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Improving life chances

Learning about Climate as part of Youth Social Action



Staff guide and lesson plans for Key Stage 2




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An Overview of Our Youth Social Action Resources


1 YSA Implementation Guide



Inspire Explore Plan Act Reflect


A comprehensive guide to support the leaders and teacher through the Youth Social Action Process.

2 Implementation Model Guide



These guides will support the leaders in exploring different models which can be adopted to implement YSA into the school.

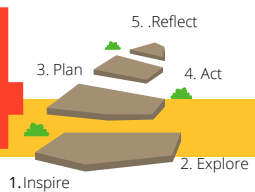
3 Skills Guides



Problem Solving Teamwork Reflection Communication


Skills guide focusing on our key skills such as Problem Solving, Teamwork, Reflection and Communication.

4 5- Step Process



The 5 step process consists of: 1. Inspire, 2: Explore, 3: Plan, 4: Act and 5: Reflect. This is a core part of the YSA process guiding the young people through the project.


5 Curriculum Guides



Poverty Climate Change Inclusion & Diversity Healthy Habits Mental Health KS4 only

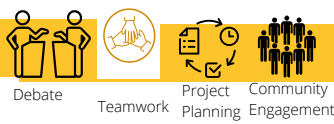
Comprehensive guides to support the teaching of YSA through Poverty, CLimate Change, Inclusion and Diversity, Healthy Habits and Mental Health

6 Passports



Passports for each key stage supporting and guiding the young people through their journey of YSA.


7 Additional Guides



Debate Teamwork Project Planning Community Engagement


Detailed guides are available to support teaching additional skills such as Debate, Teamwork, Project planning and Community Engagement.

8 Additional Guides



Additional resources to be developed are:

9 Case Studies



The main aim of the case studies are to provide the users with an overview of YSA projects with lessons learnt to support. These are projects within our core and external schools.

10 Online Resources




All our resources are available on line free of charge.

11 Whole School Quality Assurance



The quality assurance document supports the leaders with the assessment of YSA practise within their educational setting. Allowing them to reflect and plan next steps.

Next Steps



Using the 5 step Process to Support Thinking in Youth Social Action

WHY?

What problem do I see or feel?

now what?

What have I achieved through this? What can I further?

What

How can I discuss this problem with my class?

Learner

When

When can I do this?
In school? Out of school? Who can help/support me?

How?

How can I change this?
What knowledge and skills do I need to learn?

Engaging Young People in Youth Social Action

Social action teaching in the primary classroom

Youth social action is when young peoples/students work together to tackle common challenges that directly impact their lives and the lives of others in their community/city/world. If adolescents have more capacity and agency to develop a social action project from the early stages, the ability of younger children to do this should not be undermined; however, the quality of the teaching is a determinant factor in the realisation and progress that children will make through the process.

One aspect of quality social action teaching is developing a culture of asking 'good' questions related to the study topics in the classroom. A good way to start is to simplify the planning of activities by engaging children with simple resources that introduce them to the focus area and raise their awareness of how this affects their lives. As a rule of good practice, teachers should try to structure the activities that teach social action skills in a child-led manner by getting children to think about the problem they want them to think about rather than by telling them. This way, young peoples take ownership of their learning and are more likely to develop the intended skills.

With very young children, this work and attitude to learning can become part of the learning culture by getting young peoples used to making observations about the outside world: 'What is special about my school?'; 'Who are the people working in my school?'; 'What do they do for us?'; and look at what they are willing to investigate to inform your social action planning. This could start by taking notes of what problems they notice and allowing them to investigate further and act. Educating young peoples promotes 21st-century knowledge and skills and builds their social-emotional competencies.

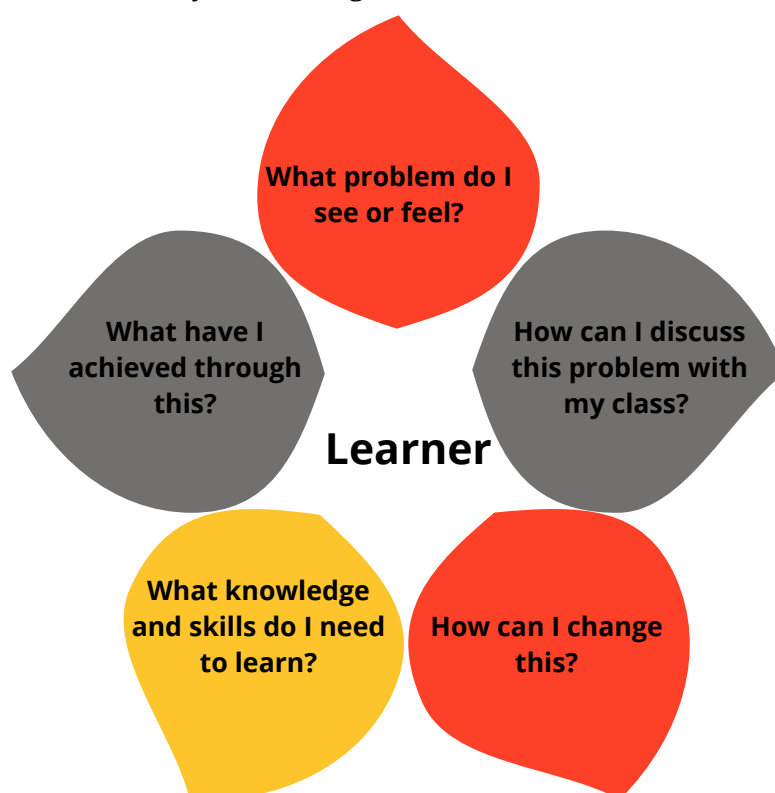







Figure 4 - Stages of thinking in social action

Delivery of Youth Social Action

The social action project can be delivered through your school's curriculum design. It can link to a specific subject area or be undertaken during enrichment/pastoral time, combining this as an extra-curricular activity. In the second section of the guide, you will find a progression of activities that can be used to teach the skills that young peoples need, either to get involved with an existing social action project linked to the focus area or to develop their own. Below are three tables outlining how the teaching of skills and the realisation of the social action project could be mapped out over an academic year.

