

Higher Education Authority (HEA) Education for
Sustainable Development (ESD) Spotlight Series
2025: Case Studies Compendium

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(HEA) Education for
Sustainable Development
(ESD) Spotlight Series 2025:
Case Studies Compendium

*EDITED BY DR MARK KELLY; COLIN
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HIGHER EDUCATION AUTHORITY
DUBLIN



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Foreword

TIM CONLON

In a period of significant global environmental and societal change, the importance of education in supporting a sustainable future is increasingly recognised. Higher education carries a responsibility to empower learners with the “knowledge, skills, values and attitudes to take informed decisions and make responsible actions for environmental integrity, economic viability and a just society” ([UNESCO, 2021](#)). Ireland’s approach to Education for Sustainable Development (ESD) is grounded in high-level policy commitments and a vision for system-wide transformation. The [Government’s Second National Strategy on ESD to 2030](#) provides a framework to integrate sustainable development principles at all levels of education, and is aligned with the pillars of [UNESCO’s ESD for 2030 framework](#), which seeks to transform learning environments to be more inclusive and sustainable.

The Higher Education Authority (HEA) is committed to providing national leadership in this mission. The HEA’s remit encompasses policy development, strategic planning and regulation across the higher education sector. Our approach to ESD recognises that sustainability is not a discrete topic but a cross-cutting ethos that permeates teaching, research, institutional operations and community engagement. The HEA Act 2022 places clear emphasis on promoting teaching, research, and institutional engagement that contribute to social, economic, cultural, and environmental responsibility. This mandate underpins our work with institutions and strengthens the sector’s collective responsibility to lead on climate action and sustainable development. This commitment is further advanced through the System Performance Framework 2023–2028, which guides institutions in developing performance objectives across four pillars — Teaching & Learning, Research & Innovation, Access & Participation, and Engagement — and

transversal areas of impact, including Climate and Sustainable Development, ensuring that environmental and climate goals are integral to institutional planning and accountability.

Since 2022, the HEA [Strategic Alignment of Teaching and Learning Enhancement Funding in Higher Education](#) (SATLE) funding has supported the response to the ESD to 2030 strategy, directly targeting innovations to embed ESD and inclusive practices in our higher education system. SATLE supports change through numerous institutional projects focused on ESD, enabling institutions to build capacity – from establishing ESD champion roles to developing new interdisciplinary modules – and to embed sustainable practices across curricula.

Ireland's higher education commitment to sustainability is increasingly apparent on the international stage. Institutions across the sector engage actively in global initiatives and partnerships focused on advancing the UN Sustainable Development Goals, and their efforts are reflected in positive international assessments and peer recognition. These achievements demonstrate that Ireland's collective progress in ESD aligns with, and increasingly contributes to, global standards and best practice.

Throughout 2025, the [HEA ESD Spotlight Series](#) provided a platform for institutions, staff, and students to showcase innovative approaches to embedding ESD in teaching and learning, research, operations, and community engagement. The breadth of contributions reflects a sector-wide recognition that equipping learners with the knowledge, skills, and values to shape a sustainable future is now central to the mission of higher education.

The HEA *ESD Spotlight Series 2025: Case Studies Compendium*, supports these objectives by translating policy into practice through the innovative initiatives it showcases. It highlights how Ireland's higher education sector is embedding sustainability across teaching, research, and campus initiatives in alignment with national and global priorities. This publication brings together a

body of work from across the higher education sector, demonstrating the creativity, commitment, and leadership that underpin Ireland's progress in advancing Education for Sustainable Development. These case studies also demonstrate the value of collaboration, both within institutions and across the wider system, in supporting the ambitions of the national strategy. It highlights what is possible when educators, students, and institutional leaders work together to integrate sustainability into every aspect of the learning environment.

This breadth of work is matched by the scale of participation in the 2025 Spotlight Series. From February to November 2025, twenty-one public and private institutions across the whole island hosted sessions in which 97 staff and students shared their experiences. With case studies and ESD open educational resources included, the compendium represents contributions from 235 individuals across 42 institutions and organisations, both national and international. The HEA applauds the educators, staff, and students across our universities and colleges who contributed to the case studies and open educational resources herein. Their dedication to integrating sustainability into curricula, campus life, and research is driving the culture shift required to meet our national ESD goals.

As we look to the future, the HEA will continue to champion ESD as a cornerstone of quality and innovation in higher education. In doing so, we aim to ensure that Ireland's higher education system not only fulfils its national policy objectives, but also serves as an international exemplar of education for sustainable development and system-wide transformation. I hope that policymakers, institutional leaders, educators and students alike will find this resource invaluable. It is my expectation that this Compendium will serve as a record of the achievements of 2025 and as a resource to inspire further action, partnership, and ambition in the years ahead.

About the author



Tim Conlon
HIGHER EDUCATION AUTHORITY

Tim Conlon is the Head of Policy and Strategic Planning at the Higher Education Authority.

Introduction

DR MARK KELLY

This Compendium provides a snapshot of Education for Sustainable Development (ESD) practice across the higher education sector in Ireland. It includes recordings from the Higher Education Authority (HEA) ESD Spotlight Series along with submitted case studies and Open Educational Resources (OERs). This resource aims to demonstrate that ESD practice transcends disciplinary boundaries and works best when integrated holistically across the curriculum.

We hope that the examples shared in this compendium will inspire and empower others to embed ESD into their everyday academic practice to provide creative and action-oriented learning experiences for our students, communities and business.

Our sincerest thanks to all the contributors included in this compendium; we are delighted to see such commitment to sustainability, climate action, and the SDGs across the higher education sector in Ireland.

About the author



Dr Mark Kelly

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Dr Mark Kelly is on secondment with the Higher Education Authority National Forum as a policy advisor on Education for

Sustainable Development (ESD). Mark is the Head of the ATU Galway-Mayo Centre for Sustainability and a Senior Lecturer in the Department of Building and Civil Engineering.

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AI Use Statement

The [Vimeo AI Video Summarizer](#) was used to generate initial text summaries of the video presentations (I-XXI) included in this document. All AI-generated outputs were subsequently reviewed,

edited, and verified by the editors for clarity and accuracy. The summaries are intended to support accessibility and multiple means of representation; readers should consult the original video presentations for full context and complete details.

How to Use This Compendium

This compendium is designed to support sharing and sector-wide learning through presentations, case studies, and open educational resources contributed during the ESD Spotlight Series. These materials may be reused and adapted by educators, programme teams, and institutional leaders. All resources are released under a Creative Commons Attribution (CC BY) licence unless otherwise stated, enabling reuse, adaptation, and redistribution with appropriate attribution.

The compendium is organised into three main sections:

1. Spotlight Session Recordings (I-XXI)

The first section contains recordings from the Spotlight Series sessions, organised by institution and presentation.

2. Case Studies (XXII)

The second section includes case studies submitted during the national case study call associated with the Spotlight Series.

3. ESD-Tagged OER from the National Resource Hub (XXIII)

The third section features open educational resources (OER) that were submitted to the National Resource Hub during the Spotlight Series and categorised as ESD.

This compendium is published in [Pressbooks](#). To use this compendium, access the left-hand table of contents to open each section. Video recordings are embedded and can be viewed directly on the page, while case studies and OER are presented as individual items you can explore at your own pace. All external links open separately and you can return to the compendium at any time.

PART I

DUBLIN CITY UNIVERSITY

I. What can you achieve in one year of ESD?

BARRY PEAK



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=5>

In this presentation, Barry Peak reflects on his first year as Dublin City University's inaugural ESD Officer, offering insights into the opportunities and challenges of embedding sustainability in higher education. Drawing on his background in secondary education and social justice pedagogy, Barry outlines his core priorities: building staff capacity, strengthening commitment, and cultivating a culture where sustainability is woven into DCU's values and practices.

He describes how strong but sometimes siloed initiatives already existed across faculties, often driven by passionate individuals. His role has focused on moving from isolated "pockets of practice" to programme- and faculty-level integration. Key developments include working with course teams on curriculum design, supporting academics to map sustainability into modules, and piloting approaches such as challenge-based learning and sustainability-focused assessments.

