

# Learning for Sustainability and STEM

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Education Scotland  
Tuesday 27<sup>th</sup> October 2020

Welcome to this webinar on LFS and STEM

Please take note of the protocols for during the session

Please take a moment to say hello in the chat box



and tell us where you are and what the weather is like there



- **Protocols:**
- Mute your microphone
- Turn off your camera
- Post comments, questions and thoughts into the chat window
- The chat will be facilitated
- The event will be recorded
- Pin the presentation to the middle of your screen to make it bigger
- **Twitter: #NA2020Equity**
- **#LearnOutdoors**
- **@STEMedscot**

For Scotland's learners, with Scotland's educators

# Agenda for the Webinar



- What is Learning for Sustainability?
- The Global Goals
- LFS and STEM
  - Sciences – Biodiversity
  - Technology – Circular economy
  - Engineering – Energy and Climate
  - Maths – power of data
- 4 contexts for learning
- Interdisciplinary learning (TASK!)
- Resources and Support

**What words come to  
mind when you hear  
Learning for  
Sustainability?**





<https://education.gov.scot/improvement/learning-resources/a-summary-of-learning-for-sustainability-resources/>



# A Vision for the Future

“All learners have an entitlement to learning for sustainability”

[Link to Vision 2030+](https://learningforsustainabilityscotland.org/)

<https://learningforsustainabilityscotland.org/>

[Education Scotland Learning for Sustainability](#)



# STEM education and training strategy

- Published October 2017
- For all sectors – ELC, primary, secondary and community learning and development
- Five year strategy
- KPIs and evidence base report

<http://bit.ly/STEMstrategy>



For Scotland's learners, with Scotland's educators

# STEM education and training strategy



“Our vision is of a Scotland where everyone is encouraged and supported to develop their STEM skills throughout their lives, enabling them to be inquiring, productive and innovative, in order to grow STEM literacy in society and drive inclusive economic growth.”



Scottish Government  
Riaghaltas na h-Alba  
gov.scot

<https://bit.ly/2RIYFEQ>

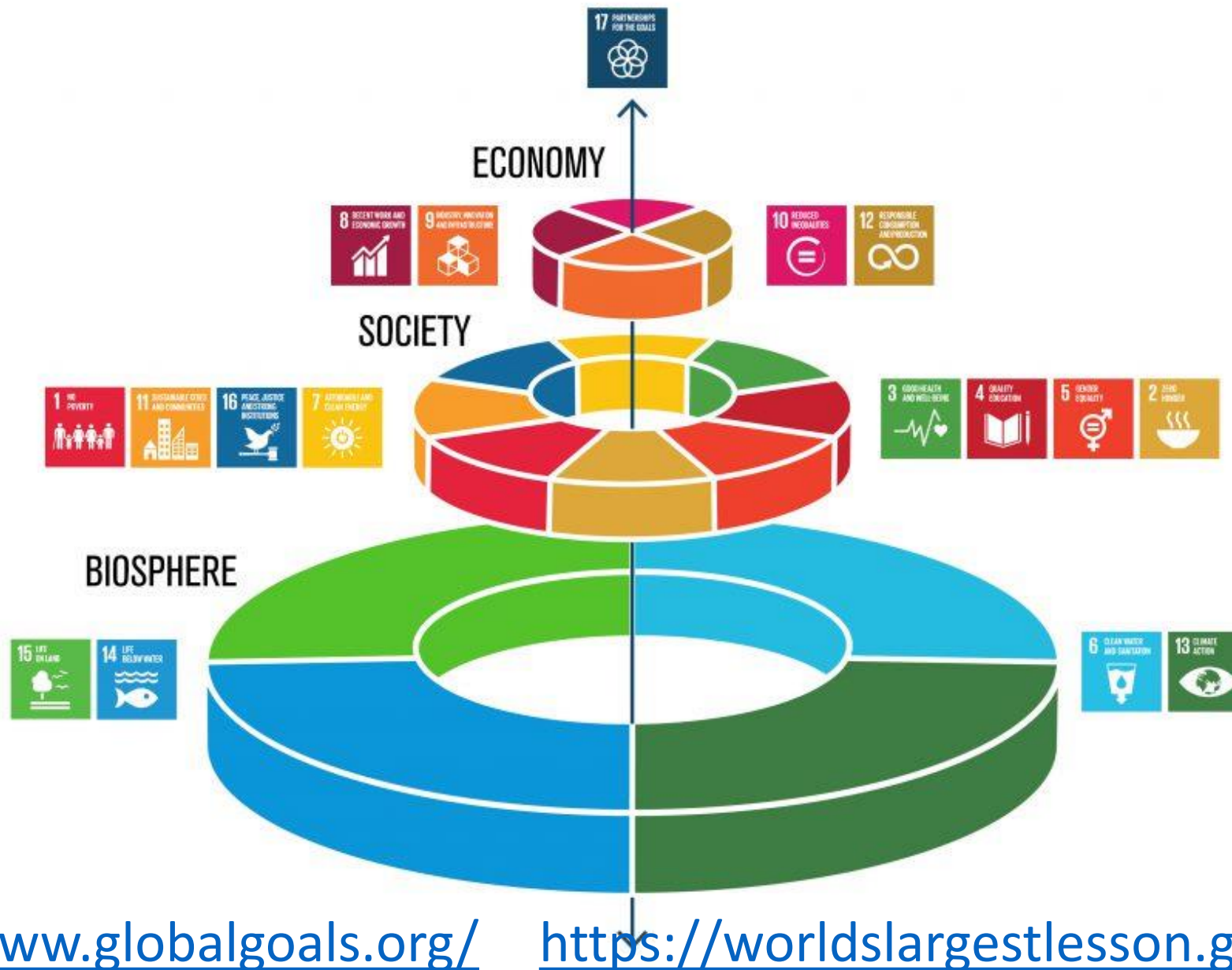
For Scotland's learners, with Scotland's educators





