

Citizen Science

science for everyone

A guide for teachers and support providers



Would you like to increase opportunities for your pupils to...

- Learn outdoors?
- Get involved in hands on activities to increase their science, numeracy & technology skills?
- Become better connected to their local environment?
- Improve their health and wellbeing?

...then Citizen Science is for you!

What is Citizen Science?

Citizen Science is the participation of the public in collection of environmental information that contributes to expanding our knowledge of the natural environment. Across the world, volunteers gather a wide range of data vital to protecting and improving our environment, from recording ancient trees to counting earthworms.

Citizen Science is much more than just science. It's fun, it promotes a healthy more active lifestyle and it delivers lifelong skills. It's about building the values of stewardship, responsibility, citizenship and equality and a sense of power to change the world for the better. Through participating in projects which monitor the local environment, people learn about the value of their local greenspaces and how to take action to protect and improve their local environment for wildlife and the local community.

“Members of the public are very enthusiastic and enjoy providing valuable data and information on the environment.”

Professor James Curran, MBE, SEPA Chief Executive

How Citizen Science fits with Curriculum for Excellence

Citizen Science is interdisciplinary, fits with existing curriculum subjects, encourages citizenship and meets requirements for outdoor learning (http://www.educationscotland.gov.uk/images/cfeoutdoorlearningfinal_tcm4-596061.pdf). It provides a wide range of hands on resources for teachers to use practical techniques to develop the skills of scientific investigation and helps young people to apply and interpret numerical information and gain confidence in the use of technology.

Through Citizen Science young people become better connected to nature and participate in activities which contribute to a healthy lifestyle. Schools can establish productive links with the local environment and the community, working with local people to learn and use new skills.

Delivering Curriculum for Excellence

Participating in Citizen Science provides opportunities for learners to:

Science

- develop the skills of scientific inquiry & investigation using practical techniques & recognise the impact that sciences make on life, the environment & on society
- develop an understanding of the Earth's resources & the need for responsible use of them
- develop as a scientifically-literate citizen with a lifelong interest in the sciences
- establish the foundation for advanced learning & future careers in the sciences

Social Studies

- develop an understanding of the natural heritage of Scotland & its impact on our lives
- develop an understanding of the principles of citizenship
- learn how to locate, explore & link features & places locally & further afield

Technologies

- take responsible, ethical actions to improve the lives of others and the environment
- gain the confidence & skills to embrace & use technologies & broaden awareness of how mathematics & science are used in the technologies

Numeracy & Maths

- understand the application of mathematics & its impact on our society
- develop essential numeracy skills
- interpret numerical information & use it to make reasoned evaluations & informed decisions
- apply skills & understanding creatively & logically to solve problems

Literacy

- communicate, collaborate & build relationships
- extend & enrich vocabulary

Health & Wellbeing

- experience personal achievement & build confidence
- participate in activities which promote a healthy lifestyle

Citizen Science School Resources

Help us learn more about the state of your local environment by participating in these surveys:

Water: Studying river water quality, pollution and flooding, measuring a local watercourse and its flow rates through activities such as:

- SEPA Floodline – Scotland’s direct flood warning service. Gives you details on what to do in the event of a flood and check your flood risk. <http://www.floodlinescotland.org.uk/>
- Yellow Fish Campaign – Many drains lead directly into local burns and rivers. Pouring unwanted liquid wastes down the drain can cause pollution and kill fish, birds and other wildlife. You will find these drains around your school buildings. Yellow Fish is very simple, volunteers mark drains with a stencilled yellow fish. http://www.sepa.org.uk/water/water_publications/yellow_fish.aspx

Air: Measuring air quality around us by identifying different lichens on trees, some of which are sensitive to air pollution through activities such as:

- OPAL air quality survey - <http://www.opalexplornature.org/AirSurvey>

Biodiversity: measuring the numbers of native or non native species in our local studying biodiversity through collecting species data in our local communities. A wide range of activities includes:

- Buglife - take part in various bug surveys - <http://www.buglife.org.uk/getinvolved/surveys/>
- Plantlife – learn your local plants with the first steps survey - http://www.plantlife.org.uk/scotland/activities_in_scotland/firststeps/
- Butterfly Conservation – record the butterflies around you with the butterfly identifier - <http://butterfly-conservation.org/2258/butterfly-and-moth-identification-guides.html>
- Froglife – report your amphibian sightings – <http://www.froglife.org/report/index.htm>
- Bumblebee Conservation Trust - get involved in bee and bee nest surveys - <http://bumblebeeconservation.org/get-involved/surveys/>
- RSPB - lots of bird surveys for you to join - <http://www.rspb.org.uk/thingstodo/surveys/>
- Woodland Trust Scotland – take part in the ancient tree hunt - <http://www.woodland-trust.org.uk/en/take-part/ancient-tree-hunt/Pages/ath.aspx#.UQ-ThR0bc6J>
- BTO - lots more bird surveys for you to join - <http://www.bto.org/volunteer-surveys>

Soils: surveying the earthworm population and testing the soil makeup using this survey:

- OPAL soil and earthworm survey - <http://www.opalexplornature.org/soilsurvey>

Climate: Help investigate ways in which we affect the climate and how the climate may affect us.

- OPAL climate survey - <http://www.opalexplornature.org/climatesurvey>
- Met Office rain gauge making info - <http://www.metoffice.gov.uk/education/kids/>
- Met Office Weather Observation Website - <http://www.metoffice.gov.uk/climate/uk/wow.html>

Land Use: study the changing landscape around you to see the impacts on our wildlife through changes in farming intensity, urbanisation and our industrial heritage. This will give perspective to the conservation work that needs done and what has already been achieved.

Additional Resources

A wide range of national schemes and online resources are available to provide teachers with material for lessons, to expand topics and to upload any gathered data.

- Scottish Environment Web - One stop shop which in next few years will be best environmental website of its kind - <http://www.environment.scotland.gov.uk/>
- SEPA river levels - See the real-time levels of rivers across Scotland http://www.sepa.org.uk/water/river_levels/river_level_data.aspx#
- MET Office - weather observation on the web - Upload photos and weather data from your local area - <http://wow.metoffice.gov.uk/>
- Natural History Museum - Open Air Laboratories - Range of easy-to-do scientific surveys with supporting resources - <http://www.opalexplorenature.org/>
- John Muir Award - A flexible environmental award scheme focussed on wild places - <http://www.jmt.org/jmaward-home.asp>

Scotland Counts Support Network

The Scotland Counts project coordinates a network of volunteer organisations, charitable trusts and agencies which will provide teachers with support to carry out Citizen Science activities, either in class, online or in the field.

We also have local ranger services and volunteer recording organisations that will assist where they can with field trips and school visits. To find out about the Scotland Counts Support Network in your area and access further resources, contact:



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