

Climate Change and Education in Scotland

This note provides a summary of how the theme of climate change is addressed in:

1. National education policy
2. Professional learning and leadership
3. The management of schools: school buildings, grounds and policies
4. Curriculum provision (curriculum content, learning and teaching, qualifications)

1. National policy

Climate change is addressed through combining experiences and outcomes across curriculum areas in a variety of contexts as part of the theme of Learning for Sustainability (LfS). LfS helps learners develop the skills, knowledge and values to live economically, socially and environmentally sustainable lifestyles. Scotland's "Vision 2030+ Report" provides a strategic plan and 14 recommendations on how we will support Learning for Sustainability up to 2030.

The main recommendations from the report are that:

- all learners should have an entitlement to Learning for Sustainability;
- every practitioner, school and education leader should demonstrate Learning for Sustainability in their practice;
- every school should have a "whole school approach" to Learning for Sustainability that is robust, demonstrable, evaluated and supported by leadership at all levels;
- school buildings, grounds and policies should support Learning for Sustainability;
- a strategic national approach to supporting Learning for Sustainability should be established

The Vision 2030+ report and action plan are available to download from:

<http://bit.ly/Vision2030LfS>

2. Professional learning and leadership

As with the overall education policy, climate change is addressed in relation to practitioners' professional learning – practitioners' skills and knowledge about climate change issues and the learning and leadership opportunities available to them – under the broader theme of "Learning for Sustainability".

Scotland is in a very positive position in that Learning for Sustainability is embedded throughout the General Teaching Council for Scotland's professional standards for teachers. It is also cited in the policy context for community learning and development (CLD)¹.

You can find full detail on how practitioners should reflect Learning for Sustainability in their practice at:

<https://www.gtcs.org.uk/professional-standards/learning-for-sustainability.aspx>

3. The management of schools: school buildings, grounds and policies

Again, issues relating to climate change are addressed under the overall theme of Learning for Sustainability as covered in the Vision 2030+ Report.

As stated, schools should take a "whole school approach" in relation to LfS. Two key recommendations are as follows:

¹ In both the National Youth Work Strategy 2014-2019 and the Adult Learning in Scotland Statement of Ambition

Recommendation 9: Local authorities need to remain vigilant to ensure that improvements to their school estate meet the highest standards of sustainable and environmental design as set out in Building Better Schools and Principle Six of the School Estate Strategy. Care needs to be taken to ensure that ambitions to improve the sustainability of the school estate are kept up front at each stage of the design process to achieve the desired outcome. Buildings and grounds, including schools, other educational establishments and community facilities, need to support Learning for Sustainability pedagogy and practice and include the provision of thoughtfully-developed greenspace to support learning and facilitate daily contact with nature and natural play. Partnership working with end users should be supported to ensure they use the buildings and grounds in a sustainable way.

Recommendation 10: Learners should be fully involved in the process of improving the sustainability of their campus as it provides a valuable opportunity for them to develop new skills and awareness of careers. We should recognise that school grounds are valuable community assets and wherever possible ensure that learners and their communities are given access out of school hours.

4. Curriculum provision

Curriculum for Excellence has been designed to prepare children and young people for learning, life and work in the 21st century. It provides a broad, flexible framework that enables teachers to connect learning to real-life issues of relevance and interest to learners. As such, it provides many rich opportunities to learn about climate change and associated issues and is a prominent and popular context for learning in many educational settings, including primary and secondary schools.

This section of the briefing outlines the various ways that climate change features in Curriculum for Excellence and is supported by activity relating to:

- Curriculum areas
- Interdisciplinary learning
- Learning for Sustainability
- National qualifications
- External programmes
- Learners' experiences and outcomes
- Resources

In addition, it outlines how Education Scotland is supporting learning and teaching in relation to climate change, including adaptation, mitigation and promotion of community resilience.

