CLIMATE CURRICULUM FOR CLIMATE ACTION FRAMEWORK

PROGRESSIVE AND AGE APPROPRIATE LEARNING OUTCOMES TO EMBED CLIMATE CHANGE ACROSS PRIMARY SCHOOL

Erasmus+

CC4CA
Climate Change Education in Primary Schools

WITH THANKS TO:

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Aplerbecker Grundschule, Dortmund, Germany

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INTRODUCTION

This climate curriculum provides a framework of learning outcomes at primary level. By working on these learning outcomes, schools can ensure that they deliver the core essentials of what young people need to know by the time they move onto secondary education. The learning outcomes are not intended as an added extra to fit into an already packed school week but can be delivered through other subjects in a cross-curricular way. If your school covers these learning outcomes there's a very good chance your pupils will leave school with not only a good and realistic grasp of the issues, but also with a critical awareness of the mindsets and actions that can enable them to help solve the challenges of the climate crisis and an attitude of hope that success is possible. This framework has been designed with end of Year 2,4 and 6 learning outcomes, rather than a learning outcome for each year. This allows for flexibility in their delivery between the Year Groups and is intended to make it easier for you to identify opportunities to teach them within existing curriculum topics.

The **Toolkit** that accompanies this **Framework** contains links to lessons and teaching resources that teachers in the partner schools have used to teach the learning outcomes. Our **Guide** gives an overview of the project and explains how to implement a Climate Curriculum in a primary school, using the Climate Curriculum Framework, together with an overview of Climate Change and a set of Big Ideas.

These resources and versions of the climate curriculum **Framework** in German and Turkish are available on the project website https://www.climatechange-education.org/

Key ideas: Scientific Background

The first of the 8 key areas of the Climate Curriculum is Scientific Background. This involves a basic understanding of the scientific processes which lead to climate change. It may be that your pupils are aware of key ideas and terms from the media or other sources but research shows that they aren't necessarily clear on the details of the processes involved and how these ideas relate. This understanding is necessary as a foundation for children in order to develop their knowledge on all other areas further.

BY THE END OF YEAR 2:	BY THE END OF YEAR 4:	BY THE END OF YEAR 6:
• Pupils understand that human activity can cause air pollution (may use the term carbon dioxide or greenhouse gases.) • Pupils understand that air pollution makes the world hotter. • Pupils know that trees help to cool the world down by helping to remove dangerous pollution from the air.	• Pupils understand the difference between 'weather' and 'climate.' • Pupils understand that burning coal, oil and gas causes greenhouse gas emissions which have an impact on the climate. • Pupils know that the climate is always changing but is changing faster today than it has before, and this is due to the actions of humans. • Pupils can define the terms 'atmosphere', 'Climate Change' and 'greenhouse gas emissions.' • Pupils can identify some natural processes that take greenhouse gases from the atmosphere such as trees growing, healthy soils and oceans.	• Pupils can clearly articulate the link between burning fossil fuels and climate change using appropriate scientific vocabulary. • Pupils can name key carbon sinks such as: forests, peatlands, oceans, algal blooms and healthy soil and explain how they affect the climate crisis. • Pupils can discuss some recent scientific findings in relation to climate change.

Key ideas: Urgency of Need for Climate Action

The second key area is an understanding of the urgency of the need for climate action. Without an appreciation of the scale and immediacy of the threat that the climate crisis poses, young people (and adults!) won't understand the radical nature of the challenges that face us and the changes we need to make. Teachers will rightly want to protect young people from the worst apocalyptic forecasts but equally, as young climate strikers have highlighted, and as DFE guidance stipulates, schools need to 'tell the truth' about the crisis we are in. This includes, at upper primary, beginning to understand about some key climate 'tipping points' and what the dangers are if they are triggered.