<https://www.globalgoals.org/> <https://worldslargestlesson.globalgoals.org/>





<https://www.globalgoals.org/>

<https://worldslargestlesson.globalgoals.org/>

Graphics by Jerrisa and Franka/2016

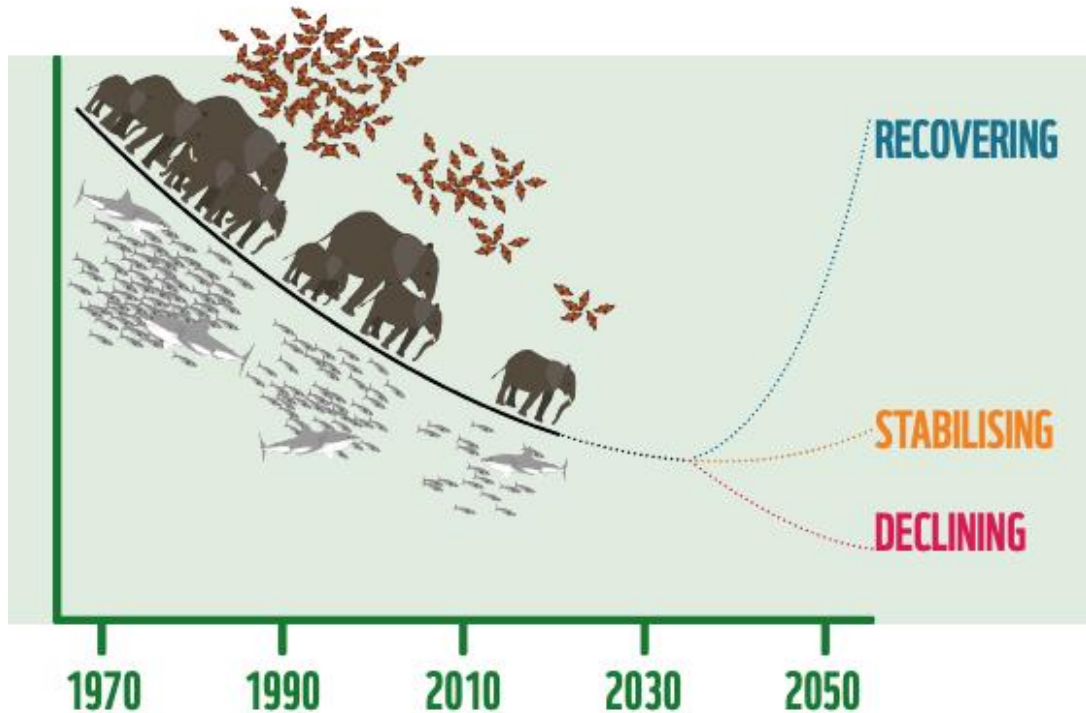
**What 3 global goals  
are most and least  
important to you?**