Curriculum areas (ages 3-15)

The curriculum areas of sciences, technologies, social studies, health and wellbeing and religious and moral education provide many rich opportunities to learn about climate change, renewable energy and sustainable development including moral principles which link to human responsibility for the environment. These issues feature prominently in a number of Curriculum for Excellence experiences and outcomes that set out the quality and nature of the learning experiences and what we expect children to achieve between the ages of 3-15. For example:

Sciences – Planet Earth

- By investigating renewable energy sources and taking part in practical activities to harness them, I can discuss their benefits and potential problems. SCN 3-04b
- I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. SCN 3-05b
- Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance. SCN 4-05b

Technologies – Technological developments in society and business

- I can analyse products taking into consideration sustainability, scientific and technological developments. TCH 4-05a
- To help care for the environment, I reduce, re-use and recycle the resources I use. TCH 0-06a

- I can analyse how lifestyles can impact on the environment and Earth's resources and can make suggestions about how to live in a more sustainable way. TCH 2-06a
- I can examine a range of materials, processes or designs in my local community to consider their environmental, social and economic impact. TCH 4-06a
- I can make suggestions as to how individuals and organisations may use technologies to support sustainability and reduce the impact on our environment. TCH 2-07a
- I can identify the costs and benefits of using technologies to reduce the impact of our activities on the environment and business. TCH 3-07a
- I can present conclusions about the impact of technologies on the economy, politics and the environment. TCH 4-07a

Social studies – People, place and environment

- I can identify threats facing the main climate zones, including climate change, and analyse how these threats impact on the way of life. SOC 4-12a
- I can carry out a geographical enquiry to assess the impact and possible outcomes of climate change on a selected region and can propose strategies to slow or reverse the impact. SOC 4-12b

Health and wellbeing – Mental, emotional, social and physical wellbeing

- I am learning to assess and manage risk, to protect myself and others, and to reduce the potential for harm when possible. HWB 0-16a / HWB 1-16a / HWB 2-16a / HWB 3-16a / HWB 4-16a
- I know and can demonstrate how to keep myself and others safe and how to respond in a range of emergency situations. HWB 0-17a / HWB 1-17a / HWB 2-17a / HWB 3-17a / HWB 4-17a
- I know and can demonstrate how to travel safely. HWB 0-18a / HWB 1-18a / HWB 2-18a / HWB 3-18a / HWB 4-18

Religious and moral education – development of beliefs and values

- I am developing an increasing awareness and understanding of my own beliefs and I put them into action in positive ways. RME 1-08a / RME 2-08a / RME 3-08a / RME 4-08a
- I am becoming aware that people's beliefs and values affect their actions. RME 1-09c
- I am developing my understanding of how my own and other people's beliefs and values affect their actions. RME 2-09d
- I can explain how the different beliefs that people have, including beliefs which are independent of religion, relate to their moral viewpoints and how this leads them to respond to moral issues. RME 3-09c
- Having reflected upon and considered a range of beliefs, belief systems and moral viewpoints, I can express reasoned views on how putting these beliefs and values into action might lead to changes in society. RME 4-09a

These experiences and outcomes demonstrate how climate change and renewable energy are embedded within the learning experiences of children and young people within the broad general education of Curriculum for Excellence. The health and wellbeing curriculum also provides learners with an opportunity to manage risk and develop awareness of how to respond in a range of emergency situations. Religious and moral education supports learners in reflecting upon the links between beliefs and actions.

As a result of the flexibility of Curriculum for Excellence, climate change, along with community resilience, can also be used a focus of study in other curriculum areas too even though they are not explicitly mentioned within the experiences and outcomes. For instance, in languages learners may choose to read a novel or other text which explores the consequences of climate change.

Interdisciplinary learning

Within Curriculum for Excellence, learning can take place in four contexts including:

- Curriculum areas and subjects
- Interdisciplinary learning

The qualifications which provide opportunities for learning about climate change and its impacts include:

- Science in the Environment [National 2]
<https://www.sqa.org.uk/sqa/48572.html>
- Science [National 3 and National 4]
<http://www.sqa.org.uk/sqa/45718.html>
- Biology [National 3, National 4, National 5, Higher and Advanced Higher]
<http://www.sqa.org.uk/sqa/45723.html>
- Environmental Science [National 3, National 4, National 5 & Higher]
<http://www.sqa.org.uk/sqa/45726.html>
- Religious Moral and Philosophical Studies [National 4, National 5 & Higher]
<https://www.sqa.org.uk/sqa/45631.html>
- Physics [National 3 & National 4]
<http://www.sqa.org.uk/sqa/45729.html>
- Geography [National 3, National 4, National 5 & Higher]
<http://www.sqa.org.uk/sqa/45627.html>
- Modern Studies [National 5]
<http://www.sqa.org.uk/sqa/45629.html>
- Engineering Science [National 4, National 5 & Higher]
<http://www.sqa.org.uk/sqa/45648.html>

