

STEAM EDUCATION FOR SUSTAINABLE DEVELOPMENT and FUTURES LITERACY

SGD13 Climate Action and Sustainable Development



Programme Phase: Strand 3 Global Connections

Leaving Certificate Support Lessons

TOPICS: Biodiversity, Environment, Science, Sustainability



SDG 13 Strand 3 Global Connections Support Climate Action and Sustainable Development



Climate Action & Sustainable Development

Strand 3

Global Connections



Module Summary: CASD Global Connections

This pathway of curated lessons from Muinín Catalyst programmes is designed to support students and teachers engaging with Strand 3 of the Climate Action and Sustainable Development (CASD) Senior Cycle subject.

Strand 3 invites learners to situate their own experiences of climate action and sustainable development within wider systems of governance, economics, and global inequality. Through these lessons, students critically examine how decisions are made, who holds power, and how the costs and benefits of climate change are distributed across the world.

Grounded in inquiry, design thinking, and futures literacy, the lessons enable students to explore pressing issues such as ecological debt, climate loss and damage, and the principles of climate justice. Learners are encouraged to connect local perspectives with global systems—investigating how innovation, technology, and nature-based solutions can contribute to just and sustainable transitions.

For teachers, the pathway offers scaffolded resources that align with the NCCA's vision for a student-centred, values-driven Senior Cycle. They support dialogue on sensitive but essential issues, including inequality, responsibility, and global citizenship, while providing practical tools for fostering research, collaboration, and critical thinking.

For students, Strand 3 is an invitation to think globally and act with agency—developing the knowledge, empathy, and confidence to imagine alternative futures and to participate in shaping more just, equitable, and sustainable worlds.

This pathway bridges curriculum and action, helping schools embed Strand 3 in ways that nurture critical awareness, responsibility, and hope, qualities that are vital for young people to thrive as ethical leaders in a globally interconnected world.

Week 10 S3.1.: Lesson 1: Introduction to Circular Design Thinking

Taken from our Future of Food Programme's Module 1, From Food Waste Food Gain, What is Circular Design Thinking helps Learners to stop taking, using, and wasting natural resources and materials. Using Circular Design Thinking methods, we can discover and create new ways to reuse, recycle, and regenerate important resources such as food.

Resources: Worksheet: Understanding Circularity Worksheet: Introduction to Circular Design

Week 12 - 15: Uses lessons from our [Eco-Agency Youth-led Action](#) programme. Future of the Ocean, Climate Change Engage that can be used to explore Strand 3, Global Connections See also [Applied Learning Tasks Support](#) for lessons to support and develop research skills 4.2.1

S3.2 Lesson 10: Eco Agency: Exploring What We CAN do - Introduction to Youth Leaders

Involving young people in research and evaluation results in valuable insights and fosters the growth and empowerment of youth participants. In this lesson learners will present their research on youth learners and change makers.

Resources: Worksheet: Action 2 Youth Leaders and Change Makers - Instructions

Lesson 11:Eco Agency: Youth Leader Case Study Presentation

In this lesson, learners will present their research and case study to their peers. Involving young people in research and evaluation not only results in valuable insights for both communities and individuals but it also fosters the growth and empowerment of youth participants.

Resources: Worksheet: Youth Leader Presentation Checklist, Teachers' Guide Youth Action presentation

S3.4 Lesson 2: Ocean Connection

In this lesson, learners are encouraged to use observation skills to understand the interconnections between the land and ocean interface and human and ocean interface and further understand our influence on the ocean.

Resources: Worksheet: Connecting to the ocean, Worksheet: Guided Observation, Worksheet: The Blue Mind- Ocean Connection

S3.4 Future of the Ocean Lesson 7: Local Coastal Pollution 2

In this lesson, learners will develop observational skills including data gathering and analysis SDG14 Future of the Ocean Micro-module 1: Introduction to Ocean Literacy SDG14 Introduction to Ocean Literacy around collected waste or open-source data online.