Mr Peak also highlights professional development opportunities introduced at DCU, including an online Moodle resource, a digital badge in Education for Sustainability, and an "Ideas Exchange"

society-led sustainability projects to staff-student forums that feed directly into university decision-making. He positions the first year as a foundation for future work. The long-term aim is to create a culture in which ESD is not an optional add-on but a shared norm that shapes teaching, learning, and the wider institutional identity.

About the author

Barry Peak

DUBLIN CITY UNIVERSITY

Barry Peak is the Education for Sustainable Development Officer in the Teaching Enhancement Unit at Dublin City University, where he supports the integration of sustainability across teaching and learning.

2. ESD in Practice – Dublin City University Business School (DCUBS)

DR CLIONA MCPARLAND



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=62>

In this session, Dr Cliona McParland showcases how ESD can be

authentically embedded into business education through the Ecotech Challenge, a final-year module in the BSc in Digital Business and Innovation. Developed under the DCU Futures initiative, the module uses a challenge-based learning approach, combining digital and transversal skill-building with meaningful industry collaboration.

Working in partnership with Uisce Éireann, Ireland's national water utility, students were tasked with addressing a pressing social and environmental challenge: ensuring vulnerable customers have reliable access to clean water during supply interruptions. Over the course of the module, students investigated barriers to service uptake, explored strategies to improve awareness and inclusion, and proposed new solutions to strengthen support for at-risk groups.

What makes the initiative distinctive is the real-world impact of student contributions. Their evidence-based proposals not only informed Uisce Éireann's internal strategy but were also presented to the national regulator, shaping policy discussions on the future of water services in Ireland. Some recommendations have already influenced public communications and service delivery, illustrating the tangible value of student-led sustainability projects.

Dr McParland emphasises how industry integration, collaborative feedback, and a strong ESD lens enabled students to develop critical thinking, problem-solving, and sustainability literacy. Beyond delivering a successful project, the Ecotech Challenge demonstrates how business schools can cultivate graduates who are both industry-ready and equipped to make a positive societal impact.

About the author

Dr Cliona McParland
DUBLIN CITY UNIVERSITY

Dr Cliona McParland is an Assistant Professor in Global Strategy (Digital Transformation) at Dublin City University.

3. Make it Slow

DR MICHAEL HINDS



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=72>

Dr Michael Hinds introduces ‘Make it Slow’, an experimental initiative that reimagines the university classroom as a space for reflection, attention, and human connection. Emerging from student feedback about the need for “havens” and quiet spaces, as well as frustrations with digital overload, the project explores how digital-free learning environments can contribute to both sustainability and student wellbeing.

The concept is simple but powerful: step back from screens, devices, and the constant pressure to “move fast,” and instead cultivate a practice of slowness. In practical terms, this means switching off technology in class, providing students with recyclable notebooks and pencils, and engaging them in activities such as close reading, collaborative writing, and deep discussion of single phrases or ideas. Rather than covering large volumes of content, the emphasis is on depth, care, and sustained engagement.

“Make it Slow” is not about rejecting digital learning — rather, it complements it by creating balance and helping students recognise

the value of limits, focus, and deliberate attention. The initiative is being developed as part of DCU's Green Week.

By reframing slowness as a skill and a graduate attribute, the project highlights how sustainable pedagogies can support ecological responsibility and also healthier, more mindful ways of learning and living.

About the author

Dr Michael Hinds

DUBLIN CITY UNIVERSITY

Dr Michael Hinds is a member of the Faculty of Humanities and Social Science at Dublin City University.

PART II

ULSTER UNIVERSITY

4. ESD at Ulster University: A multifaceted approach

DR AMANDA PLATT



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=59>

Since 2019, Ulster University has taken a whole-institution approach to embedding ESD, led by Dr Amanda Platt. In this presentation, Dr Platt provides an overview of the university's journey, highlighting the integration of sustainability into curriculum design, quality assurance, and student learning experiences.

From the outset, Ulster aligned ESD with its curriculum design framework, requiring staff to demonstrate how sustainability is embedded within programmes during validation and revalidation. This strategic move ensured that ESD became a shared responsibility across all disciplines rather than the remit of individual enthusiasts. Complementing this, bespoke workshops, case studies, and tailored resources have helped staff understand what ESD looks like in practice and how it benefits students.

Dr Platt also describes how ESD has been incorporated into professional development, including the Postgraduate Certificate in Higher Education Practice, and supported by sector initiatives such as SOS-UK's *Responsible Futures* programme. Ulster recently became one of the first Irish institutions to achieve accreditation

under this framework, reflecting its commitment to whole-institution change.

Other milestones include updating module handbooks with explicit SDG references, embedding sustainability into graduate attributes, adding student survey questions on ESD, and engaging over 700 students in the National Sustainability Skills Survey.

Dr Platt frames Ulster's progress as significant but ongoing: the goal is to move beyond progress markers towards a culture where ESD is embedded across research, teaching, and the wider student experience.

About the author

Dr Amanda Platt
ULSTER UNIVERSITY

Senior Lecturer in Higher Education Practice and the ESD Lead at Ulster University.

5. Integrating Research and Teaching with/for Sustainability

DR KIERAN HIGGINS



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=76>

In this presentation, Dr Kieran Higgins explores how Ulster University is connecting two of its key learning and teaching priorities—research-informed practice and sustainability—through the Research-Teaching Nexus (RTN). The RTN describes the ways students encounter research during their studies: engaging with academic literature, learning directly from staff research, and conducting their own projects. Dr Higgins highlights how embedding sustainability into this nexus equips students to become both critical consumers and active producers of knowledge in addressing urgent global challenges.

Sustainability research at Ulster spans a wide range of disciplines, and the RTN offers a structured way to ensure that students, regardless of subject area, engage meaningfully with this work. By positioning sustainability as a shared theme, students in disciplines where it may not traditionally be foregrounded are also able to see its relevance and potential impact.

This approach also supports the development of key competencies for ESD—such as critical thinking, systems thinking, and solution-oriented learning—while helping students cultivate research skills that will benefit them in their professional lives. Dr Higgins notes that sustainability issues demand the latest evidence and interdisciplinary approaches, making the RTN a natural platform for linking cutting-edge research with authentic student learning.

The presentation calls for universities to view research and sustainability not as parallel agendas but as mutually reinforcing, preparing graduates who are both research-informed and sustainability champions.

About the author

Dr Kieran Higgins
ULSTER UNIVERSITY

Dr Kieran Higgins is a Lecturer in Higher Education Practice at Ulster University.

6. Ulster University Research Teaching Nexus Toolkit

PROFESSOR RAYMOND BOND



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=80>

Professor Raymond Bond introduces the Ulster University Research-Teaching Nexus (RTN) Toolkit, a resource developed to help academics more deliberately integrate research into their teaching. The toolkit provides prompts, checklists, and examples of activities designed to help staff link their own research with student learning in ways that are both practical and impactful.

Drawing on his personal experiences in the School of Computing, Professor Bond reflects on the importance of making research visible to students. He notes that, as an undergraduate, he was often unaware that lecturers were active researchers, and stresses

how important it is for staff to communicate their work and bring students into contact with real-world research questions. Activities in the toolkit range from encouraging students to read and critique published papers, to designing assignments aligned with staff research interests, to giving students opportunities to develop and test their own questions and ideas.

The toolkit was created through funded research, supported by surveys and focus groups with academics. Findings highlighted both the benefits and the missed opportunities in research-teaching integration. Benefits include fostering transferable skills, creating a community of inquiry, and grounding classroom learning in authentic, real-world problems. The toolkit has since been adapted to support programme revalidation and to prompt staff to embed research in their module design.

Professor Bond frames the RTN Toolkit as a way to empower students: by engaging with research early and often, they develop curiosity, independence, and the capacity to tackle sustainability challenges with evidence-based solutions.

About the author

Professor Raymond Bond
ULSTER UNIVERSITY

Professor Raymond Bond is a Professor of Human Computer Systems in the School of Computing at Ulster University.

