CLIMATE CLUSTERS

Extreme weather. Scarce resources. Natural disasters. These are only a few of the effects of climate change that you may have noticed. Around the world, the reality of climate change is becoming clearer and more urgent every year. There is plenty of work to be done, and many communities are already taking action. People are working to slow down the changes, and to adapt to them. Often, climate literacy is the first step to action: understanding how people and the climate impact each other. This introductory activity seeks to increase basic climate literacy, providing an overview to the many facets of climate change.

Goals:

- Explore a variety of articles, videos, and images related to climate change
- Identify and explain causes and effects of climate change, as well as solutions and adaptations
- Practice communicating fundamental ideas about climate change

Time Needed: 1.5 - 2.5 Hours

Space Needed: A room (internet access optional) and chairs

Materials Needed: Climate Change Resource List (see Appendix A), printed copies of selected images and articles, computers to access multimedia resources, five printed copies of instructions for students (Appendix B), printed copies of discussion questions for each student (Appendix C), writing utensils, large pieces of paper

Preparation:

I. Look through the suggested resources and choose at least 3 for each cluster that best fit the level, time length, and content for your group. If you know of other good resources, feel free to include them.

II. Print five copies of the instructions for students (Appendix B), if you know that your students would benefit from having access to an outline of the lesson. Print 3-5 copies of the discussion questions (Appendix C).

III. Make sure that each group will be able to access the resources, whether this means preparing print-outs or providing computer access and links.

IV. Set up a table for each category of resources with a sign declaring the topic. Arrange 3-5 chairs around each table, depending on the size of the class. Wait to put the resources on the table for now.

INTRODUCTION (5 to 10 minutes)

Briefly introduce the topic of climate change and explain the outline and goals of the activity. Here are a few ideas for an introduction:

- Put up 5 papers around the room. Label each paper with one cluster topic. Give students 5 minutes to walk around the room, writing words, ideas, and questions on the posters that come to mind for each topic. After 5 minutes, instruct everyone to return to their seats. Use what the students have written to introduce what the class will be exploring in the lesson. (For example, point out a student's question that one of the resources will answer).
- Show this video as a basic introduction to the concepts that the clusters will discuss in more depth: http://youtu.be/3v-w8Cyfoq8
- Refer to the introduction to Climate Clusters to explain what climate literacy is, why it is important, and how this lesson will work to increase students' climate literacy.

CLUSTER WORK: RESOURCE EXPLORATION (35 to 45 minutes)

Instruct the students to count off from one to five to divide the class into five "clusters," ideally with 3-5 members each, and assign one of the categories of resources to each group. Direct each group to find seats at the table corresponding to their topic.

Alternately, if you know and trust the group to self-manage well, instruct everyone to select a topic that particularly interests them and sit at the corresponding table. Tell them to leave the chairs where they are, because the group sizes should remain approximately equal.

Announce that each cluster will spend 30-40 minutes exploring the resources provided together, and that the facilitator(s) will be available to address any questions that may come up. Instruct each group to assign a timekeeper, a group facilitator, and a notetaker. (Note: a group facilitator's role is to keep the group on task and encourage participation from everyone).

As the groups look over the resources, monitor their progress, circulating around the room to help students focus and answering any questions that may come up. Be sure to give students ten- and five-minute warnings before the end of the section to prepare them for transition.

CLUSTER WORK: REFLECTION AND DISCUSSION (20 to 35 minutes)

After 30-40 minutes, once it looks like most groups have finished examining the resources, tell the students that they will now take 5-10 minutes to respond quietly to the resources before sharing ideas with their groups. Pass out a copy of the discussion questions for their group (see Appendix C) to each student. Tell them to read the questions and brainstorm their answers, whether this means writing, drawing, or just thinking. Warn the class when they have 3 minutes left for individual reflection.

After individually brainstorming, tell the class that each cluster should discuss their responses to the questions for 15-20 minutes. Remind them to make use of their previously assigned timekeepers, facilitators, and notetakers.

CLUSTER AND LARGE GROUP PRESENTATIONS (25 to 35 minutes)

After 15-20 minutes of cluster-level discussions, announce that each group should spend 10-15 minutes deciding on a few takeaways to share with the entire group and an effective way to present this information in 3-5 minutes. These takeaways should aim to answer the following questions:

- What theme/topic did your group focus on?
- What do you want the rest of the class to know about the resources you looked at?
- What were the main points that came up in your cluster discussions?

Encourage everyone to make use of the markers and paper for some kind of visual aid.