This guide is based on the **#WeWill** process enabling young peoples to learn transferable skills through social action. The process follows five key steps:

	Pupils understand what social action means and are inspired to take part in a social action project.
	Look at existing practice, investigate deeper into the cause.
	Plan the project
	Carry out the project based on your plan.
	Reflect on the overall project and how it can be improved further. After reflecting, young peoples may develop their project further based on what they have learnt or may wish to pursue another project.


Each of the lesson plans lightly integrates learning or practice of a specific life/employability skill such as oracy, teamwork, reflection and or problem-solving. In addition, each lesson links learning to potential youth social projects that other young people have delivered to make a difference. The lessons are typically provided during step 2: of the Ormiston youth social action 5-Step process.

The guide:

- Introduce young people to the subject of Environment - Climate Change
- Go through the process of understanding social action by analysing an approach already taken.
- Inspire young people to act within a school, community, or city.


It is essential that the teacher (any adult supporting the learning) emphasises the key skills that are being covered at each stage. The skills are transferable and can be applied across a range of different subjects and contexts. Below are examples of possible delivery methods. The resources are adaptable and can be taught in line with your curriculum model.


Process steps for Key Stage 2

	<p>This section would have been covered through the activities teaching the skills to engage in social action in the focus area.</p> <p>Skills developed: <i>developing empathy, social-emotional competence, collaborative thinking and learning, listening to ideas, and communicating their own (aspects of self-regulated learning seen).</i></p>
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	<p>Assess: Decide on an area of action that could be used for a social action project. This could build on the activities completed or involve new research.</p> <p>Skills developed: <i>sharing ideas with partners, discussing outcomes.</i></p>	<p>Connect: Connect with people from the school/community or external partners/charities to obtain more information or discuss ways the young peoples can help/envisage the project they would like to engage with.</p> <p>Skills developed: <i>communication, oracy and presentation skills, building rapport with others involved in my learning.</i></p>	<p>Explore further: Teacher will need to plan for resources or for opportunities for children to research further. Teacher to support young peoples to research any further information they need to carry out the social action project.</p>	<p>Review: Review the goal of social action planning, and how the information could serve to outline a plan to carry out the project.</p> <p>Skills developed: <i>reflect on learning, sharing ideas, problem-solving, predicting.</i></p>
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Process steps for Key Stage 2

	<p>Outline planning: Building on previous discussions and learning, teacher should support young peoples to plan the next part of the project. Pupils should participate in the planning process, building on prior learning. This is a good opportunity to incorporate the teaching of metacognitive strategies into the planning process and start discussing outcomes whilst producing a timeline.</p> <p>Skills developed: <i>planning, writing, sharing ideas, developing attitude to timing, developing metacognitive strategies.</i></p>	<p>Building my team: Upper Key Stage 2 young peoples should be given the task to decide how to share work and whether they need to designate roles between each other. If they are becoming leaders or 'health ambassadors', then they can look back at the charter of criteria they have created for healthy living/being a health ambassador in their schools.</p> <p>Skills developed: <i>communication, teamwork, leadership.</i></p>	<p>Partners in my learning: Pupils could develop further connections with parents, the local community, and the beneficiaries of the social action project. This will help them to promote the work they have done.</p>	<p>Final planning: Pupils will need to finalise their plan and discuss risks to ensure they have the best solutions in case something does not work as expected. Teachers will need to type a risk assessment if this is needed; young peoples could participate here to make their own.</p> <p>Skills developed: <i>reflecting on outcomes, assessing planning, 21st century skills.</i></p>
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	<p>Doing and making: This Step should be spread over several sessions. We recommend blocking a longer slot each of the days when young peoples are working on this so that they have enough time to complete each part.</p>	<p>Delivering: Planning will need to be done to ensure that this part is fully completed and produces the best outcomes.</p> <p>Skills developed: <i>21st century skills, social-emotional development.</i></p>
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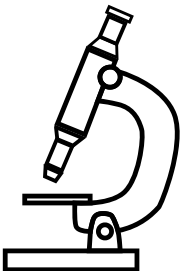

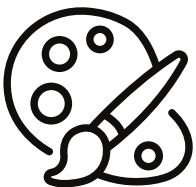

Process steps for Key Stage 2 (continued)

	<p>Evaluate and progress: Together teachers and young peoples will analyse and evaluate the outcomes of the overall project to consider:</p> <ul style="list-style-type: none"> • the overall project success and how it can be improved further • young peoples' personal achievements and how to improve further <p>How the project has impacted on the school in general, their chosen area of focus and the local community.</p> <p>Skills developed: <i>communication, leadership.</i></p>	<p>Share and celebrate: Pupils showcase their work and write up a project review which can be used to inspire others.</p> <p>Teachers and students celebrate successes enabling the team to learn more about each other.</p> <p>This Step ends with some type of event to celebrate the learning.</p>	<p>Reflect: This work can now inspire young peoples to:</p> <ul style="list-style-type: none"> • engage other year groups in a social action project. • take on new roles within the existing project team. • seek to inspire others into action by speaking at or arranging events to engage another school/organisation. <p>Staff will be focused on sustaining practice and progressing onto engaging a new group of young peoples to deliver a social action project.</p>
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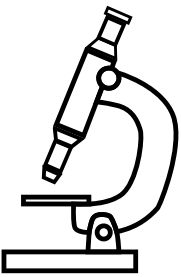




Social Action Curriculum Integration Map

The following curriculum maps provide links to integrate work on the Environment and Sustainability within the National Curriculum at Key Stage 2. It can be read to obtain an overview of the links that can be made with the National Curriculum. It can also be used to inform the planning of activities that will teach social action skills or inform future social action planning.

