Science Climate Change and Animal Habitats

Connecting to Climate Change

Teaching for Creativity

Supporting teachers to develop young people's creativity through a broad and diverse curriculum



Creative Thinking Habit - Inquisitive,

These learning sequences focus on wondering and 'what if' questions – habits at the very heart of what it means to be a creative learner. Pupils will focus on tricky questions where there aren't simple answers, they will challenge assumptions, and work together on a creative task to culminate in critical reflection.





In January 2021, research by Teach the Future reported that 90% of teachers agreed that climate change education should be compulsory in schools while 70% felt they had not received adequate training to deliver climate change education. For Oxfam, an organisation working in the front line of the climate emergency, these statistics are both encouraging and alarming. Encouraging because the vast majority of teachers recognise the crucial importance of climate education. Alarming because so few teachers feel fully equipped to take on this vital task.

Oxfam GB has over 50 years of experience in global citizenship education, and, in recent years, we have made the climate emergency an increasingly urgent and core element of our offer to schools. As you read this new resource from A New Direction, plan how you can position a **creative and critical thinking** approach to learning about climate that takes young people on a journey from their lived experience to the broader and more difficult questions of climate justice and fairness. Look for opportunities for your pupils to become **empowered agents of change** in their own lives and to **actively participate in solutions** to crises they are learning about.

Since Greta Thunberg's activism, we've seen how children around the world have become leaders of climate action and are holding adults to account. As educators we can both teach about the climate and stand in solidarity with their global call for change. This is the least that young people expect from us while we seek answers to the vital questions of not only *what* we teach about the climate but also *how* we teach about the climate.

We have never faced a more important task.

John McLaverty

Oxfam Education



A New Direction is a London-based not-for profit organisation that generates opportunities for children and young people to develop their creativity.

Like many others, we believe that creativity is an essential skill that can be taught and for it to be nurtured, young people need to be explicitly given as many opportunities as possible to develop creative skills and habits. Through **Teaching for Creativity**, we want to support schools and teachers to develop the creativity of their students, whilst also helping to broaden and diversify the curriculum in response to the combined crises currently facing young people.

The pedagogies underpinning this work come from **the five Creative Habits of Mind** – a concept developed from decades of research that has now been widely adopted into learning policies across the globe. The Creative Habits of Mind offer a great tool for tracking the development of creativity in students of all ages.

We have consulted with teachers throughout the development of these resources, which are part of a longer-term commitment to generating relevant and accessible learning materials that help us to have braver conversations in the classroom and to articulate the power of creativity.

Writer Izzy McLeod, artist, and climate communicator

In collaboration with Sam Morix, Multi-Academy Science and Eco Lead and Paul Turner, Ministry of Eco Education

In consultation with Karen Sweeney, Special Educational Needs specialist teacher

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The five-dimensional model of creative thinking

For creativity to flourish, it needs nurturing and young people need access to excellent resources.

These learning sequences focus on curriculum-linked topics for exploration with creative learning at the heart.

They are underpinned by the Creative Habits of Mind drawn from the five-dimensional creative thinking model and decades of research from Professor Bill Lucas, Guy Claxton and Ellen Spencer.

Creativity is a multi-dimensional idea and education researchers are showing just how valuable Creative Thinking is in helping our pupils learn in an increasingly complex world. The model has been widely adopted into learning policies across the globe, based on years of field trials through the Centre for Real-World Learning at the University of Winchester that included schools participating in Creative Partnerships, the UK government's flagship creative learning programme (2002 – 2011).

The Centre for Real-World Learning's model below features five Creative Habits of Mind and offers a means of tracking the development of creativity in pupils.

A New Direction, like many others, believes creativity can be taught and learned, and we want to support schools and teachers to feel equipped to do just this. The five Creative Habits of Mind are drawn out in the resources, each resource making explicit one particular habit with learning strategies and class discussion for pupils to understand the definitions for their own learning and articulate their own skills development.