7. Research-led Approach to Learning — Environmental Engineering

PROFESSOR PILAR FERNANDEZ-IBÁÑEZ



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=82>

Professor Pilar Fernandez-Ibáñez shares her experience of embedding Education for Sustainable Development (ESD) into the Environmental Engineering module at Ulster University. With a career spanning over 25 years in water research, solar energy, and environmental technologies, she demonstrates how research and teaching can be seamlessly connected to inspire students and foster sustainability literacy.

For Professor Fernandez-Ibáñez, separating teaching from research is “practically impossible.” Her teaching draws directly on cutting-edge research into water treatment, pollution control, and renewable energy. Students are introduced to real-world case studies on energy, waste, and environmental challenges, as well as the social and economic contexts that shape these issues internationally. This ensures learning is not only scientifically rigorous but also globally relevant.

A distinctive feature of the module is its team-based project, where students select a clean technology of interest and investigate it in depth over eight weeks. They conduct independent research, engage with industry or local examples, and present their findings in both written reports and peer-assessed oral presentations. This process strengthens students’ critical thinking, research skills, and ability to apply sustainability principles to engineering problems.

Student feedback consistently highlights the value of this approach, praising its emphasis on independence, collaboration, and authentic engagement with sustainability. Professor

Fernandez-Ibáñez concludes that research-led teaching not only deepens disciplinary knowledge but also empowers engineering students to see themselves as active contributors to addressing global sustainability challenges.

About the author

Professor Pilar Fernandez-Ibáñez
ULSTER UNIVERSITY

Professor Pilar Fernandez-Ibáñez is a Professor of Environmental Engineering in the School of Engineering at Ulster University.

8. Sustainability Paradoxes: Research-Teaching Nexus

DR SUSANN POWER



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=85>

Dr Susann Power presents how her research on sustainability paradoxes in tourism is directly embedded into teaching, creating powerful opportunities for students to engage with real-world dilemmas. Her work, published in *Tourism Management* alongside international collaborators, examined how industry leaders made sense of paradoxes such as: Can tourism be sustainable if people

continue to fly? Is sustainability compromised by the need to deliver positive customer experiences? And how can the right to travel be balanced with the limits of perpetual growth?

Dr Power uses these same paradoxes as the basis for undergraduate and postgraduate learning activities. At undergraduate level, students in the *Contemporary Issues in Hospitality Management* module critically debate these questions, preparing concise position statements which they present and defend in class. This approach mirrors the professional communication demands and also develops core ESD competencies such as critical thinking, problem-solving, and collaboration.

At postgraduate level, Dr Power has designed a new module, *Operationalising Sustainable Tourism*, where students explore paradoxes through workshops and a “sustainability paradox hackathon.” Working in groups, they interrogate case studies, develop management recommendations, and submit both collective reports and individual reflections. This assessment model encourages both solution-oriented thinking and critical engagement with complex sustainability challenges.

By integrating her research directly into teaching, Dr Power demonstrates the potential of the research-teaching nexus to enrich student learning. Students are exposed to current debates in sustainable tourism and actively develop the skills, perspectives, and analytical capacities required to navigate the paradoxes shaping the future of the industry.

About the author

Dr Susann Power
ULSTER UNIVERSITY

Dr Susann Power is a Senior Lecturer in Sustainable Tourism in the

Department of Hospitality, Tourism and Events Management at
Ulster University.

PART III

UNIVERSITY COLLEGE
CORK

9. Education for Sustainable Development at UCC: An Overview

DR DAVID NYALUKE



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Dr David Nyaluke provides an overview of UCC's long-standing commitment to sustainability, tracing its ESD journey from student activism in 2007 to institution-wide initiatives today. Early momentum was driven by students who called for greater environmental engagement, leading UCC to become the first university worldwide to receive a Green Flag from the Foundation for Environmental Education in 2010. The establishment of the Green Forum in 2013, chaired by the university president and involving staff and students, further embedded sustainability into governance.

Over the years, milestones have included international recognition for integrating sustainability into the curriculum (2018), the launch of Living Labs (2019), and the development of a university-wide Sustainability and Climate Action Plan. UCC has also pioneered initiatives such as a plastic-free campaign, saving millions of single-use items, and continues to support student-led

projects, including the creation of a campus sustainable food policy.

Dr Nyaluke frames his current role around three interlinked pillars: embedding sustainability within the curriculum and research; supporting student-led initiatives; and building an enabling ecosystem across campus operations, teaching, and community engagement. He also highlights innovative approaches such as the SDGs to 2030 Game, a simulation that fosters systems thinking and problem-solving.

UCC's story demonstrates how student activism, institutional leadership, and collaborative frameworks can drive transformative change and ensure ESD is woven into the fabric of the university.

About the author



Dr David Nyaluke
UNIVERSITY COLLEGE CORK

Dr David Nyaluke is the Education for Sustainable Development Officer at the Centre for the Integration of Research, Teaching and Learning (CIRTL) at University College Cork.

10. ESD in Action: Practices and Approaches at UCC

DR CATHERINE O'MAHONY



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Dr Catherine O'Mahony explores how ESD is being embedded in practice across UCC, highlighting approaches that support staff, students, and community partners in engaging meaningfully with sustainability.

She begins by situating ESD within the UN SDG 4.7, which calls for education that fosters the knowledge, skills, and values needed for sustainable living. At UCC, this has translated into multiple entry points for staff: some connect naturally with the SDGs, while others work through the lens of competencies such as systems thinking, critical reflection, or normative values. Recognising this diversity, UCC has encouraged flexible pathways into ESD.

Pedagogically, UCC emphasises transformative learning through the “head, heart, and hands” model—building knowledge, engaging emotions and values, and enabling practical action. This is realised through methods such as case-based learning, project-based learning, cooperative inquiry, and community-based research. Dr O'Mahony illustrates this with examples including postgraduate modules in community-based participatory research, where students co-design projects with local organisations, and creative approaches in the humanities, such as applying sustainability frameworks to the study of German literature.

Mapping exercises reveal that 75% of UCC's undergraduate programmes now explicitly reference the SDGs, particularly Goals 3, 4, and 5. This stepwise integration—ranging from introductory engagement to full programme design—shows how ESD can be embedded progressively across disciplines.

Dr O'Mahony concludes that while approaches differ, what matters is creating opportunities for transformative learning, collaboration, and student leadership, ensuring sustainability becomes part of everyday academic practice.

About the author



Dr Catherine O'Mahony
UNIVERSITY COLLEGE CORK

Dr Catherine O'Mahony is the Director of the Centre for the Integration of Research, Teaching and Learning (CIRTL) at University College Cork.

II. Integrating the SDGs into Teaching with the UCC SDG Toolkit

DR JOHN BARIMO



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=100>

Dr John Barimo introduces the UCC SDG Toolkit, a resource developed during the pandemic to help academics and students meaningfully engage with the SDGs in teaching and learning. Initially supported by National Forum and HEA funding, the toolkit was co-created with staff, students, and community partners, and has since grown into a widely recognised resource, showcased by the UN Academic Impact programme and cited in Ireland's SDG Implementation Plan.

The toolkit goes beyond the 17 SDG icons to explore the 169 associated targets, encouraging staff to connect their teaching and research to specific, actionable goals. Its most impactful feature has been the mapping tool, enabling lecturers and students to identify where their modules, courses, or research already align with the SDGs—often revealing existing contributions that had gone unrecognised. By doing so, it supports both curriculum development and grant-writing, while also building student awareness of sustainability within their disciplines.

Dr Barimo emphasises the importance of transformative sustainability learning, using the “head, heart, and hands” framework to balance knowledge, values, and action. Professional development has been key to embedding the toolkit, delivered through workshops, design sprints, and a digital badge programme that support staff confidence in co-creating curricula with students.

With over 20,000 online views globally—including significant uptake in the Global South—the toolkit has become both a teaching hub and an international model. Plans are now underway for a version 2.0, co-created across Ireland, to expand its reach and impact.