Give students a 5-minute warning before instructing them to return to the full group. Once the class has re-assembled, invite each cluster to take 3-5 minutes to present their takeaways while the rest of the class listens.

WRAP UP (10 to 15 minutes)

For a closing activity, instruct students to think quietly for one minute in response to two questions:

- What was one thing you learned from this activity?
- What is one question you still have about climate change?

After one minute of reflection, ask for a volunteer to begin the sharing. (If no one volunteers, pick someone.) Go around the circle and have each student share their answers to the questions.

APPENDIX A

GROUP 1 RESOURCES: SCIENCE BEHIND CLIMATE CHANGE

Beginner:
- VIDEOS
  - [Carbon and Climate Change in 90 Seconds](#) (2:21)
  - [What's the Deal With Carbon?](#) (3:06)
- ARTICLE (and IMAGES) [What is the greenhouse effect?](#)

Advanced:
- IMAGE [science of global warming mind map](#)
- ARTICLE [Oceans and Climate Change](#) (see page 12 for succinct explanation of the ocean's role in climate change)
- ARTICLE [climate feedbacks](#)
- GRAPH [Keeling Curve](#)
- ARTICLE [Forcings, feebacks, and tipping points](#)

GROUP 2 RESOURCES: CLIMATE CHANGE COMMUNICATION

Beginner:
- VIDEO (3:12) [Kids Can See It. Why Can't We?](#)
- VIDEO (3:53) [Song of Our Warming Planet](#)
- ARTICLE ["Global Warming" vs "Climate Change"](#)

Advanced:
- WEBSITE [The Canary Project](#)--art and media projects that work to promote awareness/understanding of the anthropocene. check out http://highwaterline.org/ and http://www.greenpatriotposters.org/
- INFOGRAPHIC [What Americans Really Think About Climate Change](#)
- ARTICLE [editorial on use of "scare tactics" for mobilization](#)
- VIDEO (3:51) [Climate Caravan Latin America](#)
- IMAGE [mind map of behavior change for combatting climate change](#)

GROUP 3 RESOURCES: IMPACTS OF CLIMATE CHANGE

Beginner:
- INTERACTIVE WEBPAGE [Clues of Climate Change](#)
- VIDEOS stories of people on the front lines of climate change
  - [Iowa farmer](#)
  - [Colorado fire chief](#)
  - [Texas rancher](#)
  - [Washington oyster farmer](#)
- VIDEOS impacts of climate change
  - [agriculture](#) (2:15)
  - [health](#) (1:42)
- WEBSITE [photography of places where scientists are studying climate change](#)
- IMAGE [Mind map of impacts](#)

Advanced:
- ARTICLE [climate change and human migration](#)

- MAP [how climate change affects people globally](#)
- IMAGE [global processes and effects](#)
- ARTICLE [Miami drowning under rising sea level](#)
- INTERACTIVE MODULE [Climate Time Machine maps](#)
- ARTICLE [Hurricane Risks to NYC](#)

GROUP 4 RESOURCES: RESPONSES TO CLIMATE CHANGE

Beginner:
- MAP [global adaptations to climate change](#)
- IMAGE [cartoon: what if it's a hoax?](#)
- VIDEOS
  - [mitigation](#) (2:33)
  - [adaptation](#) (2:14)

Advanced:
- ARTICLE [designer coral reefs](#)
- VIDEO (10:36) [Vicki Arroyo TED talk about prep for climate change](#)
- IMAGE [resilience framework](#)
- IMAGE [solutions mind map](#)
- IMAGE [solutions mind map](#)

GROUP 5 RESOURCES: OTHER ISSUES RELATED TO CLIMATE CHANGE

Beginner:

  VIDEO [what's gender got to do with it?](#)
- ARTICLE [Hot and Hungry](#)--see "How Will Climate Change Affect What We Eat?" section

Advanced:
- ARTICLE [Bali Principles of Climate Justice](#)--may want to use excerpt
- ARTICLE [4 laws of climate and capitalism](#)
- IMAGE [Climate change building under construction](#)
- ARTICLE [Is climate change destabilizing Iraq?](#)
- CHART [climate change and food production](#)
- IMAGE [mind map on population](#)

APPENDIX B

o Which causes of climate change seem the most important to you?
o Did anything that you read or saw surprise you?
o If you were going to explain the science behind climate change happens to someone who didn't know much about it, what would you say?
> o How does the greenhouse effect work?
> o Why is carbon important?
> o What role does the ocean play in climate change?
> o How would you explain feedback loops?