Professor Bill Lucas

Director of the Centre for Real-World Learning, University of Winchester. Co-chair of the PISA 2021/2022 Test of Creative Thinking. Academic advisor on creativity to Arts Council England. Co-author of more than forty books including the internationally acclaimed, *Teaching Creative Thinking: Developing learners who generate ideas and can think critically*. Curator of Creativity Exchange platform: https://www. creativityexchange.org.uk/

Lucas, Bill and Spencer, Ellen (2017) <u>Teaching Creative Thinking:</u> <u>Developing learners who generate ideas and can think</u> <u>critically</u>, Carmarthen: Crown House Publishing Ltd





'Creativity in the classroom does not happen by accident – we need to be deliberate and proactive in developing our pupils' creative skills and habits. Now more than ever, creative thinking is the key to their future. These resources breathe life into new areas of the curriculum and make explicit the vital and life-giving creative habits which will enable students to thrive in complex times.'

Bill Lucas

How To Use This Resource

These resources are designed to put the learner in the driving seat, with open-ended engaging activities, learning strategies and questions to prompt dialogue and debate, critical thinking, and creative response.

They take a 'split-screen' approach covering both a curriculum area and focusing on one or more of the creative habits.

There are two lessons in this topic, designed to be taught in progression. You'll find printable images, differentiation tips for students with Special Educational Needs and/or Disability (SEND), and extension activities at the end of this resource.

You are the experts, and these sequences just build on what you already do — pick from some or all to suit your needs. We would love to hear from you about how you get on, any questions you have, and what you'd like to see more of!

schools@anewdirection.org.uk

Artsmark

If using these resources helps you to develop your curriculum, build skills and knowledge across a range of art forms, and support student voice and wellbeing, you could gain recognition and accreditation with an Arts Council England Artsmark Award.

You can find out more, including a map of how this resource fits the Self Assessment Framework and Quality Principles, at the end of this resource.

www.artsmark.org.uk





A scaffolded lesson sequence that focuses on the interconnection of humans and the natural world. In a series of short and practical activities, pupils start to ask the big questions about climate change through photography, visual storytelling, and scientific enquiry. They focus on the positive human impact to be made and how their actions can make a difference.

Creative Thinking Habit — Inquisitive

These learning sequences focus on wondering and 'what if' questions habits at the very heart of what it means to be a creative learner. Pupils will focus on tricky questions where there aren't simple answers, they will challenge assumptions, and work together on a creative task to culminate in critical reflection.

(Inquisitive prompts, questions and class discussion marked in Green)

Duration 2×60 -minute lessons (or split into short activities across multiple lessons).

Curriculum links:

Living Things and Their Habitats

- Pupils should explore examples of human impact (both positive and negative) on environments.
- Pupils should recognise that environments can change and that this can sometimes pose dangers to living things.

Learning Outcomes

- I understand that humans are part of the natural world and depend on Earth's different habitats and resources
- I can explain and give examples of climate change and human impact
- I have used scientific language and illustrations to communicate my ideas
- I have shown curiosity in asking questions, connecting discussion to real-world examples
- I understand that my action matters, and that I can make a difference.

Resources

- Climate Change (according to a kid) film clip: <u>https://www.youtube.com/</u> watch?v=Sv7OHfpIRfU
- Ball of wool
- We Are Interconnected game cards Appendix 1
- Printed versions of 10 images provided, enough for 1 per group – Appendix 2
- Paper and pencils/pens per group
- Sketchpads or cameras

Preparation (15 minutes)

- Time to cut out the cards and print out / display the images.
- Time to gather natural resources if you don't have access to a local green space or outdoor area.

Tips to the Wise

While these sessions are designed ageappropriately for pupils to feel empowered and knowledgeable, the topic of climate change can bring up a range of emotions, and pupils may ask questions that go beyond the lesson content. At the back of this resource are further signposts to deepen teacher understanding and further materials in how to talk to young people about climate change.

The resource is signposted with the following icons for ease of use



Discussion



Introduction (10 minutes)

Prompt a class discussion to baseline understanding of the topic by asking the group what they know about climate change. Why not use '<u>Think, Puzzle, Explore</u>' as a tool to generate further questions together.