About the author



Dr John Barimo
UNIVERSITY COLLEGE CORK

Dr John Barimo is the Manager of the Sustainable Development Solutions Network Ireland (SDSN) at University College Cork.

PART IV

UNIVERSITY OF GALWAY

12. Creating an Undergraduate Transdisciplinary Sustainability Course at the University of Galway

DR GESCHE KINDERMANN



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=112>

Dr Gesche Kindermann describes the development of a university-wide transdisciplinary sustainability module at the University of Galway, designed to ensure all students have an opportunity to engage with sustainability during their studies. The initiative stems from the university's strategic commitment to sustainability, embedded in its "Learn, Live, Lead" model. Within this, the "Learn" pillar focuses on providing students with knowledge and skills for sustainable development both within and beyond the classroom.

Dr Kindermann and colleagues created a 12-week, credit-bearing module addressing key sustainability topics: environmental and social systems, health and wellbeing, resilience, the built environment, sustainable consumption, the circular economy, innovation, and cultural perspectives. The module is delivered

collaboratively by staff from diverse disciplines—including natural sciences, archaeology, political science, business, engineering, geography, German, and Irish studies—alongside contributions from the Sustainability Office and the Students' Union.

Central to the course is its transdisciplinary approach, bringing students from different programmes together to explore sustainability challenges and co-develop solutions. Assessments include group projects tackling real-world problems and opportunities for cross-disciplinary discussion.

Since its pilot with a single student cohort in 2019, the module has expanded rapidly. It is now embedded in over 100 undergraduate and postgraduate programmes across three of the university's four colleges, delivered both in-person and online to accommodate diverse learners.

Dr Kindermann concludes that while challenges such as workload allocation and timetabling remain, the module has fostered collaboration, innovation, and resilience among both students and staff, and has become a flagship example of ESD integration at Galway.

About the author



Dr Gesche Kindermann
UNIVERSITY OF GALWAY

Dr Gesche Kindermann is a member of the College of Science and Engineering in the School of Natural Sciences, Earth and Life Sciences at the University of Galway.

13. Matamaitic don Inbhuanaitheacht – An Irish- language Interdisciplinary Sustainability Module

DR FINTAN HEGARTY



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from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=114>

Dr Fintan Hegarty introduces *Matamaitic don Inbhuanaitheacht*, a unique five-credit module taught entirely through the Irish language that integrates mathematics, programming, and sustainability. Developed within the College of Science and Engineering, the module provides opportunities for students to maintain and expand their use of Irish while engaging with sustainability challenges through a quantitative lens.

The module is open to students from different disciplines, including those in Arts studying Irish who may not have studied mathematics since secondary school, and Mathematics Education students with more advanced skills. This diversity presented challenges in balancing content, but was addressed by using Python and Pandas in Jupyter Notebooks, allowing students to explore models and data interactively. Core topics include algebra, calculus, probability, statistics, and applications such as SIR

epidemiological models, predator–prey systems, and population dynamics.

Through coding exercises, students can manipulate parameters and directly observe the impacts on sustainability-related problems, bridging theory with practice. The module also highlights the relevance of Irish in STEM education and responds to national policy, which mandates that 20% of public service employees should have Irish by 2030.

Despite administrative hurdles, such as aligning credit across colleges, the module has generated strong interest and positive feedback. Plans include offering preparatory “refresh” sessions in Irish and mathematics, and potential collaboration with other institutions through module swaps, expanding access to Irish-medium sustainability teaching.

Dr Hegarty concludes that combining language, culture, mathematics, and sustainability creates an innovative and empowering learning experience with relevance far beyond the classroom.

About the author

Dr Fintan Hegarty
UNIVERSITY OF GALWAY

Dr Fintan Hegarty is a member of the College of Science and Engineering in Mathematical and Statistical Sciences at the University of Galway.

14. Learning Through Doing: Lessons from Stakeholder

Engagement in Media Education

DR KELLY FINCHAM



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=116>

Dr Kelly Fincham shares insights from a media education module that used design thinking and stakeholder engagement to help students connect sustainability theory with practice. The aim was to move beyond abstract discussions of climate change by empowering students to identify, analyse, and respond to sustainability challenges within their own lived experience.

Students were introduced to design thinking's structured approach—empathise, define, ideate—encouraging them to start with stakeholder interviews and deep listening before developing potential solutions. Using empathy interviews with fellow students, learners explored how climate-related issues manifested in everyday life. Topics most frequently raised were housing, transport, and alcohol—issues that strongly affect the student experience and intersect with broader sustainability concerns.

The findings highlighted feelings of loneliness, disconnection, and isolation, particularly linked to long commutes, unaffordable or unsuitable housing, and social pressures around alcohol consumption. Students translated these insights into actionable proposals, such as a dedicated commuter lounge on campus,

alcohol-free but attractive social events (“Beyond Cocktails”), and improved late-night public transport options.

While these initiatives may not directly solve climate change, they gave students a sense of agency and demonstrated how local interventions can contribute to sustainability and wellbeing. The process also helped reduce eco-anxiety by showing that problems could be broken down and addressed collaboratively.

Dr Fincham concludes that stakeholder engagement and design thinking provide powerful tools for sustainability education, building intellectual, emotional, social, and action-oriented learning while empowering students to see themselves as active change-makers.

About the author



Dr Kelly Fincham
UNIVERSITY OF GALWAY

Dr Kelly Fincham is a member of the College of Arts, Social Sciences and Celtic Studies in Global Media at the University of Galway.

15. Embedding a Culture of ESD in a New Pharmacy Programme

DR JOANNE O'DWYER



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Dr Joanne O'Dwyer outlines how ESD is being embedded from the ground up in the University of Galway's new Pharmacy programme, due to welcome its first intake in 2025. Unlike established courses where sustainability must be retrofitted, this programme provides a rare opportunity to bring sustainability into the curriculum from the outset.

Initially, sustainability was considered mainly in terms of SDG 3: Good Health and Wellbeing. However, through engagement with professional development in curriculum design, Dr O'Dwyer broadened this perspective to highlight the relevance of many SDGs, from gender equality in clinical trials to responsible consumption and disposal of medicines. She stresses the pharmacist's role not only as a healthcare provider, but also as a community leader able to influence sustainable practices.

To support this integration, sustainability prompts have been added to module lead guidance documents and year-level review checklists, ensuring consistency across the programme. These encourage staff to map content to the SDGs, embed ESD competencies, address eco-anxiety, and consider issues such as decolonisation of healthcare knowledge. Dr O'Dwyer piloted these ideas by redesigning a professional skills module, updating outcomes and assessments to reflect global healthcare perspectives and sustainable pharmacy practice.

She concludes that while much of the content and competencies were already implicit in pharmacy education, making them explicit through an ESD lens transforms how students see their future

roles. By linking local professional practice with global sustainability challenges, the programme aims to graduate pharmacists who are both skilled clinicians and sustainability advocates.

About the author



Dr Joanne O'Dwyer
UNIVERSITY OF GALWAY

Dr Joanne O'Dwyer is a member of the College of Medicine, Nursing and Health Sciences in Pharmacy at the University of Galway.

PART V

TECHNOLOGICAL

UNIVERSITY DUBLIN

I6. Overview of TU Dublin ESD Strategy

DR OLIVIA FREEMAN



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=126>

Dr Olivia Freeman opened the TU Dublin session with an overview of the university's strategic approach to embedding Education for Sustainable Development (ESD). Established in 2019 from the merger of three Dublin Institutes of Technology, TU Dublin has placed sustainability at the core of its mission through three strategic pillars: People, Planet, and Partnership.

The university's commitment is shaped by key frameworks including the UN Sustainable Development Goals, the European Green Deal, UNESCO's ESD framework, and Ireland's Climate Action Plan. Under the *Planet* pillar, TU Dublin aspires to become a beacon for sustainability, with specific targets around building staff capacity, developing sustainability literacy, and embedding sustainability into all curricula.

