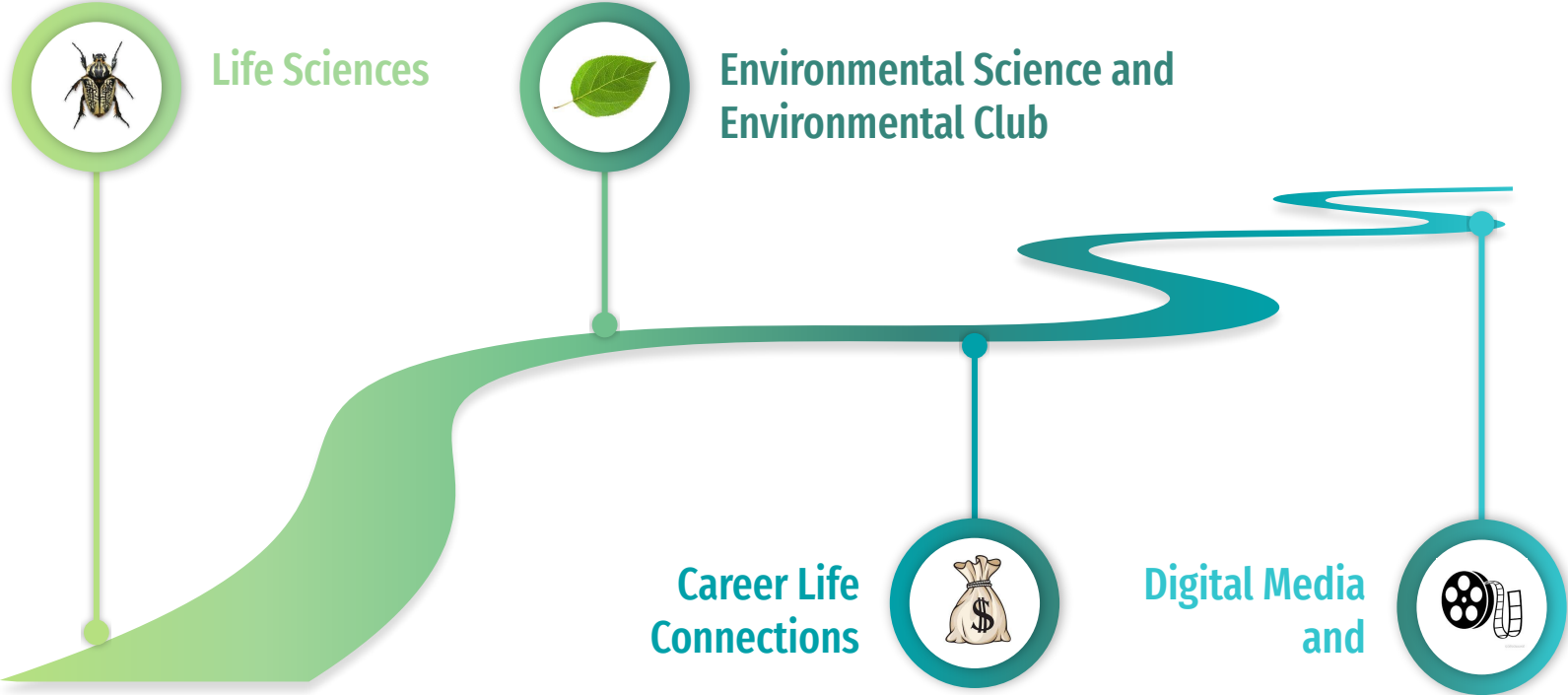
Students personal climate actions, and reflection on changes to their understanding and/or emotions around climate change.

“I didn’t realize how big of a problem climate change is, and also how much my actions can affect it. At the end of this unit I am feeling really optimistic about our ability to solve climate change”

“This unit has taught me a lot about the scientific side to climate change such as gases, additionally this unit has taught me a lot about the solutions to climate change and what globally and personally we need to do as a society to find solutions to these problems.”

“This unit has definitely increased my knowledge and understanding of climate change and really makes it more visible in a sense where I can see it in my everyday life and think about the things I'm doing before I do them to contribute to the solution. This unit has really change my outlook on it.”

Breaking away from mutually exclusive disciplines and units...



“People do not decide their futures.

We decide our habits and our habits decide our futures ”

In other words...

“People do not see the world as it is,

we see the world as we are.”