- What do we know in our class about climate change?
- What do we think causes climate change?
- What are the effects we see in the world? What about closer to home?
- What puzzles you or what questions do you have?
- How might we explore those questions?



Play the <u>Climate Change</u>¹ clip.

Warm Up Activity (10 minutes)

'So, let's explore climate change with some tricky questions, and some investigation. Then like climate scientists across the world, think about how we can work to make a positive difference. First, we need to ask ourselves about our connection to nature and natural habitats.'

'Often when we think about nature, we think of places far away from us and the way we live. Nature is all around us and humans depend on the natural systems of the world. Let's explore in a game.'

Each pupil takes a card from the *We Are Interconnected* pack (Appendix 1), and the class forms a circle.

'This is a quick-fire game of free association — one of us will read the word on their card and then throw the ball of wool to a pupil in the circle, keeping hold of one end. That person reads their card and makes a quick-fire connection between the cards before throwing the wool to the next person, and so on. There's no wrong or right answer, just thinking on your feet and seeing what comes into your head first.'



- Model the game by going first you'll read your card and then throw the ball to a pupil in the circle, being careful to keep hold of the wool so there's now a thread between you and the pupil.
- The pupil catching the wool repeats the action, until everyone has had a go and the web of wool connects the group.

'Wow — quick thinking and what connections you made! We are showing just how much we are interconnected with the natural world. What does this mean for humans? It's important that we value these connections and protect the natural systems that we depend on.'

Main Activity (30 minutes)

'In this activity, just like climate scientists, we're going to think more about our connection to the natural world. We'll be inquisitive with some tricky questions to hypothesise about the positive and negative impacts of humans on the environment.'

Split the class into small table groups of 4-6 pupils, give each group 1-2 images (Appendix 2 – some depict positive impacts and others, negative).

Note: Using images in class is something teachers do all the time. A Teaching for Creativity lens simply dials up critical reflection and frames discussion focused on curiosity and wondering.

In their groups, pupils investigate, and search out evidence and answers to the questions.

- What is happening here?
- Are humans having a positive or negative impact?

Pupils ask more questions if they have them and work as a team to use the 'See, Think, Wonder' grid below to explore ideas and hypotheses.

'Don't worry about being 100% right - talk to each other, be inquisitive, and explain why you've come to your conclusion. Be prepared to present one image back to the class!'

See	Think	Wonder
Describe everything you see in the picture	Does it remind you of anything?	I wonder why?
Start with things you are sure about	What does it make you think about?	I wonder how?

After 15 minutes, pupils present their image and hypothesis to the group. They share their questions and thoughts and what they felt in conclusion about the negative / positive human impact.

Encourage the class to ask questions and challenge the group.

- What makes you say that?
- How did your group come to this conclusion?
- Are there any other possibilities?



Plenary and Self-Reflection (10 minutes)

- What has today made you want to find out more about?
- What good questions did you hear today? What made them good?
- What helped you think up good questions today?

'You were great at asking good questions today and investigating some complex challenges and some fundamental questions about climate change. Asking good questions is key to us being creative individuals and working out how we feel about things and what matters to us.'

Go Further

- Pupils draw the climate crisis as an animal and explain their thinking
- · Record and track the temperature in the classroom everyday
- Research activity where pupils look at the way indigenous people have looked after the natural world.

LESSON 2 (60 minutes or more)

Introduction (10 minutes)

'In this lesson we're taking our curiosity on a journey and heading outside the classroom to continue our exploration of the connection between all living things and our dependence on the natural systems and resources in the world.'

- What questions have you wanted to ask since that lesson?
- What has it made you feel about what matters to you in protecting our climate?
- What do we know about our local green spaces?
- What negative impacts have you seen locally?
- What about brilliant, positive ones?

'Today's exploration is geared towards making us think about how we plan for a positive local change we want to see or to make.'

Main Activity

Take a class walk to a local green space. Pupils work in pairs. Each pair is tasked with choosing one living thing to be the focus of their joint investigation.

If you do not have access to a local green space, use a mix of elements from the natural world in the classroom for investigation (e.g. twigs, leaves, flowers, fruit, bugs) as well as images.