Sustainability is also woven into TU Dublin's graduate attributes and new education model, launched in 2023. Grounded in systems thinking, collaboration, and transformation, the model includes "Fundamental Seven," a requirement that sustainability be integrated into the learning outcomes of all programmes. Quality

The graduate attribute on sustainability is directly informed by the EU GreenComp framework, covering values, complexity, envisioning sustainable futures, and action. These are complemented by UNESCO's head, heart, and hands approach to transformative learning.

Led at institutional level by Vice President for Sustainability Jennifer Boyer, TU Dublin's Office of Sustainability spans education, decarbonisation, sustainability intelligence, and societal engagement. Dr Freeman emphasised that this whole-institution approach creates a foundation for producing socially engaged and responsible global citizens.

About the author

Dr Olivia Freeman
TU DUBLIN

Dr Olivia Freeman is the Sustainability Education Lead for Sustainability Education at TU Dublin.

17. The Sustainability Education Team at TU Dublin

DR LUCIA WALSH



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=128>

Dr Lucia Walsh outlined the role of TU Dublin's Sustainability Education Team, which supports staff and students to embed sustainability meaningfully across teaching, learning, and assessment. The focus is on building capacity, fostering collaboration, and ensuring that ESD is integrated into practice in transformative rather than superficial ways.

Formal staff development includes the Level 9 CPD programme *Educating for Sustainability*, completed by over 100 colleagues, and the national Digital Badge in ESD, co-delivered with ATU and SETU and supported by the National Forum for Teaching and Learning. More than 400 participants across Irish higher education have engaged with the badge, which is structured around the GreenComp framework and offers an additional facilitator pathway.

Beyond formal courses, the team has facilitated over 80 workshops in the past two academic years, with 1,000+ staff involved in reviewing and redesigning programmes or modules. A comprehensive Sustainability Education Toolkit provides resources, case studies, and mapping tools (including links to the UCC SDG toolkit) to help staff incorporate sustainability into curricula.

Community and collaboration are also central. The SDG Community of Practice, launched in 2020, connects colleagues across the university through seminars and workshops. Large-scale engagement activities, such as Climate Action Week and Green Week, bring together staff, students, and partners through events ranging from tree planting and litter picks to seminars and creative activities.

Initiatives like *Students Learning with Communities* and play-based learning tools such as Stepping into the Doughnut, Climate Fresk, and a climate-themed Escape Room demonstrate how TU

Dublin combines innovation with collaboration to foster sustainability mindsets.

About the author

Dr Lucia Walsh
TU DUBLIN

Dr Lucia Walsh is the Sustainability Education & Innovation Lead for Sustainability Education at TU Dublin.

I8. The role of Community Collaborations in Educating 21st century Horticulturists

RACHEL FREEMAN



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=132>

Rachel Freeman highlighted how TU Dublin's Horticulture programme integrates community-engaged learning to prepare graduates for the complex sustainability challenges of the profession. Horticulture spans food production, landscape design, golf course management, community gardening, and therapeutic practice. Given this breadth, graduates must be equipped with

critical thinking, adaptability, and innovation skills rooted in sustainability.

Community collaborations have been central for over 16 years. Early projects, such as the redevelopment of a neglected green space with the Blackstone Drive Community Group, exemplified the value of partnership-based learning. Students co-designed and co-created gardens with residents and schoolchildren, gaining practical experience while fostering civic responsibility. Assessment involved presentations to the community and the creation of maintenance manuals, ensuring lasting impact.

Other initiatives include an integrated therapeutic horticulture module where students design activities for adults with intellectual disabilities, deepening empathy and inclusivity. Collaborations with external partners, such as Stepping Stone Forests and Athenry Beekeepers, bring biodiversity, pollination, and climate awareness into teaching while offering students authentic professional experiences. The GLAS Community Garden (Green Living and Sustainability), managed with Fingal County Council and Global Action Plan, provides a thriving on-campus hub for education, food production, and biodiversity.

While challenges exist, Ms Freeman argued that experiential, community-engaged horticulture fosters knowledge-sharing, teamwork, and leadership. Students learn not just horticultural skills but also how to act as sustainability advocates. These partnerships enrich teaching, support community resilience, and create a powerful model of education aligned with TU Dublin's people-planet-partnership vision.

About the author

Rachel Freeman
TU DUBLIN

Rachel Freeman is a Lecturer in Horticulture in the School of Culinary Arts and Food Technology at TU Dublin.

19. Sustainable Design in Civil and Structural Engineering: A case study of new module development

CAITRÍONA QUINN



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=135>

Caitríona Quinn described the development of a final-year module on Sustainable Design for civil and structural engineering students. The module was introduced in response to feedback from industry, requirements from Engineers Ireland accreditation, and TU Dublin's strategic commitment to sustainability. Employers increasingly expect graduates to be “sustainability literate,” and accreditation criteria now explicitly demand competence in sustainable practices.

Delivered jointly by two lecturers, the module replaced a mathematics elective and brings together final-year civil and structural cohorts. Its design emphasises workshop-based

learning, guest lectures from industry, and project-based assessments. Students work on authentic tasks such as designing urban greening features to enhance biodiversity or conducting lifecycle carbon assessments of buildings, redesigning them to reduce embodied emissions.

The curriculum integrates key topics including climate change, energy policy, mitigation and adaptation strategies, renewable energy technologies, and ethical decision-making. While initial iterations faced logistical challenges (e.g., scheduling on Friday afternoons, excessive assessments), the module has since evolved into two thematic strands: biodiversity and energy. Assessments were streamlined and peer-to-peer evaluation introduced to strengthen engagement.

Ms Quinn highlighted the importance of explicitly addressing the social dimensions of sustainable engineering, encouraging students to consider community impacts alongside technical outcomes. She noted that while sustainability concepts can be integrated across engineering curricula, a dedicated module provides a vital opportunity for students to consolidate prior knowledge, apply systems thinking, and prepare for professional practice as engineers capable of leading change.

About the author

Caitríona Quinn
TU DUBLIN

Caitríona Quinn, MSc PGDip, is a Lecturer in the School of Transport and Civil Engineering at TU Dublin.

20. Education for Sustainable Development: An Assessment

Approach

DR RÓISÍN VIZE



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Dr Róisín Vize shared how sustainability has been embedded into assessment design for digital marketing students, focusing on the *Smarter Travel* national competition organised by Transport for Ireland. The initiative challenges third-level students to create campaigns that promote sustainable and active travel to and from campus.

Students begin by completing the SULITEST tool, reflecting on their own sustainability literacy and values. They then design a poster and develop a detailed, implementable behaviour change campaign, drawing on marketing theory and the GreenComp framework. This links classroom learning directly with real-world action and provides an external platform for students to showcase their work, as entries are judged by industry experts.

Examples of student projects include carpooling reward systems, social media advocacy campaigns such as *Active April*, app designs to improve public transport accessibility, and gamified staff initiatives that track transport-related carbon savings. Many projects aligned not only with SDG 11 (Sustainable Cities and Communities) and SDG 12 (Responsible Consumption and Production), but also with health, wellbeing, and equality goals.

Reflection is built into the assessment, with students reporting how participation gave them a sense of agency in tackling

sustainability issues and reduced climate anxiety. Several described changing their own commuting behaviours as a direct result.

Dr Vize concluded that assessment for ESD should go beyond measuring knowledge: it can engage students in meaningful, action-oriented learning that prepares them to become ethical, sustainability-conscious professionals.

About the author



Dr Róisín Vize
TU DUBLIN

Dr Róisín Vize is a Lecturer in Digital Marketing, School of Marketing and Entrepreneurship at TU Dublin.

PART VI

MARY IMMACULATE
COLLEGE

21. Overview of ESD at Mary immaculate College – Collective Consolidation

PROFESSOR LORRAINE MCILRATH



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from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=151>

Professor Lorraine McIlrath provided a strategic overview of how ESD is being embedded across MIC, framed by both institutional priorities and the UN SDGs. With a heritage as a teacher training college grounded in social justice, MIC has expanded this ethos to embrace environmental sustainability alongside equality and inclusion.