External programmes

Over the last 20 years the Eco-Schools Scotland programme has grown to be one of the most successful Eco-School Programmes in the world. Around 98% of local authority schools in Scotland are registered with the programme, which is managed by Keep Scotland Beautiful with over 2,000 schools gaining prestigious Green Flag status. The 10 topics within the programme, including *energy* and *transport*, provided plentiful opportunities for young people to learn about and engage in mitigation action in relation to climate change. Eco-Schools Scotland's programme includes a focus on the United Nations Sustainable Development Goals (SDGs). A number of the goals link strongly to resilience, mitigation and adaptation in relation to climate change. The relevant SDGs include:

- Goal 7 – Ensure access to affordable, reliable and sustainable energy for all
- Goal 9 – Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
- Goal 11 – Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 13 – Take urgent action to tackle climate change and its impacts

Keep Scotland Beautiful is delivering the [Climate Ready Classrooms](#) programme for young people aged 14-17 years across Scotland. The Scottish Government funded programme also benefits teachers, youth workers and community learning and development practitioners. The training course helps those taking part to develop their understanding of climate change, its causes and potential impacts, and prepares the young people to join a national network of carbon literate ambassadors. It supports a whole school, pupil led approach to Learning for Sustainability and is accredited by the [Carbon Literacy Project](#).

Schools are also engaging with climate change through engagement with many other external partners including the IDEAS Network, John Muir Award and Junior Saltire Award.

Early Learning and Childcare (ELC) expansion

It is recognised that the earliest years of life are crucial to a child's development and have a lasting effect on outcomes later in life. The significant expansion of funded ELC entitlement from 600 hours to 1,140 hours per year by August 2020 provides the opportunity to consider outdoor provision and embed outdoor play and learning across all settings.

- The fundamental approach to the ELC expansion has been to reuse existing infrastructure and upcycle as much as possible. Refurbishments projects account for over 60% of the programme.

- There is a growing focus on indoor/outdoor facilities where up to 20% of the internal capacity (in terms of spaces) can be registered outdoors; There are over 300 projects that are currently using this approach, thus reducing the reliance on the built environment.
- Some of the constructions are using the Passivhaus principles which aim to reduce heating requirements by up to 75%
- Fully outdoor and satellite nurseries also form part of the programme, making use of existing local greenspace while providing high quality provision and positive outcomes for children

What does learning about climate change look like in ELC and schools?

Schools and teachers are best placed to plan the learning and teaching for their children and young people. Examples of activities that promote understanding about climate change involve the following:

- Nursery school children installing small solar panels on the shed in their school grounds or making paper windmills using wind turbines as inspiration
- Loose parts (recycled materials – old tyres, pipes, sticks, rope etc.) being widely used in nurseries and school playgrounds to encourage imaginative play outdoors
- Ensuring that outdoor learning and STEM are embedded in practice within ELC settings, fostering within children, from the earliest age, a lifelong connection to nature and appreciation of the environment
- Science and engineering clubs using renewables kits to build and test simple devices
- Secondary pupils graphing data from renewable energy devices fitted to their school as part of a mathematics lesson
- Eco-School clubs undertaking a detailed carbon audit of their school estate and taking action to reduce the global footprint of the school
- Physics and Geography departments working collaboratively to use climate change and renewables as a focus to teach about land-use and generation of electricity
- Learners designing their own technical solutions to climate change with winners being determined by a Dragons' Den-style competition
- Schools using climate change and renewable energy as a focus for engineering challenges such as the Crest Awards or Junior Saltire Prize
- Learners learning and using vocabulary relating to climate change to support discussion in their French class
- Learners undertaking citizen science activities in their school grounds or local greenspaces to collect data about the effects of invasive species as a result of climate change
- A school trip to the local flood protection scheme as part of a geography field trip to see how soft and hard engineering solutions can protect communities from flooding, which is forecast to increase with climate change

Resources

Education Scotland also hosts a range of online materials to provide schools with access to high-quality curriculum resources and information relating to climate change:

Early Learning and Childcare

This resource is targeted at early learning and childcare practitioners to help them create outdoor play and learning experiences for children. Connecting children with nature at the earliest age helps foster a lifelong love of nature and the world around them.