# Sciences

## Biodiversity - The extinction crisis

<https://www.bbc.co.uk/news/science-environment-54120111>



[Living Planet report - Youth edition](#)



[RSPB State of Nature report - Scotland](#)

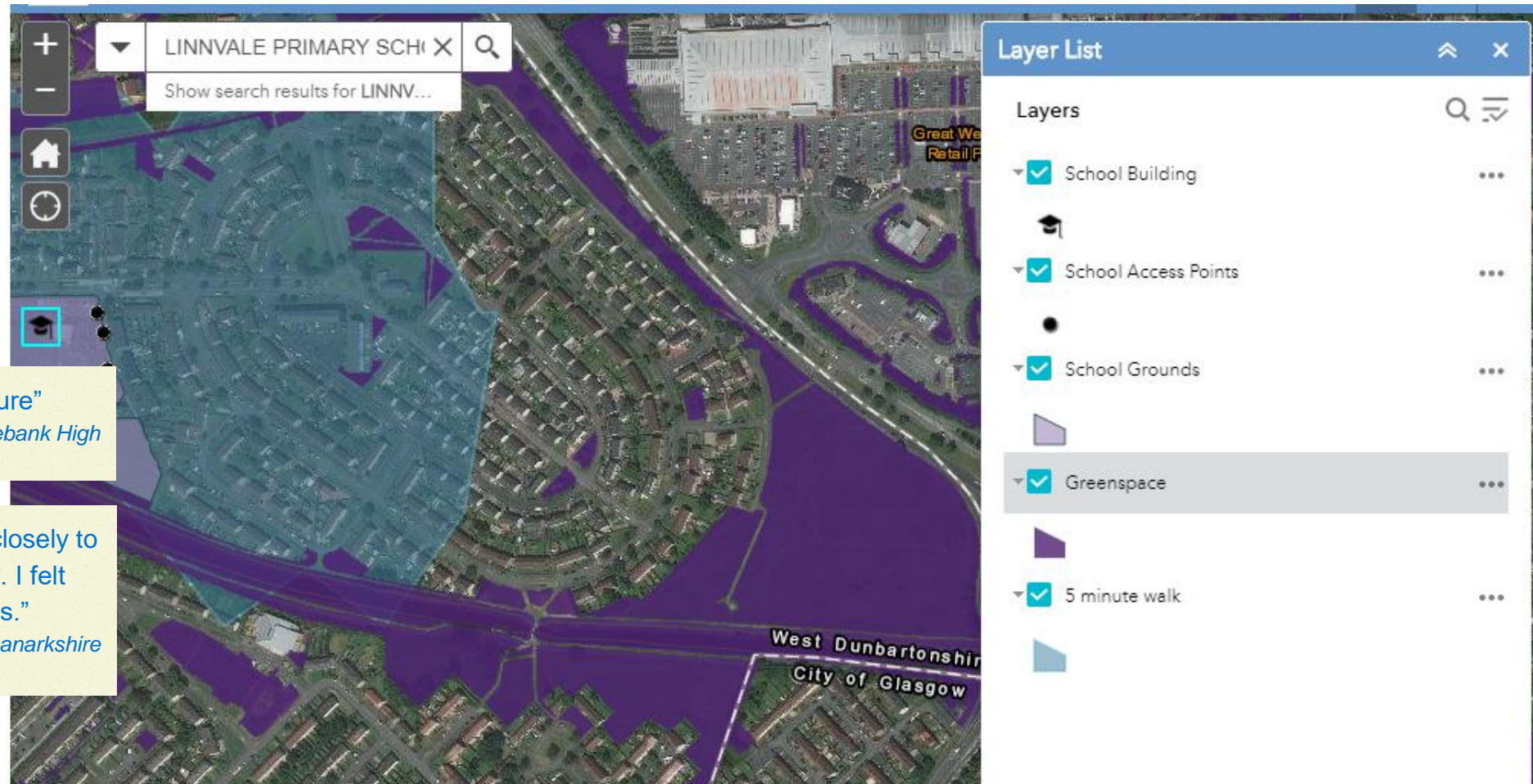
# Sciences

- Citizen Science
  - [Link to Citizen Science and CfE resource](#)
- John Muir and Field Studies Council
  - [Link to STEM by Nature resources](#)
- Beyond your Boundaries
  - [Link to Beyond your Boundaries resource](#)
- Teaching Learning Outdoors
  - [Link to free online SAPOE course](#)