Lower Key Stage 2 - Years 3 and 4

	<p>Some texts that can inform Guided Reading activities or further work on the environment could include:</p> <p>'The Great Kapok Tree' Lynne Cherry 'Seeds of change' Jen Cullerton Johnson 'When the whales walked' Douglas Dixon 'Let's investigate Plastic Pollution On land and in the Oceans' Ruth Owens</p>
	<p>Use fieldwork to take the learning on the environment further. Pupils can use the learning they have done to investigate further. For example, young peoples could explore ways of collecting data on what species of plants or animals they find in an area where they have carried out field work. If they have carried out a trip near a watercourse, they could explore the local environment, carry out some pond dipping and explore the biodiversity found in water.</p>
	<p>Explore ways of travelling to school. e.g. scooting, walking, cycling, travelling in a car. Which of these means of transport is better for the environment?</p>
	<p>Create artwork or design work linked to an environmental projects, this can include creating costumes, paintings for an exhibition, signs to sensitise your audience about the problems studied.</p>
	<p>Put together a performance to sensitise your audience on environmental issues. This can include drama, music work (creation of a soundscape with children's voices) or even dance.</p>

Upper Key Stage 2 - Years 5 and 6

	<p>Some texts that can inform Guided Reading activities or further work on the environment could include:</p> <p>'The girl who talked to trees' by Natasha Farrant</p> <p>'This morning I met a whale' Michael Morpurgo</p> <p>'We are all Greta' Valentina Giannella</p> <p>'Greta's story' by Valentina Camerini</p> <p>'Under the weather: stories about climate change' Tony Bradman</p>
	<p>When learning about changes of state learn about Antarctica melting and the effects on the ecosystem. Explore questions such as: 'Why is Antarctica worth protecting?' or 'How does the Antarctic ecosystem work'. Pupils can learn about the species living there and create food webs to show how they are interdependent.</p>
	<p>Develop use of data online. Pupils can start measuring the energy or water consumption at school, or how much food is wasted in the lunch hall. They can record this data and set targets. Using an energy monitoring software can help make this process easier.</p>
	<p>Explore the functioning of ecosystems through work on climate zones and biomes of the world. Study of the water cycle can lead to exploration of the role of the greenhouse effect and the role of H₂O, leading to understanding of the effect of other greenhouse gases.</p>
	<p>Create artwork or design work linked to an environmental projects, this can include creating costumes, paintings for an exhibition, signs to sensitise your audience about the problems studied.</p>
	<p>Put together a performance to sensitise your audience on environmental issues. This can include drama, music work (creation of a soundscape with children's voices) or even dance.</p>

Climate Change and Youth Social Action

In addition to valuing the diversity in our students, the choice of learning that we get students involved with can also reflect this diversity. Working on a social action project that provides students with new learning outcomes can be a starting point. Generally, the more we move away from a monoculture of learning to create learning opportunities producing a range of outcomes. This enables us to tap into students' interests and skills, giving them a sense of ownership in the work they get involved in.

If working on a social action project on Climate Change, giving Young people more freedom to choose and lead the work, and letting them see where it takes them, will provide the best outcomes. In terms of teaching and learning outcomes, it helps teachers develop ways of teaching subject-based skills and knowledge in a much more engaging way, ultimately motivating students even more to learn.

Below are steps to explain how to use a theme on Diversity to structure the social action project:

1 Start with a question that serves as a focal point for the learning that will take place. *e.g: 'Why is diversity essential to the functioning of nature?'*

2 Provide exploration routes for the students to shape their thinking around the question. This can take the form of a trip, an afternoon exploring resources or watching a documentary.

3 Get the students to gather up in groups linked to their area of interests around the topics and create opportunities for them to investigate further.

4 Their investigation may lead to the identification of problems that can open the premisses of a future social action project or the actual knowledge that they develop and will continue to grow.

Through further investigation can be used as educational training for them to build their own action projects in the school/community.

Background Reading

The following overview provides background knowledge for school staff to feel confident when approaching social action planning in primary schools addressing the problems of climate change and pollution.

In the National Curriculum, the core scientific knowledge that leads to an understanding of climate change is taught from key stage 1 (KS1) to key stage 2 (KS2):

- Learning about the Earth's movements around the Sun and the changes observed through the seasons and the water cycle
- Teaching on the composition of the atmosphere, the effects of carbon dioxide produced by human activities, and the interaction between pollution and the interdependence of biodiversity is covered in Science at key stage 3 building up from KS1-2
- The Geography curriculum teaches knowledge about climate and weather worldwide and gives opportunities to study the local area through fieldwork. Human geography, including types of settlement and land use; Economic activity, including trade links; and the distribution of natural resources, including energy, food, minerals and water
- The statutory requirements of the Science and Geography curriculums provide a framework of core knowledge leading to an understanding of climate change
- Food technology covers the understanding of seasonality and knowing where and how a variety of ingredients are grown, reared, caught and processed

Recent government publications on the Sustainability and Climate change strategy for the education sector set new directions for school systems. Leading excellent educational opportunities for a changing world impacted by climate change will require

- Giving early access to environments created for children that allow them to connect with nature and value its preservation
- Developing education that better understands the evolving facts related to the climate crisis and takes action within schools to reduce direct and indirect emissions on site
- Getting young people to participate in implementing climate adaptation measures (net zero) within schools to develop resilience whilst experiencing the changes in the climate
- Participation in program activities that enhance biodiversity and air quality and empower children to take positive steps to improve their local community, country and planet

Consequently, any planned social action work on environmental issues and sustainability can be a starting point for schools to develop their curriculum and practice. We also recommend staffing interested in sustainability education to access regular publications by the **Common Worlds Research Collective** and the **UNESCO Futures for Education**, which provide updates on environmental research and directions for global education, as well as **The Harmony Project** in the UK, which is a charity organisation providing the means for schools to adopt a whole-school transition into sustainable education, fully in line with Ofsted requirements. For more information, go to: <https://www.theharmonyproject.org.uk/>

Understanding Environmental Issues

The natural environment is the totality of the natural world that humans have inherited. The atmosphere is threatened when external physical conditions affect and influence organisms' growth, development, behaviour, and survival.