Resources include: Worksheet: Beach clean review & analysis

Week 13: S3.6 taken from our [game design programme](#), [Climate Change \(CCE\)](#) see here for [programme overview](#)

Week 15 S3.6: CCE Lesson 4: Mitigation and adaptation

In this lesson, learners are introduced to the concepts of mitigation and adaptation, and identifying opportunities for learners to take climate action by looking at their own behaviour and how they might reduce their impact.

Resources include: Video: Climate action- part 1-mitigation, Video: Climate action- part 2- adaptation, Support: Climate Mitigation Chart, Support: Climate Game Themes

S3.8 and S3.9 lessons are taken from our [Future of the Ocean, Offshore Renewable Energy and our game design programme, Climate Change \(CCE\)](#), see here for [programme overview](#)

S3.8 FoO: Lesson 1: Introduction to Wind Energy and Sustainability

In this lesson, learners are introduced to renewable energy, focusing on wind power's environmental impact and advantages. By the end of the lesson, learners are primed with the foundational knowledge necessary to embark on an exploration of wind energy's intricacies and its broader implications.

Resources: Yes / No Worksheet

Lesson 2: Analyse Maps Related to Onshore Wind Farms

In this lesson, learners engage with interactive online maps displaying wind turbine generation capacity. This lesson fosters digital navigation, data interpretation, and analytical skills in understanding wind energy's geographical distribution and impact.

Resources: Onshore Wind Farms Worksheet, Teacher's Notes

Lesson 3: Exploring Offshore Wind Farms

In this lesson, learners virtually explore the world of wind energy through three videos. They begin with a tour of Arbuckle Wind Farm, gaining insight from the Operations Manager's drivethrough. After exploring a number of professions Learners craft 'day-in-the-life' diaries for construction workers, considering elements like weather, safety, turbine size, and the offshore environment.

Resources: Day-In-The-Life Worksheet

S3.9 CCE Lesson 9 Working with Nature: Nature-Based Solutions & Green Infrastructure 1

Adapting to climate change involves rethinking how we design the places where we live, work and play. This lesson introduces learners to the closely associated concepts of 'nature-based solutions' and 'green infrastructure'. Key terms related to these concepts are defined.

S3.9 CCE Lesson 10 Working with Nature: Nature-Based Solutions & Green Infrastructure 2

This lesson builds on Lesson 9 and deepens the learners' understanding of key concepts and terminology presented in lesson 9.

Resources: Flipped Classroom: Vocabulary Video: 'Nature-Based Solutions'

Week 17 S3.4 Evaluating Sources: The C.R.A.A.P Test

When conducting research, it is important to find quality information and avoid misinformation or "fake" information. Therefore, critically evaluating your sources is a necessary part of research.

Strand 3 Alignment Grid

Lesson	Strand 3 Focus	Linked Global Justice/Power Prompt
S3.1 Circular Design Thinking	Governance, economics, innovation	Which actor (government, industry, community) holds the most responsibility for making this circular idea scale, and why?
S3.2 Youth Leaders (10–11)	Global citizenship, civic agency, inequality	Choose at least one youth leader from a climate-vulnerable region. Who has power in their context? How does their work highlight loss & damage or ecological debt?
S3.4 Ocean Connection & Local Coastal Pollution 2	Transnational systems, ecological debt	Where does this pollution originate? Who benefits, and who pays the cost?
S3.6 CCE Lesson 4: Mitigation & Adaptation	Governance, economic forces, justice	Which options shift costs onto low-income groups or Global South communities? How could policy redesign address this?
S3.8 Offshore/Onshore Wind Lessons	Innovation, economic transitions, governance	Who are the key stakeholders in wind energy? How can benefits be shared fairly among communities, developers, and the state?
S3.9 CCE Lessons 9–10 (Nature-Based Solutions & Green Infrastructure)	Nature-based solutions, just transitions	If the same flood risk were managed with a seawall vs wetlands restoration, who gains and who loses, now and in 30 years?
C.R.A.A.P. Test (Evaluating Sources)	Futures literacy, governance, inequality	Whose interests are represented in this claim? Who funds it, and who might be excluded from the narrative?

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 setup 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, our lessons also 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.

- Dr Anita McKeown, FRSA, FIPM, 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: UCD - 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