

Grade 4 – 5: Science

Climate Change

This resource can be used to plan an individual science lesson or a unit of study. The suggested activities can be used in the order presented here, or they can be adapted for your lesson plan and classroom.

CURRICULUM OBJECTIVES

VIDEO AND TEACHER PACK OUTCOMES

Science / Earth's Systems

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Develop a model to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Science / Science and Engineering Practices

Ask questions about what would happen if a variable is changed.

Plan and conduct an investigation individually and/or collaboratively.

Use data to evaluate and refine design solutions.

Identify the evidence that supports particular points in an explanation.

Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation.

Obtain and combine information from books and other reliable media to explain phenomena.

Social studies / Geography / Environment and Society

Describe and analyze how humans altered the physical environment to influence movement, politics, and lifestyles.

Explain the impact of humans on the physical environment in Europe and the Americas.

Activity	Resources	Outcomes
<p><u>Activity 1: What Do You Know about Climate Change?</u> Timeframe: 20 minutes Lesson overview: Students will summarize any prior knowledge they have regarding climate change and record it on a KWL chart, then discuss collaboratively as a class.</p> <hr/> <p>Ask students what they know about the concepts of “climate change” or “global warming”. Take a few answers from students before introducing the topic of climate change.</p> <p>Distribute a copy of the <i>KWL Chart</i> to each student and have them spend two minutes writing down as many things as they know about the topic in the first column, followed by what they want to know in the second column.</p> <p>After the time has elapsed, ask students to come up and write a few of their points on the board or on a collaborative piece of butcher’s paper. Continue brainstorming until students have listed all the unique facts they know about the climate change.</p> <p>Once you have finished brainstorming, go through the points together as a class and have a short discussion about each.</p> <p>As a class, watch the ClickView Miniclip <i>Climate Change</i>. After watching, have a classroom discussion about the new information presented in the video and compare it to their KWL charts.</p> <p>Students should revisit their <i>KWL Chart</i> throughout the unit to add information to the final column as they go.</p>	<p><i>KWL Chart</i> worksheet</p> <p>Writing materials</p> <p>Butcher's paper (or use Smartboard / Digital display)</p> <p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p>	<p>Students will:</p> <ul style="list-style-type: none"> Ask questions about what would happen if a variable is changed.


Activity	Resources	Outcomes
<p><u>Activity 2: What Was the Industrial Revolution?</u> Timeframe: 1-2 lessons Lesson overview: Students will learn about the Industrial Revolution and how it fits in the context of climate change and the current environmental crisis.</p> <hr/> <p>Recall the time period mentioned in the ClickView Miniclip <i>Climate Change</i> in which climate change began (hint: the Industrial Revolution).</p> <p>Ask students if they have ever heard of this time period before, and if so what do they know about it?</p> <p>Watch the video The Industrial Revolution (Series: 5 Things You Should Know about History) to introduce the time period and what it involved. https://online.clickview.us/videos/38132014</p> <p>After watching the video, have a short classroom discussion about the new information presented.</p> <p>Distribute a copy of <i>Exploring the Industrial Revolution</i> worksheet to each student. Students will be required to conduct additional research to answer the questions on the worksheet. This activity can be completed in pairs.</p>	<p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p> <p>The Industrial Revolution video (Series: 5 Things You Should Know about History) on ClickView</p> <p><i>Exploring the Industrial Revolution</i> worksheet</p> <p>Writing materials</p> <p>Devices with Internet access</p>	<p>Students will:</p> <ul style="list-style-type: none"> Describe and analyze how humans altered the physical environment to influence movement, politics, and lifestyles. Explain the impact of humans on the physical environment in Europe and the Americas.