# Outdoor learning greenspace map



"I didn't know how close I live to nature"

*S5 pupil, Clydebank High*

"I can't believe we have existed so closely to this place and never made use of it... I felt that the curricular areas were endless."

*P1 teacher, North Lanarkshire*

<https://www.nature.scot/professional-advice/education/greenspace-map-outdoor-learning>

# Technology

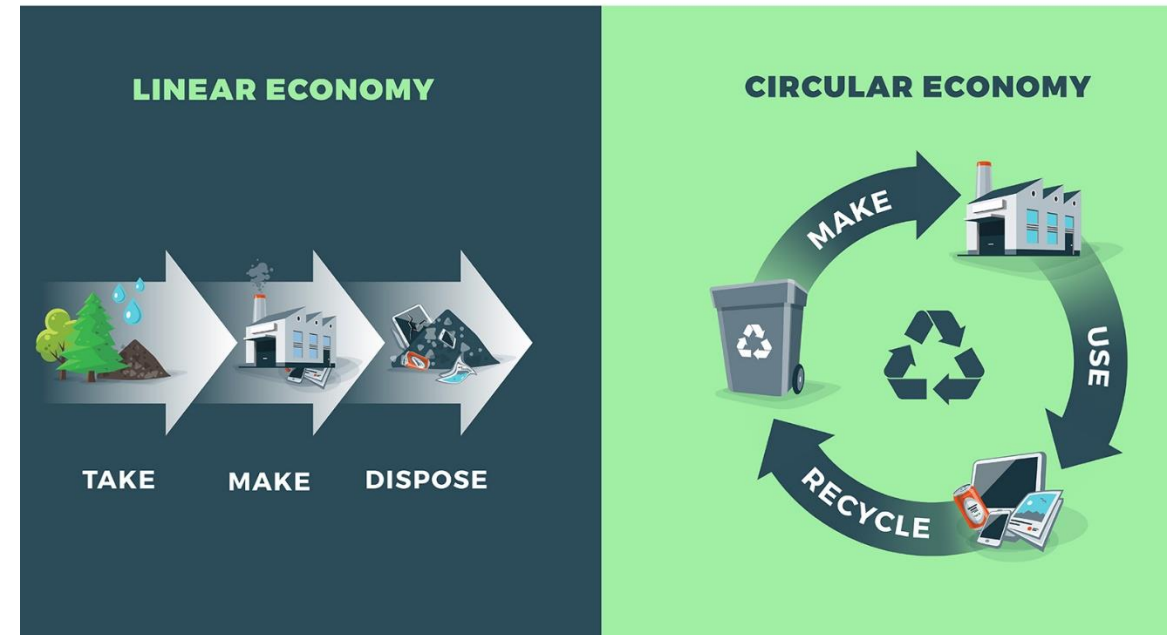
## Waste – circular economy

- Scotland produces about 2.4 million tonnes of household waste
- Recycle about 45% of this
- How can we extend the life of materials?

<https://www.zerowastescotland.org.uk/circular-economy>

<https://www.ellenmacarthurfoundation.org/circular-economy/concept/infographic>

<https://www.stem.org.uk/resources/elibrary/resource/148883/design-better-world>



# Engineering

## Energy – affordable and clean energy

- Scotland produces 2x the energy required to power our homes from wind
- North East transitioning from Oil and Gas
- Innovation across the North
- Hydrogen powered ferries, battery powered aeroplanes





# Engineering

- STEM learning
  - <https://www.stem.org.uk/resources/elibrary/resource/424574/power-everyone-everywhere>
- WWF climate change resources
  - <https://www.wwf.org.uk/get-involved/schools/resources/climate-change-resources>
- Den Building
- Food growing spaces