Page being created on the NIH – link to doc [here](#)

Weather and climate change

This resource is targeted at primary schools and contained specific sections on adaptation and mitigation.

<https://education.gov.scot/improvement/learning-resources/Weather%20and%20climate%20change>

Exploring climate change website

Aimed at learners in secondary schools, this resource provides more detailed support and scientific evidence about climate change and its impact, including activities to mitigate its impact.

<https://education.gov.scot/improvement/learning-resources/Exploring%20climate%20change>

STEM Central

This contains a wide range of resources looking at sustainability issues within sciences, technologies, engineering and mathematics. This included topics on energy-saving houses, renewables, water and food security and electric transport.

<https://education.gov.scot/improvement/learning-resources/STEM%20Central>

RME through Outdoor Learning

This resource links RME to environmental responsibility

<https://education.gov.scot/improvement/documents/rme29-rem-through-outdoor-learning.pdf>

Community learning and development

- There is a dedicated LfS resource area on the CLD professional learning platform: <http://www.i-develop-cld.org.uk>
- Youth awards demonstrate the value that non-formal learning brings to young people. Find out more about the wide range of different awards available from the Awards Network: <https://www.awardsnetwork.org>

Community resilience

Since 2013/14 Education Scotland has had a dedicated Development Officer to promote community resilience within Curriculum for Excellence. The focus of this role has been to raise awareness amongst teachers as to how resilience can be used as a meaningful context for teaching and learning. The programme has also encouraged resilience professionals across Scotland to work with schools in their authorities to help make the learning real and relevant. This has been achieved through facilitating meetings between local authority resilience professionals and education colleagues and sharing of practice and approaches through national networking events. A [community resilience and CfE flyer](#) has been produced and disseminated and case studies of good practice have been shared nationally to encourage adoption of successful approaches.

The Development Officer has also supported numerous professional learning events to raise awareness of how resilience can be integrated into the curriculum and how resilience professionals can support schools to make the learning real and relevant. In many cases, pilot schools have been identified for resilience professionals to work with to develop new approaches and models which can be shared. Working with schools in this way helps local authorities to meet their duties under the [Flood Risk Management \(Scotland\) Act 2009](#) to raise public awareness of flood risk and promote adaptation measures.

In addition, Education Scotland has promoted citizen science within Curriculum for Excellence. Through these activities young people are encouraged to collect scientific and environmental data, including data relating to climate change issues. We have also supported Scotland's Environment [Get Learning](#) web pages which contains high quality data for schools and the public to use to better understand their environment. Climate change is one of the key themes within the education section. This dedicated zone for education guides schools and learners to relevant data, maps and citizen science apps that can be used to gather a range of data relating to climate change. In 2016, Scotland's Environment website was rated as one of the top five projects funded by the European Union's *Life+ Programme*.

Examples of relevant community learning and development (CLD) available in Scotland

John Muir Award

The John Muir Award is an environmental award scheme focused on wild places. It encourages awareness and responsibility for the natural environment, in a spirit of fun, adventure and exploration.

<http://www.jmt.org/jmaward-home.asp>

Recyke-a-Bike

A community-led social enterprise providing a bicycle loan initiative in Stirling, the Recyke-a-bike initiative was set in motion in 2006. Its main aim was: to reduce the amount of bikes going to landfill, and in addition...create employment and training opportunities, promote healthy living, offer a low cost service to the general public through bike sales and servicing. Recyke-a-bike accepts donations of unwanted bikes and refurbishes and resells them to the general public.

<http://www.recyke-a-bike.co.uk>

Methilhill Community Learning Garden

The project provides opportunities for local children to play and learn through nature... to be creative and inquisitive... to grow as people and members of our local community and the wider global community.

<https://www.mcci-clubs.co.uk/communitygarden.html>

2050 Climate Group

This youth-run organisation works to engage, educate and empower Scotland's young people to take action on climate change. It is primarily a volunteer-led organisation with a team of over 60 volunteers based across Scotland.

<http://2050.scot/about-us/>