Activity	Resources	Outcomes
<p><u>Activity 3: The Mini-Greenhouse Effect</u> Timeframe: 45 minutes Lesson overview: Students will conduct an experiment to observe how the sun's heat can be trapped and relate it to the greenhouse effect in our atmosphere.</p> <hr/> <p>Rewatch the ClickView Miniclip <i>Climate Change</i>, paying particular attention to the segment explaining the greenhouse effect (1:42 – 2:24).</p> <p>After watching the Miniclip video, introduce the mini-greenhouse experiment to demonstrate the effects of the greenhouse effect on our planet.</p> <p>Distribute a copy of <i>The Mini-Greenhouse Effect Experiment</i> worksheet to each student and follow the experiment instructions. This can be conducted as a whole class or in small groups.</p> <p>Students are to complete the <i>Reflection</i> section of the worksheet and can discuss their findings and thoughts with other students.</p> <p>Come together as a class to discuss the findings as well as students' <i>Reflection</i> sections. Recall the two different temperatures recorded during the experiment and discuss why these two temperatures were different.</p> <ul style="list-style-type: none"> • What influenced the first temperature reading? • What influenced the second temperature reading? • What did the plastic wrap cause? • How does this link to the greenhouse effect in our atmosphere? • How does it connect with global warming? <p><i>Result answers: The increased air temperature inside the bowl after the plastic cover was added was due to the trapped heat. The sunlight's heat was absorbed by the dark coloured material inside the bowl, but this heat was unable to escape due to the plastic wrap causing a significant increase in temperature.</i></p> <p>► Teacher tip: This experiment requires sunshine and a certain amount of heat to produce relevant results.</p>	<p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p> <p><i>The Mini-Greenhouse Effect Experiment</i> worksheet</p> <p>Thermometer</p> <p>Large bowl</p> <p>Dark cloth or dark paper</p> <p>Paper cup</p> <p>Plastic food wrap</p> <p>Outdoor access on a warm, sunny day</p> <p>Writing materials</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Develop a model to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. • Ask questions about what would happen if a variable is changed. • Plan and conduct an investigation individually and/or collaboratively. • Identify the evidence that supports particular points in an explanation.

Activity	Resources	Outcomes
<p>Activity 4: How Do We Battle Climate Change? Timeframe: 1 hour split over two days Lesson overview: Students will brainstorm and record a range of small and big solutions to climate change that can be enacted in your school and at their own homes.</p> <hr/> <p>Rewatch the ClickView Miniclip <i>Climate Change</i>, paying particular attention to the segment on big and small solutions to battle climate change (4:03 – 5:23).</p> <p>Ask students to summarize the range of solutions presented in the Miniclip.</p> <p>Ask students which of the little actions they are already doing at home or at school. Can they think of any other actions that could be done to help even more?</p> <p>Distribute a copy of the <i>Small Solutions for School vs. Home</i> worksheet to each student.</p> <p>Students are to walk around the school grounds and fill in the section about schools. The section regarding home can be filled in for homework.</p> <p>► Teacher tip: Ensure students are supervised while they explore the school grounds and complete any risk assessment in accordance to your school requirements.</p> <p>In the following lesson, discuss the suggestions of each student. Use their suggestions to begin enacting change in your school.</p> <div style="border: 1px dashed black; padding: 10px; margin-top: 10px;"> <p>Extension: Select your top three suggestions (by vote) and put together a plan to pitch it to your schools' leadership team. Perhaps you have a yearly plan to achieve or implement these three changes in your school? For example:</p> <ul style="list-style-type: none"> • Composting waste • Aiming for zero plastic waste from students' lunchboxes and the school cafeteria • Reducing meat options in the cafeteria • Reducing electricity consumption or swapping to renewable sources • Planting a vegetable garden • Holding a swap drive (with old toys, books, games etc.) to reduce consumption of new products • Organizing community clean-ups etc. </div>	<p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p> <p><i>Small Solutions for School vs. Home</i> worksheet</p> <p>Writing materials</p> <p>Student access to the school grounds and home</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. • Describe and analyze how humans altered the physical environment to influence movement, politics, and lifestyles. • Explain the impact of humans on the physical environment in Europe and the Americas.

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<p><u>Activity 5: Climate Change Consequences</u> Timeframe: 1 hour Lesson overview: Students will research four major consequences of climate change and their causes and effects on the environment, people and wildlife.</p> <hr/> <p>Rewatch the ClickView Miniclip <i>Climate Change</i> and summarize the consequences listed of climate change (2:32 – 4:02).</p> <p>Distribute a copy of the <i>Climate Change Consequences</i> worksheet and ask students to conduct research into the causes and effects of each consequence listed. Students can complete this activity independently or in pairs.</p> <div style="border: 1px dashed black; padding: 10px; margin-top: 10px;"> <p>Extension: Students can come together in small groups to reflect on their findings and hypothesize on the following questions:</p> <ul style="list-style-type: none"> • What do you think might happen in 50 years if no action against climate change is taken now? • What do you think might happen in 60 years if action against climate change <u>is</u> taken now? • Do any of these consequences make you worried? Why or why not? </div>	<p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p> <p><i>Climate Change Consequences</i> worksheet</p> <p>Devices with Internet access</p> <p>Writing materials</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Distinguish among facts, reasoned judgment based on research findings, and speculation in an explanation. • Describe and analyze how humans altered the physical environment to influence movement, politics, and lifestyles. • Explain the impact of humans on the physical environment in Europe and the Americas.