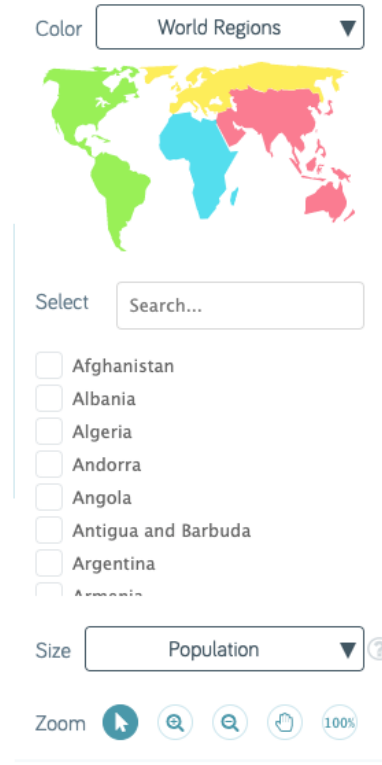




# Maths

Its all about the data..

GAPMINDER – fact based world view <https://www.gapminder.org/>



**8** DECENT WORK AND  
ECONOMIC GROWTH

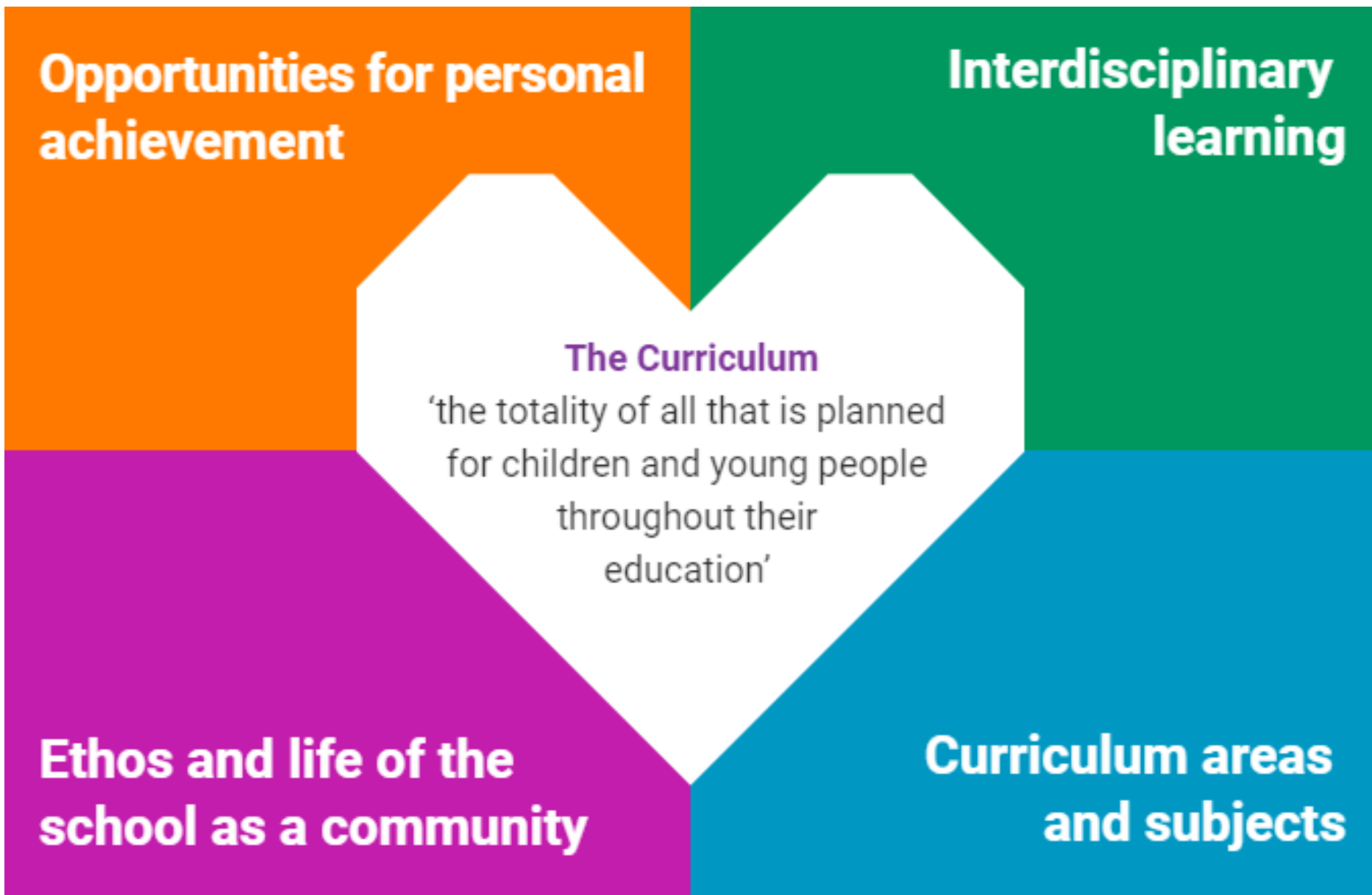


**4** QUALITY  
EDUCATION



Scotland's environment data site

<https://www.environment.gov.scot/educational-resources/#>



## Opportunities for personal achievement

RSPB wild Challenge -

<https://www.rspb.org.uk/fun-and-learning/for-teachers/schools-wild-challenge/what-is-wild-challenge/>

RHSS School Gardening Award -

<https://schoolgardening.rhs.org.uk/school-gardening-awards>

Duke of Edinburgh Award -

<https://www.dofe.org/notice-boards/scotland>



### The Curriculum

'the totality of all that is planned for children and young people throughout their education'

Pupils involved in design of school grounds using the School Ground Audit -

<https://www.ltl.org.uk/resources/school-grounds-audit-tool/>

Pupils co-constructing their residential experience -

<https://learningaway.org.uk/case-studies/importance-learning-park-school/>



## Ethos and life of the school as a community

## Interdisciplinary Learning

Book studies; The Lorax

<https://blogs.glowscotland.org.uk/ea/learningoutdoorssupportteam/the-lorax-literacy-activities/>

Eco schools green flag -

<https://www.keepsotlandbeautiful.org/sustainable-development-education/eco-schools/>



Science/STEM

<https://www.johnmuirtrust.org/latest/news/1906-tayside-teachers-pilot-stem-by-nature>

Social Studies - Heritage hero -

<https://archaeologyscotland.org.uk/learning/heritage-hero-awards/>