Big Picture



**Climate Science,
Research,
Guest Speakers**
September-October



**Microplastic
Surveys**
October 10



**Marine Debris
Clean-Up**
October 24-27



**Formative
Assessment**
Term End
mid-Novemeber



**Remembrance
Day for Lost
Species**
Nov 30

Environmental Club

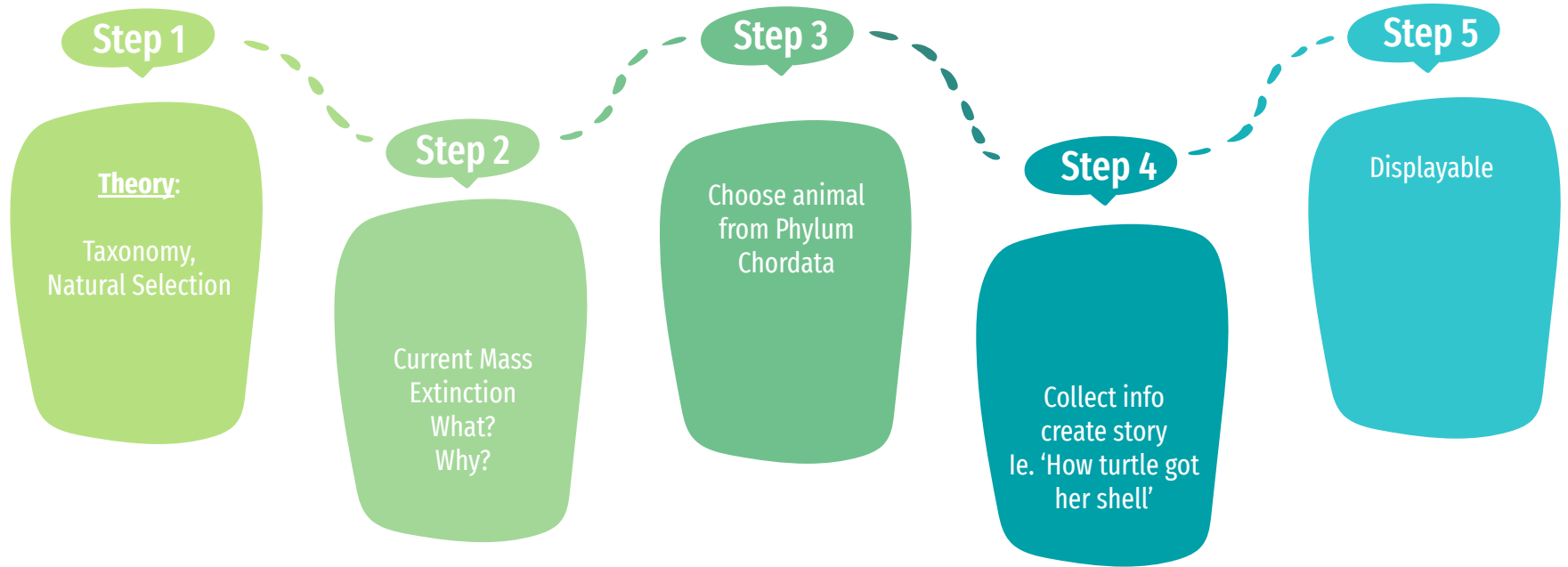
Planning logistics:

Booking theatre,
itinerary,
display space,
elementary contact,
speakers

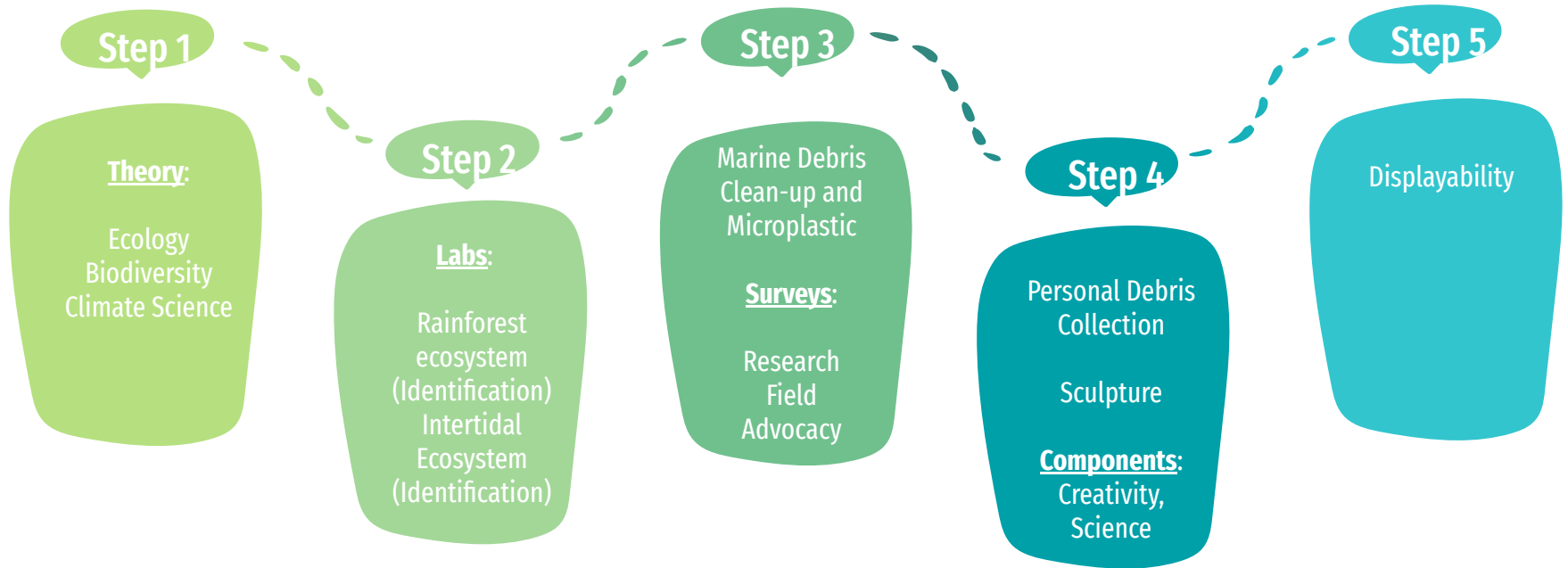
Elementary Outreach:

Grade 5,6
Eco-Teams

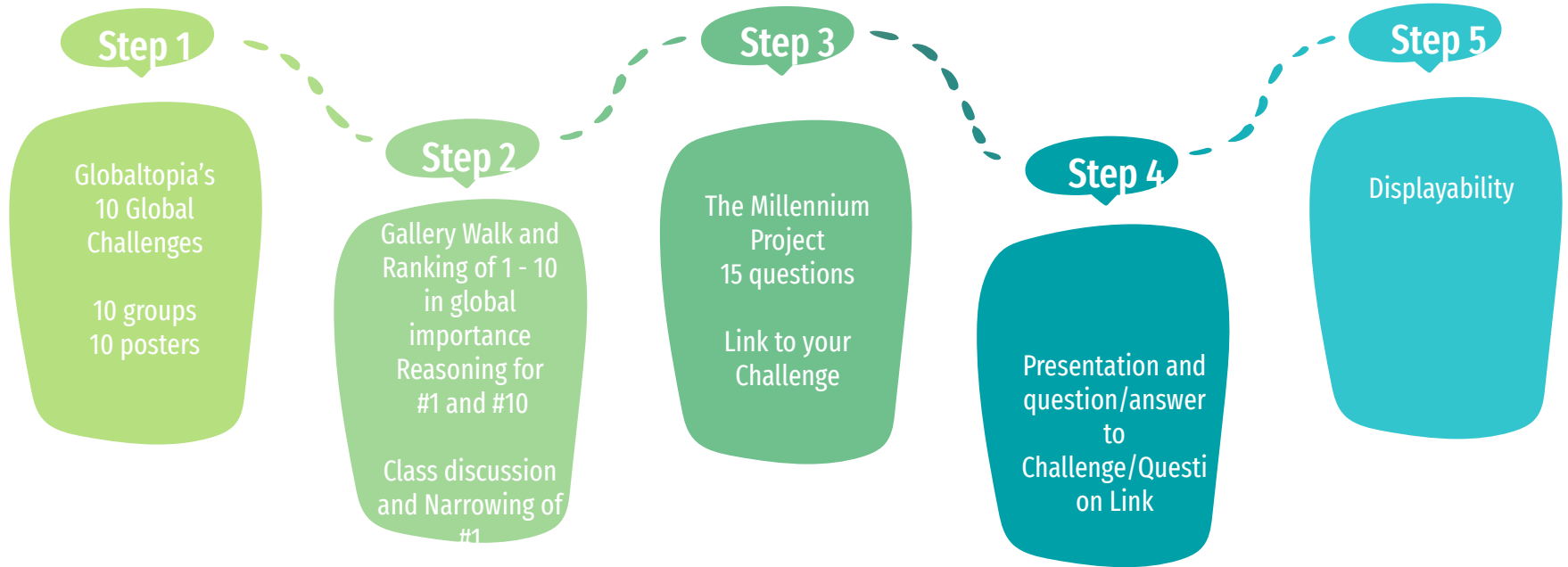
Life Sciences 11



Environmental Studies 11/12



Career Life Connections



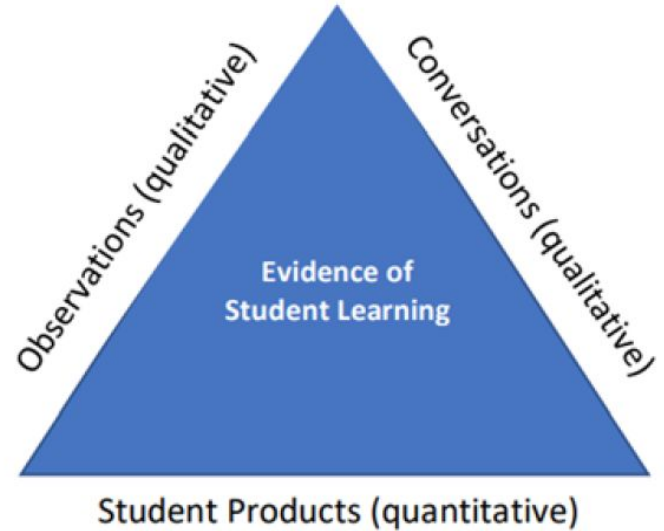
Discussion on Assessment

Emphasis on learning story & personal reflection



Emphasis on active participation and skill development

Assessment strategies



**“The best questions don’t want answers as much
as companionship”** *Myron Dueck*

Thank you

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