

STEAM EDUCATION FOR SUSTAINABLE DEVELOPMENT and FUTURES LITERACY

SGD13 Climate Action and Sustainable Development



Programme Phase: Strand 1 Earth Systems, Life and Environment

Leaving Certificate Support Lessons

TOPICS: Biodiversity, Environment, Science, Sustainability



SDG 13 Strand 1 Support

Climate Action and Sustainable Development



Climate Action & Sustainable Development

Strand 1

Earth Systems, Life and Environment

Seven Supporting Lessons



Module Summary: Strand 1 CASD Support

This curated set of seven lessons from Muinín Catalyst programmes is designed to support learners and teachers engaging with Strand 1 of the Climate Action and Sustainable Development (CASD) Senior Cycle subject.

Grounded in sustainability, systems thinking, and innovation, the lessons provide scaffolded activities that support learners to explore the complexity of Earth systems, biodiversity, and the interdependence of life and environment. Lessons cultivate 21st-century skills that help learners connect scientific understanding with purposeful climate action.

The lessons draw on design thinking and inquiry-based learning, empowering young people to co-create practical responses that balance human needs with planetary boundaries.

For teachers, the seven lessons offer ready-to-use resources and structured support that align with the NCCA's vision for a values-led, student-centred Senior Cycle. They promote reflection, collaboration, and active citizenship while equipping educators to facilitate meaningful conversations about climate, biodiversity, and sustainability.

For learners, the lessons are an invitation to see themselves as change-makers—connecting knowledge of Earth systems and ecosystems with purposeful action. Through this journey, learners build not only scientific understanding but also the confidence, empathy, and resilience required to navigate a rapidly changing world.

These lessons bridge curriculum and action, helping schools embed Strand 1 in a way that nurtures knowledge, skills, and values, while inspiring hope and empowering students to become ethical leaders and active stewards of the environment. The seven supporting lessons and resources are aligned to support specific learning outcomes from in the [CASD 25 / 26 Through Route](#)

S1.3, and 3 lessons taken from our [game design programme, Climate Change \(CCE\)](#) see here for [programme overview](#)

S1.3: CCE: Lesson 2 What is Climate Change?

In this lesson, learners are introduced to the foundational concepts of Climate Change.

Learners will be introduced to the difference between weather and climate, begin to understand the changes in patterns and recognise the impacts that this can have.

Resources: Video: What is climate change? Part 1 and 2, Worksheet: Activity Question, Discussion Questions and Infographic: Impact of 2C vs 1.5C, Support: CCE 2 - 4 Teachers' Guide

S1.3: CCE: Lesson 3: The Cause of Current Climate Change

In this lesson, learners are introduced to the current causes of climate change. Through an exploration of the process of energy transport (radiation), the relationship between greenhouse gases and how heat is trapped, learners will develop an awareness on the causes of global warming and how this contributes to contemporary climate change.

Resources: Video: 'The Cause of Current Climate' Change, Support: CCE 2 - 4 Teachers' Guide

Week 27: Three lessons from our '[Seeding Sustainability](#)' Programme's Module 3, [Examining Edible Medicinal Flora](#) supplement learners ability linked to biodiversity

S1.6 Lesson 1: Biota, Flora and Fauna

Flora and Fauna also contribute significantly to the ecosystem of the Earth. This lesson will build and consolidate key vocabulary that learners will use throughout the micro-module. It encourages the development of research skills to develop an awareness of the different types of edible plants that can be found growing in Ireland.

Resources: Worksheet: Wild Irish Edibles, Flipped Classroom Task: Biota, Flora and Fauna

S1.6 Lesson 2: Habitats

Over 100 habitat types have been classified in Ireland, boasting a rich array of flora and fauna. This lesson asks learners to use independent and collaborative research skills to discover information about habitats in Ireland and the different types of flora and fauna that can be found in each.

Resources: Worksheet: Habitats, Flora and Species Webquest

S1.10 Lesson 3: Local Flora/ Fauna Scavenger Hunt

Flora and fauna is linked with the air we breathe and the food we eat and are interdependent. This lesson connects learners with their local, natural place as they are tasked with identification, information-gathering and evaluation of local flora and fauna.