## Curriculum areas and subjects

# What is IDL?

Interdisciplinary Learning is a planned experience that brings disciplines together in one coherent programme or project. The different disciplines plan and execute as one. These disciplines might fall within one curricular area (e.g. languages, the sciences) or between several curricular areas.

IDL enables children and young people to ;

- learn new knowledge or skills, and develop new understanding of concepts;
  - draw on prior knowledge, understanding and skills
  - transfer and apply that collective knowledge to new problems or other areas of learning
- 
- IDL should change the learner ... and you







8 million tonnes of plastic enters the ocean each year – that's a truckload a minute.

Source: University of Georgia



Sea turtles at the Great Pacific Garbage Patch were found to have up to 74% of their diets composed of ocean plastics.

Source: The Ocean Cleanup



There will be 10x more plastic in our oceans by 2020 at current rates.

Source: University of Georgia



There are five massive patches of plastic in oceans around the world - the biggest is twice the size of Texas with 1.8 trillion plastic pieces.

Source: The Ocean Cleanup

BUSINESS  
INSIDER  
AUSTRALIA



GIZMODO



The Ocean's Deadliest Predator



By 2050, there will be more plastic than fish (by weight).

Source: Ellen MacArthur Foundation.



A million plastic bottles are bought around the world every minute.

Source: Guardian



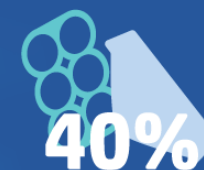
8.3 million plastic bottles turned into recyclable cartridges by HP.

Source: HP Australia Environmental Sustainability Study 2018 with Planet Ark



91% of Australians are concerned about the environment and sustainability - but only half think they are doing enough to help.

Source: HP Australia Environmental Sustainability Study 2018 with Planet Ark



40% of all plastic produced is single-use packaging.