Central to this work is the recently published MIC Climate Action Roadmap to 2030, which commits to a 64% reduction in greenhouse gas emissions from baseline levels. This roadmap is structured around six themes and overseen by the Environmental and Sustainability Committee, a cross-functional group linking academic expertise with operational best practice. Leadership is further embedded through a designated senior-level Climate Action Champion and integration of sustainability as a standing item for the university's executive team and governing authority.

Professor McIlrath highlighted how the SDGs guide both strategic planning and practical initiatives, ranging from gender

equality and inclusive policy reform to climate-focused campus operations. Examples include projects on gender equality in higher education, which brought together 65 authors across Irish institutions for a forthcoming Palgrave publication, and initiatives supporting life-course transitions such as breastfeeding-friendly campuses, free access to sustainable period products, and menopause awareness programmes.

Other projects include partnerships with local and national bodies to support refugees, asylum seekers, and migrants, such as an English for Academic Purposes certificate co-delivered with Limerick and Clare ETB. Professor McIlrath emphasised that partnerships (SDG 17) underpin MIC's approach, combining top-down strategy with grassroots engagement to create a culture of sustainability and inclusion.

About the author



Professor Lorraine McIlrath
MARY IMMACULATE COLLEGE

Professor Lorraine McIlrath is the Director of Equality, Diversity, Inclusion and Interculturalism (EDII) at Mary Immaculate College.

Playing to our traditional strengths to deliver ESD: Teacher Education and ESD

DR ANNE DOLAN



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Dr Anne Dolan outlined how Mary Immaculate College (MIC) integrates ESD into its undergraduate and postgraduate teacher education programmes, building on a long tradition of environmental and social learning in primary schools. From “nature tables” to outdoor excursions, sustainability has long been a feature of Irish education, but today it is reinforced by national and international policy, including UNESCO frameworks and Ireland’s second National Strategy on ESD.

She highlighted how SDG 4.7—ensuring that all learners acquire knowledge and skills for sustainable development—sits at the heart of curriculum reform. In Ireland, exciting developments are underway: the early years framework *Aistear* has been updated; a new primary curriculum framework explicitly embeds strands such as *Environment and Sustainable Living*; and senior cycle reform includes the review of geography and the piloting of a new Leaving Certificate subject on Climate Action and Sustainable Development, which Dolan chairs.

At MIC, teacher education is guided by the Teaching Council's Standards for Initial Teacher Education, which mandate Global Citizenship Education across programmes. Dolan has authored and co-authored key resources to support this, including *Powerful Primary Geography*, *Teaching Climate Change in Primary Schools*, and *Teaching the Sustainable Development Goals*. These are accompanied by open-access digital resources, including a national Padlet of teaching materials for every SDG.

MIC also offers specialist courses, including a new Masters in Education for Sustainability and Global Citizenship, with strong emphasis on outdoor learning and partnerships with organisations such as the Burrenbeo Trust and the Explorers Marine Education Programme.

About the author



Dr Anne Dolan
MARY IMMACULATE COLLEGE

Dr Anne Dolan is an Associate Professor at Mary Immaculate College.

23. New pathways for innovative ESD (Part 1)

EMMA GLEESON



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=155>

Emma Gleeson shared insights from her doctoral research on effective climate change education, positioning it as a vital pathway for sociocultural transformation. She argued that education must go beyond knowledge transfer to actively challenge unsustainable values and practices, fostering students as agents of change who are willing and able to act.

Her research identifies several core principles of effective climate change education, beginning with the need to make learning meaningful by helping students build connections—to nature, to those directly impacted by the climate crisis, and to their own communities through experiential and collaborative learning. This fosters care, empathy, and personal responsibility.

Critical thinking is another cornerstone. Students must be equipped to interrogate and disrupt the sociocultural systems that underpin climate change. Ms Gleeson emphasised the role of critical media literacy, enabling learners to question consumerist narratives that equate self-worth with consumption, and to resist the culture of overconsumption. Similarly, incorporating critical political and historical perspectives empowers students to understand climate change as both an environmental and social justice issue.

Her findings, published in *Environmental Education Research* (co-authored with Dr John Morrissey), call for climate education that is thematic, cross-curricular, and emotionally engaged. She also surveyed over 200 primary teachers in Ireland, highlighting both enthusiasm for teaching climate change and barriers to

implementation. Ms Gleeson concluded that effective climate change education requires integration across curricula and must be deliberately designed to nurture active, critically aware citizens who can contribute to a more sustainable future.

About the author



Emma Gleeson
MARY IMMACULATE COLLEGE

Emma Gleeson is a PhD Scholar in the Department of Geography at Mary Immaculate College.

24. New pathways for innovative ESD (Part 2)

DR JOHN MORRISSEY



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=157>

Dr John Morrissey discussed how the Department of Geography at

disciplinarity, and applied problem-solving. Though small in size, the department maintains diverse expertise—ranging from political ecology to geospatial science—which feeds directly into teaching and aligns with SDGs including 4 (Quality Education), 11 (Sustainable Cities), 12 (Responsible Consumption), and 13 (Climate Action).

Dr Morrissey highlighted the department's investment in postgraduate research, with PhD and MA students contributing cutting-edge scholarship on climate change education and climate justice. This research is directly integrated into undergraduate teaching, ensuring students engage with live debates and emerging findings rather than static content.

At postgraduate level, two new masters programmes highlight MIC's innovative ESD pathways: the MA/MSc in Environment, Society and Culture, which explores interactions between human and natural systems, and the MA in Climate Justice and Sustainability, jointly delivered with the Department of Philosophy. This latter programme combines environmental ethics and climate justice with geographical expertise in transitions and sustainability, embodying a transdisciplinary model.

A distinctive feature is the Environmental Consultancy module, in which students work with external partners (such as Adare Manor and community organisations) on real-world sustainability projects. This provides hands-on experience, builds transferable skills, and demonstrates how theoretical knowledge translates into applied solutions.

Dr Morrissey concluded that MIC's geography department exemplifies how research integration, cross-disciplinary collaboration, and real-world application can create meaningful new pathways for ESD in higher education.

About the author

Dr John Morrissey
MARY IMMACULATE COLLEGE

Dr John Morrissey is an Associate Professor in Geography at Mary Immaculate College.

25. Supporting SDGs in Curriculum Design

DR KATHERINE WHITEHURST



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=159>

Dr Katherine Whitehurst outlined how Mary Immaculate College (MIC) is embedding the SDGs into curriculum design through structured approval processes, inclusive pedagogies, and digital innovation.

At institutional level, all new programmes and significant modifications must pass through an academic programme approval system. To support this, MIC has developed ABC curriculum design workshops adapted with principles of Universal Design for Learning (UDL). These ensure accessibility and inclusion are considered from the outset of programme development. Learning designers and academic developers provide additional guidance on aligning outcomes, assessment, and technology with inclusive practice.

Beyond approval, MIC offers workshops to help staff design accessible and inclusive Moodle and module pages. Redesign

windows allow academics to rework existing assessments or modules, applying UDL principles and accessibility standards. This proactive approach ensures inclusion is sustained beyond initial programme design.

Digital tools are also central. Platforms such as YuJa (for captioned video) and Mahara (for flexible learning portfolios) enable students to engage with materials in multiple formats, while staff are trained to embed accessibility features. A forthcoming technological standards framework will set expectations for accessibility in all teaching tools.

Grassroots initiatives are celebrated through case studies of staff embedding inclusive practices in their modules. Communities of practice and UDL digital badges further support cultural change.

Dr Whitehurst emphasised that these measures make inclusion and sustainability inseparable, ensuring programmes align with MIC's values of equality, diversity, justice, and the global SDG agenda.

About the author



Dr Katherine Whitehurst
MARY IMMACULATE COLLEGE

Dr Katherine Whitehurst is the Director of Teaching and Learning at Mary Immaculate College.

PART VII

ATLANTIC

TECHNOLOGICAL

UNIVERSITY

26. Overview of ATU ESD Academy

DR JOHN SCAHILL



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=176>

Dr John Scahill introduced the newly established ATU ESD Academy, created to strengthen and coordinate ESD across the university. A partnership between ATU's Teaching and Learning Centre and the ATU Centre for Sustainability, the Academy provides a central hub for training, resources, and collaboration. It supports staff and students in embedding sustainability into teaching, learning, and practice through accredited programmes, workshops, and digital tools.