NOTES:

GROUP 2 DISCUSSION QUESTIONS: CLIMATE CHANGE COMMUNICATION

    o Which of these resources do you find most compelling? How come?

    o Have you seen other effective ways of getting out a message about climate change? What do you think made them work?

    o Have you seen any ineffective ways of getting out a message about climate change? Why don't you think they worked?

    o Why could music, visual art, or other creative media be important for spreading a message about climate change?

    o If you wanted to spread a message about climate change, how would you do it?

        o What are the three main things you want people to know?

        o How would you catch their attention?

        o What would you do to get the information across?

NOTES:

GROUP 3 DISCUSSION QUESTIONS: IMPACTS OF CLIMATE CHANGE
- o How would you explain some of the effects of climate change that you learned about?
    - o Effects on ecosystems?
    - o Effects on people and communities?
- o What other effects of climate change do you know about around the world?
    - o How about in your own community?
- o Which people or communities are most affected by climate change? How come?
- o Which ecosystems are most affected by climate change? How come?
- o Who or what else might face challenges?

NOTES:

GROUP 4 DISCUSSION QUESTIONS: RESPONSES TO CLIMATE CHANGE

o What do you think of the responses to climate change that you learned about?
    o Do you think they are effective? Why or why not?
o What are other ways that you've heard of people working to mitigate or adapt to climate change?
o What are people doing in your own community?
o What is the difference between adaptation and mitigation?
    o Do you think one is more important than the other? How come?
o How might human reactions to climate change be similar to or different from the ways that other parts of an ecosystem (like animals and plants) react?

NOTES:

GROUP 5 DISCUSSION QUESTIONS: OTHER ISSUES RELATED TO CLIMATE CHANGE

   o What stands out to you from these resources as important or surprising?
   o Many people see climate change as an environmental issue, not a social issue. What do you think about this?
   o Do you think people might care more about climate change if they saw how it connects with other issues that are important to them?
   o Think about another social or environmental issue that you care about. How might it connect with climate change? Here are some ideas:
      o housing/homelessness
      o animal rights
      o immigration
      o employment
      o hunger/food insecurity
   o Can you think of any social or environmental issues that are not related to climate change at all?

NOTES:

APPENDIX C

CLIMATE CLUSTERS ACTIVITY

GOALS:
- o Explore a variety of articles, videos, and images related to climate change
- o Identify and explain causes and effects of climate change, as well as solutions and adaptations
- o Practice communicating ideas about climate change

I. INTRODUCTION

The teacher will introduce the topic and goals of the activity.

II. Cluster Work: Resource Exploration

The class will split into five "clusters," each responsible for one of the following topics:
- o Science Behind Climate Change
- o Getting Out the Message
- o Impacts of Climate Change
- o Responses to Climate Change
- o Other Issues that Relate to Climate Change

Spend 30-40 minutes exploring the resources that the teacher provides--reading the articles, watching the videos, clicking through the websites, and looking at the images. Feel free to share your reactions briefly, but keep in mind that you'll have time for more talking later. The teacher will be available to answer questions.

Use these questions to help understand charts, infographics, and images:
- o If there are several graphs or branches of the image, choose three to focus on. What is your main takeaway from each one?
- o If there are numbers, what do they mean?
- o How does the information compare with what you saw or read in other resources?

III. CLUSTER WORK: REFLECTION AND DISCUSSION

The teacher will pass out copies of discussion questions to each cluster. First, students will respond quietly, whether this means writing, drawing, or just thinking.

After brainstorming individually, each cluster will designate a facilitator, note-taker, and timekeeper. Then each cluster will discuss their responses to the questions for 15-20 minutes.

IV. CLUSTER AND LARGE GROUP PRESENTATIONS

After the cluster-level discussions, each group will decide on a few takeaways to share with the entire group and an effective way to present this information in 3-5 minutes. Try to answer these questions:
- o What theme/topic did your group focus on?
- o What do you want the rest of the class to know about the resources you looked at?

o What were the main points that came up in your cluster discussions?
Use the paper and markers to make some kind of visual aid (a mind map, list, chart, or drawings, for example).

The teacher will tell you when to return to the full group, and each cluster will present their take-aways while the rest of the class listens.

V. WRAP-UP

After the presentations, the teacher will ask you to think quietly about these questions, and then share your responses with the group:
    o What was one thing you learned from this activity?
    o What is one question you still have about climate change?