Source: University of California

# Drowning in Plastic...

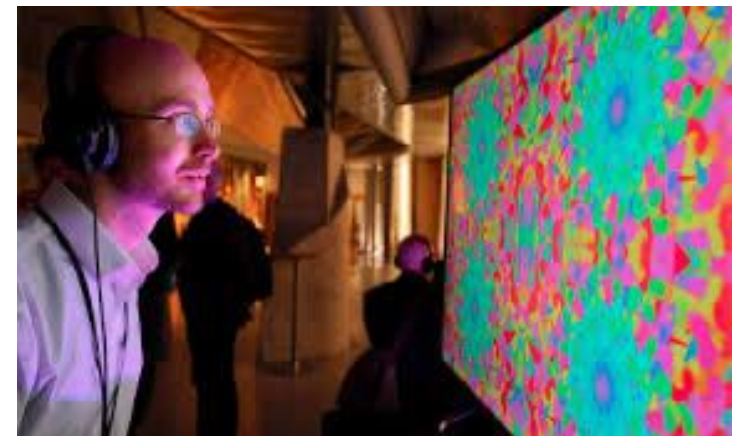
IDL project based on marine plastic pollution

- *The problem* – marine plastic pollution causes huge environmental impacts on marine life and coastal communities
- *The challenge* – How can we stop plastics getting into the ocean?
- *The task* – 3 minutes to come up with an IDL project idea and pitch it to us (if you want 😊)





# Developing the Young Workforce - Scotland's Growth Sectors



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# Outdoor learning/Learning for Sustainability Wakelet

<https://wakelet.com/wake/dx8-511rFvLFU03cIV9eh>



## Learning for Sustainability Scotland

Learningforsustainabilityscotland

A new Publication Celebrating Award-Winning RCE Project Contributions to Education for Sustainable Development has been produced, including one of Learning for Sustainability Scotland's award winning...



## Outdoor Learning

Outdoorlearningdirectory

Scotland's Outdoor Learning Directory aims to provide a portal to...



## Home - Wildlife Watch

Wildlifewatch

Wildlife Watch is the junior branch of The Wildlife Trusts and the UK's leading environmental action club for children and families.



## Backyard BioBlitz

Facebook

Backyard BioBlitz are videos and quizzes online (via FaceBook). It is about monitoring wildlife in our own backyards, to explore the biodiversity around us while staying close to home. Remember



## MerPack - Marine Education Resource Pack - COAST

COAST

This pack for primary school teachers includes fun and engaging activities with all the worksheets required. It is aimed at level 2 of the Curriculum for Excellence



## John Muir Award - John Muir Trust

Johnmuirtrust

Our engagement initiative encourages people to connect with,



## Outdoor learning ideas | Outdoor Lesson ideas | Ltl

Ltl

Hundreds of free outdoor learning ideas from Learning through Landscapes, ideal for forest school and curricular led lessons.



## Outdoor learning ideas | Outdoor Lesson ideas | Ltl

Ltl

Our free outdoor learning ideas and outdoor lesson plans are below, ideal for curricular led outdoor



316 5:01 PM - May 25, 2020  
180 people are talking about this



## Outdoor and Woodland Learning

Owiscotland



## The Royal Highland Education Trust

Rhet

Next month 18th/19th June, we are working with partners up and down Scotland to bring online activities and videos about food and farming direct to young people. The Food & Farming Extravaganza that is Royal Highland Show goes online for 2020. There are a variety of activities scheduled including quizzes, videos, live feeds and the opportunity to cook along at home.





# STEM Nation Wakelets <https://wakelet.com/@STEMES>

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## STEM

38 items



## Sciences

4 items



## ELC Science

19 items



## Primary Science

9 items



## Secondary BGE Sciences

4 items



## Senior Phase Sciences

13 items

# Organisations for support

British Council Connecting Classrooms

<https://scotland.britishcouncil.org/connecting-classrooms-scotland>

UNICEF – rights respecting schools

<https://www.unicef.org.uk/rights-respecting-schools/>

International Development Education Association of Scotland

<http://www.ideas-forum.org.uk/>

Eco Schools Scotland

<https://www.keepsotlandbeautiful.org/sustainable-development-education/eco-schools/>

WWF

<https://www.wwf.org.uk/learn/love-nature>

<https://www.wwf.org.uk/scotland>

John Muir award

<https://www.johnmuirtrust.org/john-muir-award>