BY THE END OF YEAR 2:	BY THE END OF YEAR 4:	BY THE END OF YEAR 6:
• Pupils know that some impacts of our changing climate are happening now, and others will happen in the future. • Pupils understand that the future climate depends on actions we take now.	• Pupils understand the term climate emergency & climate crisis. • Pupils can give examples of some of the impacts that higher temperatures are already having on people and ecosystems	• Pupils know about current trends in total global climate emissions, i.e., whether they are rising, peaking or falling. • Pupils are familiar with the concept of greenhouse gas emissions reduction targets. • Pupils begin to assess how realistic these targets are and to what extent they are being achieved / may be achieved. • Pupils understand that 2030 is a scientific estimate of a year by which global emissions should have peaked in order to give humanity a reasonable chance of controlling eventual warming levels, (and that it is not a deadline for an end-of-the-world scenario.) • Pupils begin to understand some key climate tipping points (e.g. rainforest die-back; permafrost thawing; ice-sheet collapse; coral reef die-off) and can connect these with the urgency to take action.

"The Climate Curriculum Framework was the cornerstone for finally incorporating the important topic of climate and climate change into elementary school instruction. During the work in the project, we were able to orient ourselves to this framework again and again and refer back to the detailed content. Without this help, it would have been much more difficult to implement the topic so intensively in the classroom."

Lisa Nehm, teacher at Aplerbecker Grundschule

Key ideas: Impacts of Climate Change

The third area involves an exploration of the Impacts of climate change – on people, other animal species, on plants species, and on wider ecosystems. This might involve investigation into the children's local area as well as an understanding of impacts in other regions across the world.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils know some of the impacts of our changing climate on people and their lives, both in their own locality and elsewhere. • Pupils understand the impacts of our changing climate on some animals, plants and environments both in their own locality and elsewhere.	• Pupils can identify some impacts of our changing climate on people locally and across the world. • Pupils can identify a range of impacts of past and / or present climate change on plants and animal species, including biodiversity loss and extinctions.	• Pupils understand how climate change is a factor in the current loss of biodiversity and can describe some future predictions in connection with this. • Pupils can describe the impact of climate change on ecosystems locally and across the world both in the present and in some future scenarios. • Pupils can identify a wider range of impacts of our changing climate on people in their local area, and also across the world. • Pupils can identify a range of predicted future impacts of climate change depending on levels of heating, for example human migration, changes in agricultural patterns.

Key ideas: Responses to Climate Change

The fourth area offers children the chance to explore what responses are already being made to mitigate and adapt to climate change both locally and around the world. This includes responses by international bodies, such as the UN, by national governments, such as the UK government's Climate laws, by local government, by business, by community groups (perhaps including at their school) and by households and individuals. This understanding that already a huge amount is being done, incredibly imaginative solutions are being pioneered and good news stories are popping up everywhere, can help children not to feel alone in caring about the future of the planet. This must be accompanied by a realistic understanding of the adequacy of these responses, an ability to think critically about which are effective and, by upper primary, beginning to be able to identify which may be 'greenwashing'.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils can name some actions which would have a positive impact on the climate and some ways in which we can stop having a negative impact. • Pupils can choose some actions they / their class / their school / their family could take to have a positive impact on the climate. • Pupils can describe at least one simple / familiar example of how a group of people are taking positive climate action together	• Pupils understand how using less energy can reduce emissions. • Pupils understand what renewable energy is and can explain why it is important in reducing greenhouse gas emissions. • Pupils can identify actions that they can take personally to reduce emissions / promote carbon sinks. • Pupils can identify actions that can be taken at the level of their school and locality. • Pupils can name different examples of how groups are taking climate action together and can talk about the outcomes.	• Pupils are familiar with a range of different climate action strategies including reducing consumption, using renewable energy and protecting/ restoring carbon sinks. • Pupils begin to discuss what makes some strategies more effective than others at reducing emissions. • Pupils can identify actions they can take personally and with a group of which they are part, locally or globally. • Pupils understand that leaders of governments make agreements with each other about climate action and can identify some of the content of these agreements. • Pupils begin to form their own opinions on these governmental responses. • Pupils can begin to discuss what makes for effective climate action using case studies from around the world.

"The big ideas encompassed by the CC framework are comprehensive and accessible. The framework is clear in its intention and is presented in a logical and coherent way.
The end of year documents lend clarity and coherence to each year group's learning and provide clear direction for pupils' progress and learning. It is sufficiently broad to allow for adaptation in different educational settings and provides a significant and " deliverable" climate curriculum."