A. Earth, Atmosphere and Water

Planet Earth is the only planet in our solar system able to support life. This life is made possible through the presence of **water, breathable air, a climate conducive to life, and solar energy.**

The **Earth's atmosphere** is made of layers of different gases that protect life on Earth by shielding ultraviolet radiation from the Sun. This layer insulates the planet to maintain the climate and prevents extreme differences between daytime and night-time temperatures when Earth does not face the Sun. Between the Earth's surface and the atmosphere occurs a greenhouse phenomenon.



The Greenhouse effect (named after the role of glass in maintaining temperature in a greenhouse) is a natural process thanks to which the temperature brought by the warmth of the sunlight remains at an average around the Earth's surface; maintaining this way a temperature that is compatible with the presence of water and life as we know it.

This occurs when sun radiations enter the atmosphere, reach and warm up the Earth's surface and are reflected into the sky. Some of this heat will return into space while some remains trapped in the atmosphere.

The natural process of trapping some of the heat occurs through heat absorption by water vapour (H₂O) and cloud formation, whilst some happen through other heat-trapping gases, also called greenhouse gases.

To be a greenhouse gas, the gas must be able to absorb and emit longwave radiation in a planetary atmosphere. So the action of these gases in high concentration is that they prevent radiations from going back into space and contribute to the natural greenhouse effect responsible for maintaining the climate. One of these heat-trapping gases is carbon dioxide (CO₂), which is essential for plant life to be sustained in small quantities. This carbon dioxide is naturally emitted through decomposition, ocean release and respiration.

Nature and Biodiversity

Nature is a complex network of elements and living organisms that interact. The diversity of species of plants and organisms found in nature is essential to support life on Earth, including human life.



Each species possess a genetic heritage providing for the defence of biodiversity and going beyond to preserve the genetic origin of the planet. If one species disappear, it is a genetic library that disappears. If the wide diversity of animals, plants, and microorganisms disappeared, we would not have healthy ecosystems providing us with the air we breathe and our food. Each element has a specific role to play in sustaining the natural system.

The Impact of Human Activities on The Environment

A. Climate Crisis

Over time the increase of heat-trapping gases in the atmosphere due to human activities increase the greenhouse effect. These gases include an expansion of Carbon dioxide emissions (CO₂) due to burning fossil fuels, deforestation, and industrial processes. Methane (CH₄) comes from the energy, agriculture and waste sector. Nitrous oxide (N₂O) and Fluorinated gases are emitted through refrigerators, air-conditioners, foams and aerosol cans.

These rising temperatures produce changes in precipitation patterns and severity of storms and cause glacier melting, leading to sea level augmentation. The glaciers spread around the globe are responsible for climate regulation because they reflect 95% of the sunlight into the sky through their white appearance. This allows them to maintain low temperatures in their surrounding environment and viable temperatures around the planet. The climate of our world has always functioned in this way..

The rising sea level directly affects the total mass of Earth we have access to. We can only live on 30% of the mass of the Earth, and we need this land to thrive. The rising sea level causes erosion, damage to coastal areas, loss of land, and floods. The increasing sea level pushes hurricanes and tropical cyclones to move farther inland. Combined with the higher temperatures, it increases the severity of these storms and their frequency. Warmer temperatures intensify evaporation in regions with drier seasons, reducing surface water and drying soil and vegetation. Periods of precipitations are low, which engenders droughts. Climate change is also altering the timing of water availability: warmer winter temperatures are causing fewer precipitations to fall as snow in regions like the Northern Hemisphere. It changes the variations of rainfalls, which increases the alternation between periods of extreme rain and droughts.

Warming of the climate and oceans also impacts the lives of living organisms and animals. The new field of studies on the effects of a warming environment on animals found an impact on the migration and movements of groups of animals. Warming waters affect the spawning of certain fish species and disorientate underwater displacement. Both underwater and on land, the warming climate increases the population of certain parasites that can be harmful to certain species. The warming of the climate affects the landscape, which for species that need camouflage for their survival will cause a decline in their population. The warming environment also affects access to food sources for animals and, in some cases, already a complete loss of habitat like polar bears in the Arctic.

Pollution

As well as the effects of heat-trapping gases, pollution has a devastating impact on the quality of air, water and soil, of which preservation is necessary for our health and that of the ecosystems. As for greenhouse gas emissions, pollution is linked to human activities. Air pollution happens when solid and liquid particles, called aerosols, get stuck in the air. This is often related to human activities by releasing particles from factories and truck exhausts. Gases can also cause air pollution. For example, Ozone (O₃) is a gas essential to shield sun radiation in the outer part of the atmosphere.

In contrast, when Ozone is created above the Earth's surface through the sunlight reaction to certain chemicals coming from sources of fossil fuels, it makes a type of air pollution called 'smog'. Long exposure to air pollution is associated with heart and lung diseases and some cancers. The increase in wildfires linked to climate change also adds to air pollution. Industrial waste in the form of toxic chemical pollutants from agricultural sites contributes to water pollution.

Pollution

This is because, in some cases, waste needs to be treated properly. This type of pollution can also occur from sewage and wastewater. When chemical waste joins natural water currents, it pollutes one body of water to another until it reaches the sea, endangering human health and living organisms. In parallel, due to the increase of carbon dioxide in the air, ocean acidification occurs in the top layer of the ocean, where algae and zooplankton absorb carbon dioxide. This acidity causes some animals to have difficulties making and keeping their shells.

Soil pollution largely occurs through food and farming activities and the introduction of pesticides and herbicides into the ground. Whatever their use, they cannot be broken down in nature as they are artificially made. Consequently, they seep into the ground, stripping away soil fertility and harming the ecosystems. Industrial activity also damages soil when waste is not properly disposed off.