'In pairs we're going to observe one element from the natural world (e.g. a tree root, leaf, flower, woodlouse) to investigate habitats more closely. Thinking about the pictures you explored in the last session, we're going to create our own images to think about either through drawing or taking photographs.'

They question how their living thing fits into the natural world – either as notes, or sketches and maps.

- What is this?
- What does it do?
- Why does it do this?
- How is this connected to the rest of the eco system/living things?
- How is climate change impacting this?
- How am I, as a human, connected to it?

Example sketch



Bring pupils back together in the classroom and each pair joins two more to make a group of six. At a table, they share their images and follow the '<u>Claim, Support, Question</u>' method to walk through each other's findings. They make a claim with their findings, they evidence the claim, and raise a further question relating to their claim.

Together they reflect and make connections, using arrows or presenting their work in a shared table display.

Encourage pupils to go further in their thinking by asking:

- What makes you say that?
- What would happen to the eco system if we took this away?
- What does it make you want to find out more about?

Plenary and Reflection (10 minutes)

'You have worked so thoughtfully in making these connections to the natural world and our inter-dependencies. Climate scientists are working hard to find positive impact solutions and climate activists are campaigning for the world to make changes.'

'It's understandable that you might feel worried that it's too big a challenge but if we all work to make changes together we can make an impact.'

- What positive change would you like to make for yourself, in this green space or in our school?
- Thinking about the impacts of climate change and the linking this to the idea of climate justice, what questions do you want to ask people in power?

Pupils spend five minutes in individual reflection about their investigation and learning — they write down thoughts using the frame; 'I used to think...but now I think...'

Invite volunteers to share with the class before reflecting on the learning outcomes of the lessons together.

- I understand that humans are part of the natural world and depend on Earth's different habitats and resources
- I can explain and give examples of climate change and human impact
- I have used scientific language and illustrations to communicate my ideas
- I have shown curiosity in asking questions, connecting discussion to real-world examples
- I understand that my action matters, and that I can make a difference.

Go Further

You are never too small to make a difference." — Greta Thunberg

- Create a class exhibition about the impact of climate change on the local area – this could include placards and statements, photos, and drawings. You could encourage the class to respond like activists sharing their message and invite other classes or families to come and see the display.
- Make a 'Zine' about the findings in the local area to distribute through the school. Have a look at the <u>Culture, Community and</u> <u>Activism</u> resource for how to create a zine as part of a lesson.
- Create protest placards, distilling conclusions to short powerful statements to ignite further interest in affecting change.
- Make a class plan for a single positive action that you will do together — a class mission that you could document as you go. You might find inspiration in the **Manifesto** lesson plan in the <u>Year 3 Learning Lenses resource</u>.

Special Educational Needs and/or Disability (SEND)

You will know best how to adapt these activities for your pupils, but we hope the suggestions below from teachers in SEND settings help you to scaffold the lesson for children who are D/ deaf, disabled, and neurodivergent.

General

- Before each lesson, pre-teach technical vocabulary to ensure understanding.
- When asking children to answer questions or engage in discussions, provide sentence starters and model example answers to support those who struggle with open thinking and generating ideas.
- Used mixed ability pairs/groups where possible.
- Consider spreading activities out over more than two lessons.

Lesson 1

- Introduction In order to keep children engaged and active, consider displaying one question per table and asking children to move around, adding their ideas to each question before choosing spokespeople to feed back to the rest of the group.
- Warm up activity consider adding images to the word cards to engage reluctant readers and include non-readers. For those that would struggle with the ball of wool aspect, draw a large web on the class board, invite children to come up and stick on their words, then use a coloured pen to show how their word connects to others.
- Main activity for smaller class sizes, use talk partners to complete the activity, then partner up with another pair to question and challenge each other's thinking. Where possible, use additional adults to steer questioning and encourage reflective thinking. Consider using ICT to record responses of work refusers where writing is a trigger.

Lesson 2

 Main activity – provide images of all natural elements for reluctant drawers and question prompts to encourage thinking. Consider use of ICT, for example working on Microsoft Publisher for those with poor fine motor skills.