Paula Galvin, teacher at Our Lady Queen of the Apostles

Key ideas: Consumption and Climate Justice

The fifth area is Consumption and Climate Justice. These two can be seen in some ways as two sides of the same coin which is why they are placed together. Consumerism is the driver of climate change. As we have noted already, those with heavily carbon intense lifestyles are often not those who are suffering the first and worst effects of the climate crisis. They, for now, are the ones who are most able to insulate themselves from the worst impacts. Climate justice involves taking responsibility for emissions. It may involve climate reparations. The Loss and Damage Fund set up at the COP27 summit in Egypt, into which polluters pay and those suffering the effects receive support to adapt and survive is an example of countries beginning to recognise this.

Children can often feel they lack agency in addressing big issues. However, they certainly do have some control over one of the biggest drivers of climate change – the consumption of goods and services – transport, clothes, food choices and (to a degree) how much they use lighting, heating etc. These are topics which have traditionally been a core element of language teaching, so exploring these in the context of climate change is relatively simple and straightforward.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils begin to group human activities they are familiar with (e.g., how they travel to school, how they use energy, what they buy) according to whether they have a big impact on the environment / climate. • Pupils understand that the choices they make may affect other living things including people in other parts of the world.	• Pupils can name some of the things that they and others do that are responsible for climate change at a personal, community, country and global level. • Pupils begin to explore alternatives to these activities which are less harmful (e.g active transport, alternatives to fast fashion etc) • Pupils can evaluate and begin to rank human activities according to carbon emissions produced. • Pupils can explain simply what a carbon footprint of an individual, a product, or an activity is • They begin to understand that different lifestyles have a greater or lesser impact and link this to the concept of a carbon footprint.	• Pupils understand that some individuals and countries are more responsible than others for greenhouse gas emissions to date. • Pupils can explain how some countries are more responsible than others for producing greenhouse gas emissions and compare this with where the climate crisis has the most severe impacts. • Pupils can use information about carbon emissions and impacts to begin to develop their own ideas about climate rights and responsibilities now and in the future.

Key ideas: Possible Futures

The sixth area is often overlooked but is actually key to what children want to know about the climate: Possible Futures. Children are extremely interested in this area because it is literally their future. Of course, none of us can predict with certainty what the future will hold. However, based on modelling, scientists have outlined the parameters of a variety of future scenarios based on different levels of carbon emissions. Understanding these different scenarios makes it really clear to children that the pathways we choose now will lead to very different futures and that these choices are still ours to make. Talking about the future does not need to be filled with doom. Neither does cutting carbon targets does not have to be all about sacrificing our standard of living. Some of the future scenarios in which humanity has achieved its carbon targets are also ones in which there is a more equal society and wellbeing is enhanced in many ways which children will recognise and value.
According to research, having an emotional investment in a positive vision of the future that you know is possible (even though you know it's not certain to happen) is hugely beneficial for our mental health, and also for our capacity to take action to bring that future into being.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils begin to understand that the future will be different depending on what we do or do not do now.	• Pupils can explore and imagine different futures within their own likely lifetimes and beyond based on different levels of heating (including optimistic scenarios) • Pupils know that action or lack of it now will have an effect on these different futures.	• Pupils can outline different possible future scenarios depending on levels of emissions and heating, based on scientific forecasts. • Pupils have an understanding of current scientific consensus on what these future scenarios may look like, including best-case scenarios. • Pupils know that our scientific understanding is developing and being revised.

"The progression shown in the framework outlining the year group objectives made the learning journey really clear for teachers in school. This allowed for teacher confidence when learning and delivering materials to pupils and ensured a full and extensive experience for the students. Review by the partners during the Erasmus project allowed for the fullest and smoothest journey for the children."