Intensive farming activities such as intensive agriculture and livestock farming for meat have the largest role in biodiversity loss. Intensive farming pollutes air, water, and land altogether. It is responsible for countless other damages to carry these production activities: deforestation, use of chemicals in agriculture, development of zoonotic diseases, the release of CO₂ emissions, and the disposal of slurry. The treatment of waste, not only gases but other human waste, is also a major contributor to the degradation of ecosystems.

Plastic pollution, for example, devastates the ocean's ecosystems and the life of marine animals. Many marine animals, like turtles, seabirds, fish, and mammals, have been reported ingesting or entangling in plastic debris, leading to impaired movement, reduced reproduction, abrasions, ulcers, and death. This is a common problem in certain species since plastic often looks like food to these animals.

For instance, 95% of fulmar seabirds that wash ashore dead in the North Sea have plastic in their guts. One area of concern is microplastics, which are tiny fragments of plastic. They can be especially dangerous for animals since they absorb toxins and look like food, causing many marine animals to eat them. Unfortunately, microplastics are extremely hard to remove and can be present in everyday items like toothpaste.

Solutions and Sustainability

The interlinks between human activities and the problems of climate change and pollution show that solving these problems cannot be solved by isolating them and dealing with them.

Solution 1: Preserving and Restoring Nature's Ecosystems

One of the first threats to biodiversity and the destruction of habitats is soil and water pollution. The Zoological Society of London (ZSL) estimated in 2008 that 40% of species could disappear within the next fifty years. In 2019, the European Commission estimated that 59% of freshwater molluscs, 58% of endemic trees, 40 % of freshwater fish, 23% of amphibians, 20% of reptiles and 17% of mammals were threatened with becoming extinct.

Preserving natural habitats is an indispensable condition for developing animals and plant species. Firstly, around agricultural lands, the preservation of plants is vital to the survival of animals. Trees, hedges, copses and water streams that separate fields are pools to maintain biodiversity. These landscape elements also compete for better storage of underground water that protects reliefs against erosion and limits leakage of phytosanitary products in water streams. They assist the soil culture by providing shelter to predators that feed on pests without chemical interventions and allowing pollinating species to fertilise cultivated plants. Secondly, woodlands must be protected as they preserve plant species, trees and wildlife. New tree planting projects and undertaken initiatives compensate for carbon emissions but are not the sole solution.

Reinforced protection of oceans has to become a priority. Beyond 250 000 animal species and millions of plants are greatly threatened. Beyond the uncountable species we have to protect, the oceans' resources allow us to feed at least 3 billion people, absorb 25% of CO₂ and generate 50% of the planet's oxygen. We can not underestimate their role.

Since non-recycled and incinerated waste ends up in the ocean, all of the pollutants that are threatening it are not counted anymore: plastic waste creating continents, algae and other i

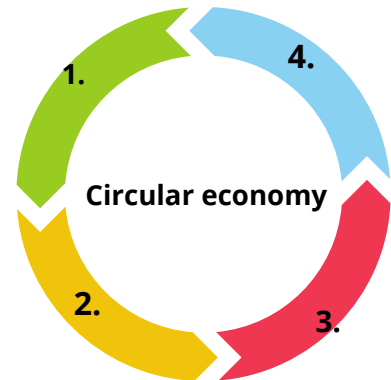
invasive species proliferation, chemical and oil pollution, acidification of water, dust clouds created by underwater mining, mangrove and coral reefs destructions (20% have already disappeared and 70 to 90% are threatened to disappear before 20 years.) Massive action to reduce plastic waste must be undertaken (150 million tonnes of plastic pollute the oceans today, and 9.5 million are added annually).

Developing and Sustaining a Cyclical Economy

According to the UN, the consumption of primary resources will have tripled by 2050 to reach a level unbearable for the planet. A circular **or cyclical economy** is defined as an economic system of exchange and production that, at all levels of the cycle of life of the products (goods and services), aims at increasing the efficiency and use of resources, reducing then its impact on the environment whilst developing the well being of individuals. The aim is to disconnect the production and service of natural resources through reuse and recycling. This loop can be summarised by the following cycle:

1. The conception of an environmentally responsible product*
2. Production from recycled materials
3. Consumption
4. Recycling and production of a new product made from recycled materials.

*a good or a service



Develop an Energetic Model That Reduces CO2 Emissions.

Industrialised countries agreeing to reduce their CO2 emissions have adopted a **mixed energy strategy** by reducing energy production that releases CO2 emissions by allocating a part of the energy production to clean energy sources. Whilst this has allowed some countries to reduce their emissions, it is not meeting the need for a drastic reduction of CO2.



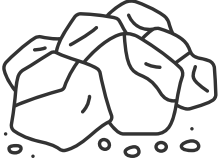
Regarding climate change, net zero is a term established to restore the balance of greenhouse gases in the atmosphere. Regarding the responsibility of human activities for heat-trapping emissions, it does not account for differences in the origins of gases responsible for increasing the greenhouse effect or pollution.

It is approached as a response to counterbalance emissions by activities that have a negating effect. For example, some industries operate with higher fuel consumption as long as other activities and initiatives negate these. On the next page is a list of the different energies used today.

Types of Sources of Energy


Fossil Fuel Energies

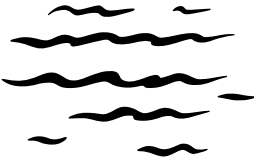

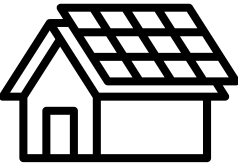
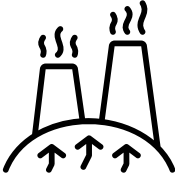
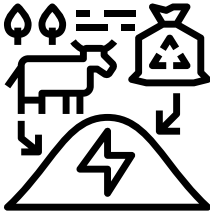
Fossil fuels were formed from animals and plants that have been buried and fossilised over the space of millions of years. They have an extremely high carbon content, perfect for creating energy. People started to use fossil fuels to generate power in the 1880s when coal was first used to give electricity to homes and factories. They were essential in the Industrial Revolution. Below is a list of the different fossil fuel energies:

<p>Natural gas</p> 	<p>Natural Gas is a non-toxic hydrocarbon that is highly flammable, odourless, and colourless. It can be a gas or liquid.</p>
<p>Oil (or petroleum)</p> 	<p>Oil (or petroleum) – a liquid once extracted from reservoirs below land or ocean floor can then be converted into car and aeroplane fuel, among other things.</p>
	<p>Coal – is possibly the most harmful to the environment. Coal is a combustible carbon-based black rock that we burn to gain energy.</p>

Renewable Energies

Renewable energies are also known as flow resources, natural resources that can renew despite consumption. This can be achieved through biological reproduction or other repeating processes. This allows us to use energy without worrying about finite resources because they regenerate.