Activity	Resources	Outcomes
<p>Activity 6: Community Concerns Timeframe: Multiple lessons Lesson overview: Students will survey the local community to identify key areas of concern and present these to local council members to create actionable change.</p> <hr/> <p>Ask students: <i>What issues are your main concerns regarding climate change?</i></p> <p>Students' responses will serve as a starting point for the various concerns that may be experienced in the local community.</p> <p>Students are to go out into the local community to conduct research on the concerns of local members and collect the survey data. Students are to create a survey sheet before the excursion. The <i>Community Survey</i> worksheet provided can be used or students can use it as inspiration for their own.</p> <p>► Teacher tip: This can be conducted as a short excursion to your local community's main hub (e.g. shopping plaza or main street) to interview local community members for an hour. Please organize your excursion plan and risk assessment in accordance to your school requirements.</p> <p>Students will collate this data and identify key areas of concern and potential action that could be taken.</p> <p>Students are to present their findings in a suitable method and reflect on their data. Compare students' findings across the class to identify any similarities or differences.</p> <p>Alternatively, the class could collate all their individual data and present it together.</p> <p>Reflect on the data collection and draw conclusions from it, including ideas for action that could be implemented to create a greener and more sustainable community.</p> <div> <p>Extension: Invite members from your local council to visit your school and discuss these issues together. During this discussion students could ask the local council about the existing steps they are taking to ensure a more sustainable community, as well as propose additional simple steps.</p> <p>Your class could also raise awareness and generate community support by holding fundraisers or a talk at your local library or community centre about sustainability plans for the local community.</p> </div>	<p>Smartboard / Digital display</p> <p>ClickView Miniclip – <i>Climate Change</i></p> <p>Class excursion into the local community</p> <p><i>Community Survey</i> worksheet</p> <p>Writing materials and a clipboard</p>	<p>Students will:</p> <ul style="list-style-type: none"> Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. Ask questions about what would happen if a variable is changed. Plan and conduct an investigation individually and/or collaboratively. Use data to evaluate and refine design solutions.

Activity	Resources	Outcomes
<p><u>Activity 7: Interactive Video</u> Timeframe: 15 minutes Lesson overview: Students will watch the ClickView Miniclip and answer the interactive questions to show their understanding of climate change.</p> <hr/> <p>ClickView has created an interactive video lesson to accompany the ClickView Miniclip <i>Climate Change</i>. It includes a range of question types such as multiple choice, missing word, and true or false.</p> <p>You can assign the interactive video to your students to do at any suitable point in your unit. Alternatively, you can edit the premade questions to suit your students or create your own interactive video.</p> <p>To share the interactive video with your students, follow these steps:</p> <ol style="list-style-type: none"> 1. Search for the Miniclip <i>Climate Change</i> that has the interactive logo (). 2. Click to view the video. 3. Click on the "Interactive videos" tab beneath the video. 4. Click the "Print as Worksheet" OR "Save to Workspace" button on the interactive video. 5. If you click "Save to Workspace", you can either click "Share with your students" or access it via your Workspace. <ul style="list-style-type: none"> • If you choose "Share with your students", copy the link and send it to your students. • Otherwise go to your Workspace, select the "Interactive videos" folder, and click "Share" to access the link and send to students. <p>Students can watch and answer the interactive questions either in class or at home. Their results will be collated for you to view from your Workspace.</p> <p>The following guides are available if you require assistance:</p> <p>Creating an interactive video How do I share an interactive video? How do I make my interactive video private/public?</p>	<p>Smartboard / Digital display</p> <p>Interactive video for the ClickView Miniclip – <i>Climate Change</i></p>	<p>Assessment</p>