Henry Wareham, teacher at Moor Allerton Hall Primary

Key ideas: Mindsets and Viewpoints

The seventh area of the Climate Curriculum is an understanding of the Mindsets that have brought humanity to this point, and an appreciation of the different Viewpoints that exist on the relationship between humans and the rest of the creatures and ecosystems of Earth. The dominant viewpoint in our society is that humans are above the rest of nature and can and should use it as we wish for our own ends. Alternative viewpoints see humans as part of the rest of the natural world and recognise human interdependence with other species within ecosystems. At first sight this may seem difficult for some children to grasp. However, sometimes children seem more able to take a step back from the predominant views of our society than adults – perhaps they haven't had so long to internalise that 'this is the way things are'? In the light of the issues of Climate Justice outlined earlier, it's really important that children have an opportunity to encounter viewpoints such as those of indigenous peoples, and people of the global South who are experiencing the impacts of climate change directly. And not predominantly as 'victims' but also as people from whom those of us caught up in patterns of consumerism can learn a different way to relate to the Earth and to each other. Through exploring this area, young people realise that the viewpoints we listen to and the mindsets we hold can deeply affect the way we feel and can cause us to behave very differently.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils explore stories from many different cultures (including indigenous peoples) about humans and our relationship with our earth.	• Pupils listen to diverse voices on the climate crisis (for example including people of colour, people of the global south, spiritual / faith perspectives.) • Children begin to consider why different people might have different viewpoints and mindsets about the climate crisis.	• Pupils reflect on and compare different views of the relationship of humans with the Earth (including a variety of different perspectives from around the world.) • Pupils begin to identify the viewpoints which have influenced their own mindset, and which influence society more widely in the UK. They are given opportunities to think critically about these. • Pupils can identify viewpoints about humans' relationship with the rest of nature which have influenced their own mindset. • Pupils can think critically about and begin to challenge the accepted mindset in society about how humans treat the earth.

Key ideas: Feelings and Behaviours

This leads on to the eighth and final area: that of Feelings and Behaviours. We have already discussed the importance of recognising children's (and adults') emotions in relation to learning about the climate crisis and the importance of fostering a sense of hope. Negative feelings can set off a cycle in which we despair, and feel that there is no point doing anything. Perhaps we hide our heads in the sand because the feelings of despair are too painful and we avoid them by not thinking about any of it if we can possibly help it. On the other hand, positive feelings can set off an opposite cycle in which we are motivated to take action and then we begin to see the changes all around us. And this cycle can also start from the point of action. As Greta Thunberg said: 'Once we start to act, hope is everywhere'. If we can help our children (and ourselves as educators) to nurture this positive cycle within themselves, we will indeed be giving them and our world's future, the best gift that education can hope for.

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
• Pupils can talk about their own feelings about the earth, the natural world and the climate.	• Pupils can talk about their feelings about the earth and the natural world, our changing climate, and its impacts. They know that others have a range of different feelings, including hope. • Pupils are familiar with a range of strategies people use to cope with anxiety about climate change including finding hope by taking collective action.	• Pupils can talk about their feelings about the climate crisis and about their own future. • People begin to compare the effectiveness of different strategies to help cope with feelings around climate change. • Pupils begin to understand that awareness of the problem does not always lead to action and begin to explore some of the reasons why. • Pupils begin to recognise from experience that taking action with others and imagining positive visions of the future can bring more hopeful emotions.

"The preparations of the climate curriculum framework were carried out in effective cooperation using the team's experience throughout the project. Primary school teachers now have the framework curriculum of how to teach climate change. With their professional experience, I am happy to work on the development of a tool to be used across Europe using appropriate pedagogical methods."

Hulusi Karatas-SerGED Association

Introducing key terms

By the end of Year 2:	By the end of Year 4:	By the end of Year 6:
Weather and Climate	Climate change Atmosphere Greenhouse effect Greenhouse Gas emissions Carbon emissions Carbon dioxide Fossil fuels Renewable energy	Carbon footprint Climate emergency Tipping points Intergovernmental Panel on Climate Change Ecosystems Climate justice Carbon sinks Biodiversity Permaculture

SKILLS FOR A NET CARBON ZERO FUTURE

- Food growing
- Clothes repair skills
- Cycle safety
- Cycle maintenance
- Household item repair skills
- Cutting down food waste
- Sustainable cookery

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