Further Resources and Reading

Links for teachers — understanding climate change

- World Wildlife Fund Climate Change Resource
- British Council Climate resources for school teachers
- <u>British Council Podcast How teacher collaboration can</u> boost climate education
- BBC How to teach children about climate change

Links for talking about climate change with children

- Oxfam Young people are worried about the climate crisis. Here's how our education resources can help them to learn, think and act
- Force of Nature
- Another Way Ambassadors
- Kids and Climate Anxiety
- National Geographic Helping Kids Deal With Climate Anxiety
- We Are Teachers Ideas and resources to shift anxiety into action
- <u>BBC Exploring weather and climate</u>
- BBC Exploring Biomes

Links for teaching about climate change

- <u>Ministry of Eco Education</u>
- <u>WWF schools' sustainability guide</u>
- <u>RHS guidance setting up a school garden</u>
- Let's go zero 2030
- Climate Outreach Image Bank



If you are using these resources to help you to develop your curriculum, build skills and knowledge across a range of art forms and support student voice and wellbeing, you could gain recognition and accreditation with an <u>Arts Council England</u> <u>Artsmark Award</u>.

Artsmark is a journey that supports educational settings to develop and celebrate their commitment to arts and cultural education. The clear and flexible framework supports settings to embed creativity across the whole curriculum and to address school improvement priorities. It complements your school improvement plan and recognises commitment to a broad and balanced curriculum.

Completing the activities in this resource can contribute to your Artsmark journey and provide evidence of impact in a number of areas. **Please note: you cannot evidence any activity for your Artsmark journey that has happened before submitting your Statement of Commitment.** We have mapped out how this resource connects with the <u>8</u> <u>Artsmark Principles in the Self Assessment Framework</u> and the <u>Arts Council 7 Quality Principles</u>:

lues and ethos	Ensuring a positive and	
	inclusive experience	Developing close observational skills
hildren and young eople engagement urriculum design	Actively involving children and young people Developing belonging and ownership Being authentic	Developing speaking and listening skills Practising empathy skills Confidence in communication and self-expression through peer feedback and sharing work Developing a culture of reflective practice and disciplined approaches to process and outputs (mirroring artists' practice and making connections with careers in the creative industries)
		rriculum design Developing belonging and ownership

As well as using these resources to support your Artsmark journey, we also have a suite of <u>other resources</u> and provide <u>one-to-one</u> <u>support throughout term time</u>. If you are thinking about starting your Artsmark journey, or just want to find out more about it, talk to the team at A New Direction: <u>artsmark@anewdirection.org.uk</u>

Appendix I We are Interconnected Game Cards

earth	home
habitat	forest
deforestation	rewilding
pollinators	food
human	animal
community	global warming
plants	parks
water	drought
rivers	flooding
shelter	life
ocean	pollution
fossil fuels	renewable energy
rain	flowers
bees	seasons
fire	trees

Appendix 2 Suggested Images for Classroom Activity

Negative images

1. Kangaroo and Forest Fires

Image showing a house burning in forest fires in Australia with a kangaroo in the foreground. Forest fires increase in both frequency and intensity due to climate change. Warmer and drier weather means forest fires start more easily and last longer.

Historically in Australia, Aboriginal people would have controlled fires in areas to try and halt the spread of bigger, more dangerous fires, called fire-stick farming, or cultural burning. This practice is being reintroduced in parts of Australia. This is also a practice used by indigenous people in the Americas too.

2. A Couple in a Surrey Flood

This image shows a couple in Surrey in 2014 after the Thames flooded 1,000 homes in the area when it burst its banks. Due to climate change, flooding become more severe and more frequent in many areas across the world as weather changes mean more extreme weather events, heavier and more intense rainfall, more snow melt, and sea level rise. Measures such as flood barriers, rewilding and tree planting upstream, avoiding building on flood plains can all help lower flood risk.