<p>Wind</p> 	<p><i>Wind</i> – the motion is used to generate electricity. Simply put, the wind is created by the sun's heat and the Earth's rotation, something called the <u>Coriolis Force</u>. A wind turbine is used to draw energy from air currents.</p>
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<p>Ocean</p> 	<p><i>Ocean</i> - The rising and fall of the tide can be harnessed to generate electricity. A tidal current turbine (like a wind turbine) or <u>tidal stream generator</u> collects the energy from the water currents.</p>
<p>Hydro Power</p> 	<p><i>Hydropower</i> - similar to the ocean, uses water's motion to produce electricity. Still, the key difference is that any wetness can be used, so a tidal current turbine does not need to be used.</p>
<p>Solar</p> 	<p>Solar – energy can be collected from the sun's heat through solar panels to generate electricity, heating, and lighting.</p>
<p>Geothermal</p> 	<p>Geothermal – generates electricity by using heat from underground trapped in the Earth.</p>
<p>Biomass Energy</p> 	<p>Biomass – this is the most versatile and reliable renewable energy source. Biomass refers to animal and plant materials such as wood chips, food waste, or other organic matter. Once energy is extracted from biomass, it can be used for chemicals, fuel to power vehicles, heating, and electricity</p>

Teaching activities

Inspire and Inform

The resources below support the teaching of the skills needed so young peoples can carry out their own social action projects. It should:

- Introduce the young person to the subject of **environment and sustainability**.
- Go through the process of understanding what social action is by analysing an approach already taken.
- Inspire young people to act within a school, community, or city.

It is essential that the teacher (any adult supporting the learning) emphasises the key skills that are being covered at each Step. The skills are transferable and can be applied across a range of different subjects and contexts. Below are examples of possible delivery methods. The resources are adaptable and can be taught in line with your curriculum model.

KS2 activities spread over four lessons

Lesson 1- What biodiversity is found in Antarctica?

Learning Objective

- To be able to describe the biodiversity found in Antarctica.

Skills Objectives:

- Problem-Solving - Young people can carry out effective research.
- Communication - Young people can present their ideas with great impact and clarity.

Lesson 2: Why are glaciers worth protecting?

Learning objective:

- To be able to explain why glaciers are melting.

Skills Objective

- Teamwork - Young people are able to accept responsibility as an individual and as a member of my team.
- Communication -Young people can prepare for discussions, debates, and presentations

Lesson 3: How does climate change affect the Antarctic food web?

Learning objective:

- To research the impact of climate change on a food web.

Skills Objectives:

- **Teamwork** - Young people are able to accept responsibility as an individual and as a member of my team.
- **Communication** -Young people can prepare for discussions, debates, and presentations

Activity 4: How can I present an argument for the protection of Antarctica in a debate?



Learning Objective:



- To learn how to present an argument for the protection of Antarctica.

Skills Objectives:

- **Communication** -Young people can deliver and speak up front with personal confidence.
- **Teamwork** -Young people I have the confidence to work with others and adapt to the situation

Lesson 1: What biodiversity is found in Antarctica?

<p>Learning Objective</p> <ul style="list-style-type: none"> To be able to describe the biodiversity found in Antarctica 	 	<p>Skills Objectives</p> <ul style="list-style-type: none"> Young people can carry out effective research Young people can present their ideas with great impact and clarity
<p>Skills: Pupils can explain what a biome is and the role of climate in maintaining a biome by giving the example of Antarctica. They can describe the biodiversity found in certain biomes, including Antarctica.</p>		

<p>#WeWill Step</p>  	<p>National Curriculum: Geography describe and understand key aspects of physical geography, including climate zones, biomes, and the water cycle.</p>
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Time	Teaching content
40 min.	<p>The session aims to learn about the biodiversity found in Antarctica. The topic of protecting Antarctica is useful to allow young young peoples to learn about the different elements sustaining life on Earth, which will later lead to a broader understanding of the complex relationship between the Sun, atmosphere and earth's surface in regulating the climate as well as the role of the biodiversity in sustaining health and life.</p> <p>Begin the session by looking at the word biodiversity and what it means. Explain that through the session, you would like young peoples to research ' What biodiversity is found in Antarctica?'. This will include looking at:</p> <ul style="list-style-type: none"> The <i>biome</i> of Antarctica, thus reviewing or carrying out Geography learning as biomes, is normally taught. Finding out about the land and sea animals living in Antarctica. Learning about the Antarctic food chain.

Lesson 1: What biodiversity is found in Antarctica?

Research could be carried out on laptops in pairs or groups. At the end of the session, carry out a plenary to review what has been found. Pupils could present their work on a mind map with illustrations.

Lesson 1: What biodiversity is found in Antarctica?

1

'What Biodiversity is Found in Antarctica?'



2

Learning Objective

To be able to describe the biodiversity found in Antarctica.

Skills Objectives

- Young people can carry out effective research
- Young people can present their ideas with great impact and clarity



National Curriculum: Geography
describe and understand key aspects of physical geography, including climate zones, biomes, and the water cycle.

3

KEY WORDS:

***biodiversity:** a term that refers to all different kind of life found in an area and that make up the natural world. This can include, animals, plants, fungi and even microorganisms like bacteria.