Core activities include the Postgraduate Certificate in Education for Sustainability, a Level 6 Certificate on the SDGs, and over 17 MOOCs aligned to the UN Global Goals. The Academy also delivers national digital badges in ESD and curriculum design, equipping educators with practical frameworks. A significant focus is Carbon Literacy Training, with ATU aiming to roll this out at scale, building staff and student confidence in climate-focused action.

Dr Scahill highlighted the Academy's role in cultivating a community of practice, bringing together dispersed sustainability initiatives and ensuring good practice is shared across ATU's nine

ensure that sustainability is not an add-on but a core principle woven into teaching, research, and operations. Positioned as an AASHE-accredited centre, ATU stands alongside TU Dublin as designated leaders in embedding sustainability across the curriculum.

About the author



Dr John Scahill

ATLANTIC
UNIVERSITY

TECHNOLOGICAL

Dr John Scahill is a member of the Department of Building and Civil Engineering and Co-Lead of the Atlantic Technological University ESD Academy.

27. Engaging Community through the Power to Change Project

DR YVONNE LANG



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=178>

Dr Yvonne Lang showcased the Power to Change Project, an initiative developed in partnership with the Sligo Public Participation Network to strengthen community capacity in addressing climate challenges. Funded by the Department of the Environment, Climate and Communications, the project emphasises mentorship, climate education, and community-based learning.

Three strands underpin the project: a community mentoring programme, climate education clubs, and a woodland-based initiative. The mentoring strand supports local groups in identifying achievable climate actions tailored to their resources. The education clubs focus on bridging formal education and lived community knowledge, recognising the value of both. Activities have been co-created with schools, youth groups, and local organisations.

Dr Lang highlighted the development of “SDGs and Me: Nurturing Our World”, a workbook co-designed with 10–12-year-olds. Featuring creative activities linking the SDGs to nature and daily life, the workbook empowers children as “SDG Champions” and has since been published as an e-resource. Workshops and interactive sessions ensured the children’s voices directly shaped its content, embedding ownership and pride.

Youth and higher education engagement have also been central. Transition Year students were introduced to local climate policy forums, while ATU students collaborated with community groups such as BirdWatch Ireland, Sligo Global Kitchen, and active travel networks, aligning academic projects with real-world needs.

The project demonstrates how community partnerships, creative learning tools, and policy connections can amplify climate action

and make sustainability education accessible, relevant, and empowering across age groups.

About the author



Dr Yvonne Lang
ATLANTIC TECHNOLOGICAL
UNIVERSITY

Dr Yvonne Lang is a Lecturer and Project Manager on the Power to Change project at Atlantic Technological University.

28. An Analysis of the Environmental Attitudes of Undergraduate Construction Management Students

DR JAN GOTTSCHÉ



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=182>

Dr Jan Gottsche presented findings from a study exploring the environmental attitudes of undergraduate construction management students using the New Ecological Paradigm (NEP) scale. With the construction sector heavily linked to climate and resource challenges, the research examined whether teaching interventions could shift student perspectives towards sustainability.

Second-year students undertaking the Environmental Management module were surveyed at the beginning and end of a semester. The module covers global sustainability challenges such as resource depletion, biodiversity loss, and climate change, alongside practical solutions. Teaching drew on problem-based learning, collaborative activities, and reflective practice, with tools such as the Climate Fresk workshop, SDG action games, and case studies.

The NEP results indicated a positive shift towards pro-ecological worldviews across all 15 survey questions. Students also reported more sustainable behaviours at home, such as energy conservation, waste segregation, and shorter showers.

Qualitative insights from focus groups reinforced the findings: students reported being more aware of environmental issues and more motivated to act, though many stressed the importance of collective responsibility for meaningful change.

Dr Gottsche concluded that structured, research-led sustainability teaching can influence attitudes and behaviours, while students themselves expressed a preference for continuous assessment approaches over traditional exams. The study highlights the importance of embedding ESD early and systematically into construction-related programmes, preparing graduates to lead in a sector pivotal to climate action.

About the author

Dr Jan Gottsche

ATLANTIC

TECHNOLOGICAL

UNIVERSITY

Dr Jan Gottsche is a Lecturer in the Department of Building and Civil Engineering at Atlantic Technological University.

29. Embodying Outdoor and Place-Based ESD

DR DEIRDRE GARVEY AND KEVIN O'CALLAGHAN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=180>

Dr Deirdre Garvey and Kevin O'Callaghan presented on ATU Mayo's distinctive focus on outdoor and place-based education, where the local environment itself becomes a classroom. Dr Garvey described how the Department of Environmental Humanities and Social Sciences integrates natural, social, and cultural environments into teaching and research, underpinned by the long-standing Mayo Green Campus initiatives. Projects such as the Swift Conservation programme, biodiversity gardens, poetry pillars, and food security events exemplify how campus life is interwoven with sustainability practice and community partnerships.

Kevin O'Callaghan, Programme Coordinator for the MSc in Outdoor Education, Sustainability and Wellbeing, expanded on the pedagogical approach underpinning these activities. ATU's outdoor education programmes emphasise experiential, transformative, and

place-based learning, where students engage directly with forests, waterways, and local communities. Assignments are often rooted in campus or regional projects, from developing outdoor classrooms to supporting play days with local health services.

Central to the approach is enabling students to become change agents. Learning is scaffolded so students begin with small, achievable actions and progress to more ambitious sustainability initiatives, building resilience and agency. Failures are reframed as part of the process, preparing students to tackle complex real-world challenges.

The MSc programme blends immersive outdoor experiences, cross-disciplinary input, and community partnerships.

About the authors



Dr Deirdre Garvey

ATLANTIC
UNIVERSITY

TECHNOLOGICAL

Dr Deirdre Garvey is the Head of the Department of Environmental Humanities and Social Sciences and Chair of the Atlantic Technological University Mayo Green Campus.



Kevin O'Callaghan

ATLANTIC
UNIVERSITY

TECHNOLOGICAL

Kevin O'Callaghan is the Programme Co-ordinator for the MSc in Outdoor Education, Sustainability and Wellbeing and a Lecturer in Outdoor Education at Atlantic Technological University.

PART VIII
SOUTH EAST
TECHNOLOGICAL
UNIVERSITY

30. Education for Sustainable Development at SETU

DR DAVID RYAN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=199>

Dr David Ryan outlined how SETU, Ireland's newest university, is embedding sustainability across strategy, operations, and education. Established in 2022, SETU serves over 18,000 students across 11 campuses, with sustainability positioned as a core pillar of its inaugural strategic plan.

The university's sustainability agenda is framed around four interlinked pillars: climate action, biodiversity and nature restoration, regional leadership in the green transition, and education for sustainable development (ESD). Key commitments include achieving net zero by 2040, developing nature-centred campuses, and ensuring every graduate is equipped with sustainability knowledge and competencies.

Dr Ryan emphasised that SETU's 5,000 graduates each year represent its greatest impact on sustainable development, as they bring sustainability thinking into their professions and communities. To support this, SETU is aligning with the national ESD strategy while developing its own institutional framework that integrates ESD into teaching, learning, and staff development.

The approach is intentionally broad, spanning science,

curriculum with place-based initiatives such as the Living Lab at Carriganore. Dr Ryan stressed that SETU sees sustainability not as a series of projects but as a whole-institution culture, with ESD central to the student experience.

Embedding sustainability into leadership, governance, and curriculum, SETU is positioning itself as a regional driver of the green transition and as a model for systemic, university-wide approaches to ESD.

About the author



Dr David Ryan
SOUTH EAST TECHNOLOGICAL
UNIVERSITY

Dr David Ryan is the Associate Vice President for Sustainability at South East Technological University.