3. Coral Bleaching

This image shows coral bleaching in the Great Barrier Reef. Temperatures rising in the ocean causes stress to coral, which expel the algae within them which is what gives them colour and life. Coral reefs are home to many different marine species, food sources for humans, and are natural barriers protecting the coast from waves and storm surges, so their bleaching has a knock-on effect. They can recover given the right conditions, and there are many scientists looking into how to help coral survive, and also planting coral which can withstand these higher temperatures. Choosing sunscreen that is "reef safe" can also help as chemicals in many sunscreens can also lead to bleaching.

<u> 4. Crime scene – dead bee</u>

This image shows an imagined "crime scene" looking at a dead bee. Bee populations around the world, including here in the UK are on the decline due to many different reasons:

- seasonal timing of plants, and the scent of plants changing due to global warming
- habitat loss
- pesticides used that are toxic to bees

Bees are incredibly important for humans and other animals; they help pollinate plants which in turn, helps grow food. Around 84% of Europe's crops depend on pollinators. Other pollinator species include butterflies, moths, flies, and wasps - many of which are also in decline.

5. UK Summer Drought

Image showing the UK summer droughts of 2022. Hotter, drier, summers due to climate change mean that droughts become more frequent and more severe around the world. This has a knock-on effect on food growth and many animals' habitats. In the UK, this means in the future we may see more measures like hosepipe bans, and limits to how and when we can use water during droughts.

To help lessen the effects of droughts we can be more careful about how much water we use, harvest rainwater, plant more trees in areas to help increase rainfall and retain water, rotate crops/ grow less water intensive species, create more reservoirs to hold water.

Positive images

1. Aboriginal Fire Management

This image may look negative at first, but this image shows a controlled fire done by Aboriginal people living in Australia. Australia, and other parts of the world, are very prone to big forest fires which are harmful to humans and animals, destroying homes and habitats. Controlled fires by experts like these can create natural fire breaks, meaning that if a forest fire happens in one area it's much harder for it to spread to another. This solution combines traditional knowledge and science to protect people and animals from the effects of wildfires, made worse by climate change.

2. Young People's Climate Change Protest

This picture shows young people protesting for action on climate change. Protests like these, by climate groups, activists, concerned citizens and young people can help put pressure on governments and industries to take action needed on climate change. The more people that stand up and ask for change together, the more likely those in charge will listen and make change. Protest shows the power of working together.

3. Children learning about solar panels

Renewable energy is an alternative to fossil fuels which uses energy from the natural world, sun, wind, and water to generate electricity and generally produce greenhouse gases in the process, so it doesn't contribute to global warming. Using less coal, oil, and gas to make energy and more renewable energy is one big way to tackle climate change.

4. Children learning to ride their bikes

Travelling using active transport such as riding your bike or walking instead of using a car is a great way to help reduce greenhouse gas emissions. It reduces air pollution, promotes the need for greenspace and cyclable roads, and encourages more people to get involved.

5. No Mow May

A 'No Mow May' Poster in someone's front garden - a campaign where people commit to not mowing their lawns for the month of May. This encourages people to leave their gardens wild, as well as to plant wildflower meadows in place of grass, to help increase biodiversity and give food and habitats to species like bees, other many other insects, birds, small mammals, and reptiles, as well as act as a carbon store. Wildflower meadows are also good for our mental health, with evidence to show they boost people's moods and make us feel happier.

Sources

Negative images

- 1. https://media-cldnry.s-nbcnews.com/image/upload/newscms/2021_05/3168991/200102-twip-ONE_TIME_USE_ONLY_03.jpg
- 2. https://gideonmendel.com/i/Drowning-World/1-Submerged-portraits/SubPortsWeb-23.jpg
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Positive images

- 1. https://ensia.com/wp-content/uploads/2019/03/Feature_FireManagment_Main-1.jpg
- 2. https://live.staticflickr.com/7896/40422072893_f1f306df30_b.jpg
- 3. https://climatevisuals.org/search/?searchQuery=renewable+solar+children
- 4. https://climatevisuals.org/search/?searchQuery=cycle+children+learning
- 5. https://www.ilkleygrammarschool.com/images/uploads/8/2308/NoMowMay3.jpg

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