

Learner-Focused Inquiries

Essential Questions for Each Grade Band



This section and the next two sections provide suggestions for initiating and facilitating learner-focused inquiries. Specifically, we suggest Essential Questions and examples of Inquiry-Based Action Projects for four grade bands (K-2, 3-5, 6-8, and 9-12), for adult learners, and for informal audiences.

The concept of Essential Questions grows out of the educational research of Grant Wiggins and Jay McTighe (*Essential Questions: Opening Doors to Student Understanding*, ASCD, 2013). Such questions guide teacher instruction and student learning by focusing on major issues, problems, and themes that invite students to explore a subject in meaningful ways.

The suggested Essential Questions for the study of climate change have been designed to be appropriate for the cognitive and affective levels of development for students at different ages. The questions spiral up in complexity.

In the next section of this e-publication, you will find a template to use in guiding the learners you work with in defining their own Action Projects and then an example of an Action Project for each grade band and for adults. The specific project included for each grade band and for adults is merely an example.

Essential Questions by Grade Band

Grades K-2

WEATHER

- What is weather?
- Is the weather the same every day?
- How is it different from one day to the next?
- Have you experienced very hot/cold/windy/rainy/snowy weather?
- How do these kinds of weather affect people, plants, and animals?

RESOURCES

- What do we need to live?
- What do other animals need to live?
- What do plants need to live?
- What do people need that other animals and plants need, too?

GREENHOUSE EFFECT

- Why is sunlight important to life on Earth?

Grades 3-5

WEATHER AND CLIMATE

- What is the difference between weather and climate?
- What are some ways to track weather patterns where you live?
- Why is it important to collect data about weather and climate?
- Are climates the same in other parts of the United States (3-4)? Of the world? (5)

GREENHOUSE EFFECT

- How does the sun warm the earth?
- What is the greenhouse effect?
- What might happen if the sunlight warms the earth too much, and how might that affect people, other animals, and plants?

RESOURCES

- What are natural resources, and how do we use them?
- Are some of these natural resources renewable? How?
- Could we ever run out of natural resources? Which ones?
- What are some ways we can conserve (or use less of) our natural resources, such as: water, soil, food, coal, oil, gasoline, etc.?
- What are some ways we can protect our natural resources?

CLIMATE CHANGE

- What are some examples of renewable energy sources/technologies that could reduce human impact on the climate? How would each reduce climate change impacts?
- What are some steps that we can take to reduce human impact on climate change?

Grades 6-8

WEATHER AND CLIMATE

- How is weather different from climate?
- How are weather and climate influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things?
- How does human impact change how these features regulate the climate?
- Why does severe weather happen?
- What are some ways that humans can decrease the impacts of severe weather?

RESOURCES

- How do some of the natural resources we use impact the climate? (Local, national, global)
- How has the use of energy resources increased over the past century, and what does this have to do with climate change?

GREENHOUSE EFFECT

- What are greenhouse gases, and how are they related to climate change?

CLIMATE CHANGE

- If climate has changed throughout the earth's history, why is there so much concern about climate change today?
- What factors are responsible for climate change?
- Why do most scientists think that Earth's climate is changing as the result of human activity?
- What human activities are likely contributing to climate change?
- Why might people disagree about climate change?
- What can individuals do to slow the rate of climate change?
- What are local communities trying to do about climate change, and what are countries around the world trying to do about climate change?
- How will efforts to slow climate change affect individual people, communities, countries, and the planet?
- Who is responsible for climate change?

Grades 9-12

WEATHER AND CLIMATE

- How is weather different from climate?

GREENHOUSE EFFECT

- What is the carbon cycle?
- What is the greenhouse effect?
- What countries produce the most carbon dioxide as a total for the country? Which countries produce the most per capita? Add in the projected population increases for these countries. What conclusions can you draw from this data?
- How does the increase in anthropogenic carbon dioxide and other greenhouse gases affect climate?



RESOURCES

- How has the availability of natural resources guided the development of human society?
- What are the associated economic, social, environmental and geopolitical costs and risks associated with energy production?
- What new technologies and social regulations balance the costs and risks of

energy production?

- Is it our responsibility to reduce carbon emissions to try to mitigate climate change? Why or why not?

CLIMATE CHANGE

- What are some of the possible outcomes of a warming planet in various areas? Describe these outcomes in terms of their impacts on the environment, humans living in the affected areas, and the economy.
- What are some examples of engineering and technology that have reduced carbon emissions?
- What are the social impacts of climate change? Economic impacts?
- How might climate change affect human health globally? Food access? Civil strife?
- What are the economic impacts of climate change?
- How can climate scientists predict how climate change will impact the future?
- What can be done to mitigate climate change:
 - by individuals?
 - by local/state/national government (in the United States)?
 - by local/state/national non-profit organizations (in the United States)?
 - by national and international corporations?
 - by other countries?