4



***biome:** a biome is an area of the planet that can be classified according to the plants and animals that live in it. Climate, soil and the amount of light as well as the amount of water will help determine what life lives in it. It is different from an ecosystem which is the interaction of living and non-living things in an environment.

5

***climate:** the climate is the weather conditions, including temperature, precipitation, and the wind that prevail in a region



***food chain:** a food chain is a diagram illustrating how plants and animals get their energy.



6

Antarctica is one of the seven continents located in the South Pole, at the bottom of the Earth. It is surrounded by oceans, and the continent itself is covered in snow and surrounded by glaciers. Scientists work in stations on Antarctica to study its biodiversity and the effects of climate change.



7

The following tourism videos will give you an introduction to Antarctica, and what it looks like. Click on the two glaciers below to open the pages.



https://www.youtube.com/watch?v=WMvQ59IVq_A



<https://www.youtube.com/watch?v=TixOQn7z9Hg>

8



As you can see, Antarctica is an incredible continent, and will be the focus of the series of activities you will be working on to become a LEADER OF SUSTAINABILITY!

9

Activity 1: What biodiversity is found in Antarctica?

In this first activity, you will work with a partner to research the biodiversity that makes Antarctica. You will need to consider the following research:

- Find out about the climate of Antarctica and its biome (what are the physical features, seasons and temperatures of Antarctica).
- Look for the land and sea animals found on the continent.
- Look at the links of the Antarctic food chain.



10

To help you gather your research we have created a facts sheet that you can use to write down notes.



11

The following websites can help you start the research:

Discovering Antarctica.org.uk
<https://discoveringantarctica.org.uk/>

Cool Antarctica.com
<https://coolantarctica.com/>

National Geographic.org
<https://education.nationalgeographic.org/resource/antarctica>



12

Plenary

Share what you have found about the biodiversity of Antarctica with your class and teacher.



Lesson 2: Why are glaciers worth protecting?

Learning objective

- To be able to explain why glaciers are melting



Skills Objective

- Young people are able to accept responsibility as an individual and as a member of my team
- Young people can prepare for discussions, debates, and presentations

Skills: Pupils can explain in simple terms why glaciers are melting and the link with climate warming. They can use simple vocabulary like: 'glaciers', 'CO2 gas', 'greenhouse effect', etc.

#WeWill Step



National Curriculum: Geography

Describe and understand key aspects of physical geography, including climate zones, biomes, and the water cycle.

Time	Teaching content
40 min.	<p>The aim of the session is for young peoples to understand the role of the glaciers in the greenhouse effect and how greater CO2 emissions through the impact of human activities have devastating consequences. If there are opportunities to teach at greater depth, then young peoples can look at the role of the glaciers in regulating the Earth's temperature.</p> <p>Begin the session by localising Antarctica and the North Arctic Pole on the globe. Children can do this on an atlas. Explain that for a number of years; the Earth has been warming up because of the way humans are releasing harmful gases in the sky that block the sunlight radiations. A very simple way to illustrate this introduction is through the use of a diagram; please refer to the presentation slides to see an example.</p> <p>Tell children that you would like them to research more about this greenhouse effect and by, looking particularly at its effects. Again this can be carried out on a laptop with a partner or in a group. The groups could structure the research through the following questions:</p>

Lesson 2: Why are glaciers worth protecting?

'How can we see the glaciers are melting?'

'What happens when the glaciers fall in the sea and melt?'

'What are the consequences in other parts of the world?'

At the end, the whole class can answer the activity question 'Why are glaciers worth protecting?'

Lesson 2: Why are glaciers worth protecting?

1

'Why are glaciers worth protecting?'

2

Learning Objective <ul style="list-style-type: none"> To be able to explain why glaciers are melting 		Skills Objective <ul style="list-style-type: none"> Young people are able to accept responsibility as an individual and as a member of my team Young people can prepare for discussions, debates, and presentations
#WeWill Step:	National Curriculum: Geography Describe and understand key aspects of physical geography, including climate zones, biomes, and the water cycle.	

3

KEY WORDS:

*glaciers: A huge mass of ice slowly flowing over a landmass, formed from compacted snow

After the session, can you find the define the following words?

*greenhouse effect *global warming

4

RECAP: LOCATE ANTARCTICA ON THE EARTH

Use an atlas or a globe to locate Antarctica. Apply your prior learning, can you describe its location? Are there other parts of the world covered of snow and ice? What are their names.

5

GLACIERS

Glaciers are found on every continent, but most of the world's ice is located on polar regions, at two opposite poles, the North and South Pole, that is in Greenland and Antarctica.

The National Snow and Ice data center found at <https://nsidc.org/> can tell you all about ice and glaciers on earth.

6

CLIMATE AND ATMOSPHERE

You may not know what makes the climate yet. In a few words, the climate of the Earth is made through the atmosphere that surrounds its surface. You have to imagine a layer of gases around the planet. This layer is made of different gases that filter the sunlight ultraviolet radiations. It also insulates the planet at night by maintaining temperatures when a part of the Earth is not facing the sun.

7

THE 'GREENHOUSE EFFECT'

The greenhouse effect is named after the role of glass in maintaining temperature in a greenhouse. It is a natural process thanks to which the temperature brought by the warmth of the sunlight remains at an average around the Earth's surface; maintaining this way a temperature that is compatible with the presence of water and life.

This occurs when sun radiations enter the atmosphere, reach and warm up the Earth's surface and are reflected into the sky. The diagram on the right show you how this works. Some of this heat will return into space while some remains trapped in the atmosphere.

8

THE 'GREENHOUSE EFFECT' IN ACTION

Some of this heat goes back into space, while some stays trapped between the atmosphere and the Earth's surface.

'heat reflected and released'

9

What's the greenhouse effect? Why is it called a 'greenhouse' effect?