Resources: Worksheet: Local Flora/ Fauna Scavenger Hunt, Optional Extra Worksheet: Web Quest: 1 Wild Irish Edibles (Lesson 1)

Week 29: 2 lessons from our [Eco-Agency: Youth Led Climate Action programme](#), which can be found [here](#)

S1.12 Lesson 12 Eco Agency: Youth Movement for the European Nature Restoration Law

In this lesson, learners are introduced to the Youth Movement around the European Nature Restoration Law. Learners will delve into the law's details, its roles in health and conservation, and its connections to the UN Sustainable Development Goals and Earth Charter.

Resources: **Worksheet: Introduction to Youth movement for the European Nature Restoration Law, Mind Mapping, Teachers' Guide: Meditation Script, Introduction to Youth movement for the European Nature Restoration Law, Discussion Cards**

S1.12 Lesson 13: Eco Agency: The European Nature Restoration Law

In this lesson learners will learn more about the law, how it supports health and planetary conservation and explore it's links to the UN Sustainable Development Goals and the Earth Charter.

Resources: **Worksheet: Law for Nature Instructions including Goals and Pillars, Teachers' Guide The European Nature Restoration Law: Planetary conservation and health, Information Cards 1 & 2**

See also Strand 2 collection, 2.4 Lesson 9: Promoting Positive Action

Using the Resources:

If you wish to use these resources, we can offer an induction and online support throughout the module to help you plan integration into your projects and timetable. To register for this option, please contact us e:hello@futurefocus21c.com For more information on the resources please visit www.muinincatalyst.com

Setting up an online learning environment for the lessons on this module:

Our lessons integrate the use of virtual learning environments. To ensure seamless use of our lessons, a module should be set up on your school's virtual learning environment, such as Teams, Google Classroom, etc. Learners are encouraged to upload documents to share with their peers. If your virtual learning environment does not support document sharing, we recommend OneDrive or Google Drive.

You can also use Google Sites or Microsoft Sway to encourage learners to present their work over the year - this can easily be set up to reflect the aims of TY and provide a showcase for their work as well as assessment tool.

Setting up a Canva Education account:

As our lessons integrate design, activities and additional activities may refer to Canva. Educators and schools can open a free Canva for Education account by registering [here](#): Canva for Education provides primary and secondary school teachers and students with premium features and templates. You can then also set up lessons and invite your learners to the class.

Expertise in developing the resources including design, layout and overarching pedagogical framework have been developed by Future Focus21c. Future Focus21c is Rebecca White and Anita McKeown, and a network of collaborators and content developers, nationally and internationally. Anita and Rebecca, have close to 5 decades of experience between them working across the arts, education, inclusive design place-based regeneration, STEAM education and sustainability, in both formal and informal settings with diverse learners and communities.

- Dr Anita McKeown, FRSA, FIPM, FGI, MEI, is an award-winning artist|scholar and STEAM educator, co-designing values-based leadership through education and community processes at the intersection of art, equitable placemaking, Open Source Culture and Technology (ethical and ecological implications). She is also a certified as a Earth Charter Education for Sustainable Development Educator; Inclusive Teaching and Learning Educator, Enterprise and Innovation educator, Trauma-informed practitioner and VUCA world design
- Ms. Rebecca White: is an educator, consultant, trainer and curriculum developer, focusing on STEAM education, project-based, student-led learning and professional development for place-based learning. She is the Senior Learning Advisor for the Ocean Race and an Award-Winning Programme Developer
- External Expertise: We engage with external experts to bring contemporary and real-life knowledge to our resources. By working with these experts, we can ensure that our resources include future-focused learning and innovative ideas to expose learners to world-leading research in a digestible and accessible format. Learners are encouraged to critically think about and engage with knowledge and content in a learner-led and project-based manner.

For more information or to access online support in integrating the programme into your existing teaching please contact: hello@futurefocus21c.com

References and full programmes can be found here www.muinincatalyst.com/courses