THE IMPORTANT ROLE OF GLACIERS

10

Research with a partner:

- How can we see the glaciers are melting?
- What happens when the glaciers fall in the sea and melt?
- What are the consequences in other parts of the world?
- Why are glaciers worth protecting?

11

Plenary

Think about your discussions, explain why are glaciers worth protecting?

Lesson 3: How does climate change affect the Antarctic food web?

Learning objective

- To research the impact of climate change on a food web



Skills Objectives

- Young people are able to accept responsibility as an individual and as a member of my team
- Young people can prepare for discussions, debates, and presentations

Skills: Building on previous learning, young peoples can explain how climate change is affecting the Antarctic food web.

#WeWill Step



National Curriculum: Science

Recognises that environments can change and that this can sometimes pose dangers to living things.

Construct and interpret a variety of food chains, identifying producers, predators and prey.

Time	Teaching content
40 min.	<p>In this session, young peoples will look at the effects that the melting of glaciers has on the Antarctic food web. <u>Understanding food webs</u></p> <p>Begin the session by reviewing what a food web is. Hand out a template of a food web for young peoples to complete by researching the Antarctic food web.</p> <p>Once the food web is completed, ask young people to research how is the melting of glaciers impacting the food web of Antarctica?</p> <p>Pupils could complete their research in groups. Draw out conclusions on the type of species affected and how it affects other groups of species.</p> <p>Pupils could then create an Antarctica logo that will then be used to support a potential campaign for protecting the Antarctic wildlife.</p>

Lesson 3: How does climate change affect the Antarctic food web?

Lesson 3: What Effect is Climate Change Having on the Antarctic Food Web?



Learning Objective

To research the impact of climate change on the food web

Skills Objective

- Young people are able to accept responsibility as an individual and as a member of my team
- Young people can prepare for discussions, debates, and presentations.

#WeWill Stage

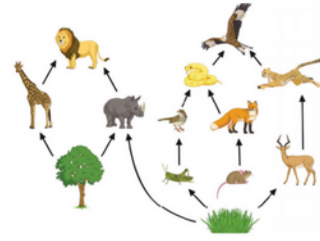


National Curriculum: Science

Recognises that environments can change and that this can sometimes pose dangers to living things. Construct and interpret a variety of food chains, identifying producers, predators and prey.

A food web is a tool that illustrates the feeding relationship among species within a specific habitat. It is a connection of multiple food chains to show the interaction between different organisms in an ecosystem.

When you draw multiple food chains together, you end up with a food web. These represent relationships in ecosystems more accurately and give you a much clearer visualization of how each animal affects others.




5




6

**Research in groups.
Create your own food webs.**

Lesson 4: How can I present an argument for the protection of Antarctica in a debate?

<p>Learning Objective</p> <ul style="list-style-type: none"> To learn how to present an argument for the protection of Antarctica 		<p>Skills Objectives</p> <ul style="list-style-type: none"> Young people can deliver and speak up front with personal confidence Young people I have the confidence to work with others and adapt to the situation
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Skills: Pupils can explain why Antarctica is worth protecting and how the biodiversity is affected by drawing on prior learning. In this session, they will learn the skills to present the facts and findings to bring change.

<p>#WeWill Step</p> 	<p>National Curriculum: English (composition) Plan, write and evaluate (Yrs 3-4)</p> <p>Perform their own compositions, using appropriate intonation, volume, and movement so that meaning is clear. (Yrs 5-6)</p>
--	---

Time	Teaching content
40 min.	<p>The aim of this session is to develop the skills to present an argument for the protection of Antarctica.</p> <p>We recommend that part of the session focuses on teaching writing skills to write the argument before looking at how this can be the object of an oral presentation, potentially for the purpose of a debate.</p> <p>Yr5/6 young peoples would have normally learnt about persuasive writing. If not, then this is an opportunity to look at the features of persuasive texts. In terms of writing, the plan of an argumentative text should include the following:</p> <p>Introduction: What problem are we looking at? To which extent is it affecting the world?</p> <p>Part 1: Presentation of the facts.</p> <p>Part 2: Explanation of the consequences.</p> <p>Part 3: What solutions can be taken?</p>

The final part of the lesson could close on the skills that young peoples have learnt through this activity and on what other investigation topics young peoples could see themselves getting involved with.

As a social action project, young peoples could wish to pursue work on Antarctica by building a campaign, thus making use of the research and work they have done, or focus on other works.

Lesson 4: How can I present an argument for the protection of Antarctica in a debate?

1

How Can I Present an Argument for the Protection of the Antarctic?



2

Learning Objective • To learn how to present an argument for the protection of Antarctica		Skills Objectives • Communication -Young people can deliver and speak up front with personal confidence • Teamwork -Young people I have the confidence to work with others and adapt to the situation
#WeWill Stage 	National Curriculum: English (composition) Plan, write and evaluate (Yrs 3-4) Perform their own compositions, using appropriate intonation, volume, and movement so that meaning is clear. (Yrs 5-6)	

3

Present an argument for the protection of Antarctica.

- Introduction: What problem are we looking at? To which extent is it affecting the world?
- Part 1: Presentation of the facts.
- Part 2: Explanation of the consequences.
- Part 3: What solutions can be taken?

4

Identify the problem:

What problem are we looking at?

Today we are here to look at climate change's impact on the Antarctic. This is important because.....

5

Part 1: Presentation of the facts.

List the facts:

Based on my research I found out.....

Mention your sources this will give your research validity.

6

Part 2: Explanation of the consequences

What will happen if we don't make the changes?

How will it impact us and the animals?

Include: Facts, Figures and images

7

Part 3: What solutions can be taken?

List options:

1. We need to.....
2. We need to start today.....

These actions will help us.....

8

Conclude: Re-enforce the purpose of the debate:

Today we are here to look at climate change's impact on the Antarctic. This is important because..... I have presented some facts and figures to support possible solutions. We must act now to protect the future of our planet.

9

You can.....

- Include quotes
- Images
- Facts
- Figures
- Make reference to videos



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