31. The SETU Living Lab at Carriganore

DR DENISE O'MEARA



*One or more interactive elements has been excluded
from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=201>

Dr Denise O'Meara introduced the Carriganore Living Lab, a 120-acre site adjacent to the Waterford Greenway that serves as a hub for teaching, research, and community engagement in sustainability. Developed by the Department of Land Sciences, the Living Lab brings together woodlands, wetlands, biodiversity areas, and agroforestry plots as living classrooms and research spaces.

Students from agriculture, horticulture, forestry, and environmental sciences use the site for hands-on learning, while postgraduate and PhD researchers conduct fieldwork on biodiversity monitoring, pollinator health, regenerative land use, and soil quality. Over 500 students and community members have participated in activities such as tree planting, habitat restoration, and biodiversity walks.

The Living Lab also houses the National Biodiversity Data Centre, providing opportunities for collaboration, training, and citizen science. Partnerships with local schools, Waterford City and County Council, and industry (including sponsors of tree-planting initiatives) strengthen its role as a regional sustainability hub.

Enhancements include pollinator corridors, native bee and bat boxes, biodiversity gardens, and sustainability-focused trails. A new Biodiversity Hub and outreach centre is also in development. The initiative is complemented by a Biodiversity and Sustainability Forum, launched to bring together academics, students, policymakers, and industry to address regional knowledge gaps and guide collaborative research.

Dr O'Meara highlighted the Living Lab as a scalable and inclusive model for ESD, linking theory with practice and fostering community engagement. It exemplifies SETU's commitment to place-based sustainability, while inspiring active, experiential learning and interdisciplinary research.

About the author



Dr Denise O'Meara

SOUTH EAST TECHNOLOGICAL
UNIVERSITY

Dr Denise O'Meara is a Lecturer in Molecular Biology in the Department of Science, School of Science and Computing at South East Technological University.

32. Sustainability in the Arts Festival

DR HAZEL FARRELL



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=203>

Dr Hazel Farrell presented the Sustainability in the Arts Festival, an innovative initiative designed to engage students in the Sustainable Development Goals (SDGs) through creativity. Now in its third year, the festival has expanded from a one-day pilot into a multi-

campus, multi-day event with national and international collaborations.

The festival emerged from a humanities staff group seeking deeper student engagement with sustainability. Initially, many students had little awareness of the SDGs or their relevance to the arts. Through the festival model, students explored how sustainability connects to music, visual art, culinary practice, design, and performance, leading to projects on themes such as inequality in the music industry, sustainable festival management, and creative activism.

Events have included installations from recycled materials, collaborative performances, climate-themed compositions, culinary demonstrations of sustainable foods, and community outreach projects with schools. Partnerships with Georgia Southern University (USA), Queen's University Belfast, and the Sustainable Development Solutions Network have broadened the impact, with student exchanges and joint performances.

The festival won a national SATLE Impact Award for ESD in recognition of its unique focus on the arts and demonstrable growth. Students describe it as empowering, allowing them to showcase their work publicly and connect with global issues in ways that feel authentic and inspiring.

Dr Farrell emphasised that the festival fosters peer learning, interdisciplinary teaching, and student agency, transforming campuses into “canvases” for sustainability and positioning the arts as a powerful medium for SDG engagement.

About the author

Dr Hazel Farrell

SOUTH EAST TECHNOLOGICAL
UNIVERSITY

Dr Hazel Farrell is the Academic Lead for GenAI and Programme Leader for the BA (Hons) Music at South East Technological University, and the Lead for the South East Technological University Sustainability in the Arts Festival.

33. SDGs in Architecture at the Granary

JUERGEN BAUER



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=205>

Juergen Bauer shared how SETU's Department of Architecture embeds the 17 UN SDGs into its curriculum, particularly in the early years of study. While some goals—such as sustainable cities, infrastructure, and climate action—are clearly aligned with architecture, the challenge lies in translating all SDGs into meaningful design tasks.

Through global case studies, students explore how architecture intersects with issues like gender equality, water sanitation, and poverty alleviation. Examples include designing safe, semi-transparent sanitation facilities for women in India (SDG 5) or integrating stormwater parks into urban design (SDG 6). These

demonstrate how abstract goals can become tangible architectural interventions.

Mr Bauer stressed that the SDGs should not be treated as a labelling exercise, but as vehicles for critical discussion and inspiration. Students are encouraged to question greenwashing and critically analyse international sustainability rankings, linking global frameworks to local responsibilities.

The department also integrates the planetary boundaries model from the Stockholm Resilience Centre to prioritise themes most relevant to architecture—such as carbon emissions, land system change, and water use. This leads to guiding principles such as “design out CO₂,” “design in nature,” and “design in water”, which shape studio briefs and design critiques.

By challenging traditional architectural education to embrace resilience, biodiversity, and resource limits, the programme equips students to see architecture not only as building design, but as a practice embedded in wider environmental and social systems.

About the author



Juergen Bauer

SOUTH EAST TECHNOLOGICAL
UNIVERSITY

Juergen Bauer, Dipl. Ing. Architekt MRIA, is a Lecturer in the Department of Architecture and the Built Environment and the Department Coordinator of HCI Building Change 2022–2025 at South East Technological University.

The SETU GrowthHub

DR MARGARET TYNAN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=208>

Dr Margaret Tynan introduced the GrowthHub, a Human Capital Initiative (HCI) funded project developed in collaboration with TU Dublin to foster entrepreneurial mindsets with sustainability at their core. Based in a purpose-built collaborative learning space, GrowthHub uses design thinking, hackathons, and experiential learning to help students tackle real-world challenges.

Sustainability is positioned as a driver of innovation and entrepreneurship, creating opportunities for students to explore business models that deliver economic, social, and ecological value. Activities include ideation workshops grounded in the SDGs, speaker events featuring sustainable entrepreneurs, and student-led initiatives such as swap shops and circular fashion panels.

A flagship event, InspireFest, focused on sustainable entrepreneurship. It combined keynote talks, panel discussions, and design sprints with student showcases, craft fairs, and upcycling challenges. The aim was to inspire students by highlighting positive, solution-oriented approaches to sustainability while providing hands-on opportunities to act.

GrowthHub also supports staff through training in new methodologies (such as the Climate Fresk) and funds cross-disciplinary projects through bursaries. Upcoming initiatives include Innovate for Sustainability, a multi-institutional

programme of design sprints and accelerators focused on sustainable enterprise.

Dr Tynan emphasised that sustainability can feel overwhelming for students. GrowthHub reframes it as an opportunity, celebrating what can be achieved and demonstrating that entrepreneurial thinking can be a powerful catalyst for sustainable change.

About the author



Dr Margaret Tynan

SOUTH EAST TECHNOLOGICAL
UNIVERSITY

Dr Margaret Tynan is the GROWTHhub Project Lead and a Senior Lecturer in Enterprise and Management at South East Technological University.

PART IX

TRINITY COLLEGE DUBLIN

35. A Framework to Support Curriculum Design for ESD – facilitating the embedding of ESD into the Trinity Curriculum

DR CAITRÍONA NÍ SHÉ



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=223>

Dr Caitríona Ní Shé outlined Trinity College Dublin's new curriculum design framework for Education for Sustainable Development (ESD). Developed through a HEA SATLE funded ESD Fellows programme, the framework is designed to support academics embedding sustainability into their programmes and modules in ways that are coherent, accessible, and discipline-appropriate.

Rather than working directly from all 17 SDGs, the framework focuses on a set of broad ESD themes, informed by the “wedding cake” model of planetary boundaries, society, and economy. These themes are linked to UNESCO's key sustainability competencies—such as systems thinking, critical reflection, and anticipatory skills

—ensuring that teaching fosters not only knowledge but also values and action.

Three pedagogical approaches underpin the framework: learner-centred, action-oriented, and transformative teaching. Dr Ní Shé emphasised that these must be embedded alongside teaching, learning, and assessment strategies to create a “jigsaw” where all four pieces—themes, competencies, pedagogies, and assessment—work together.

To help staff engage, Trinity has launched an online resource hub, including competency guides, assessment ideas, and a “quick start” section for lecturers not yet ready to redesign whole modules. Toolkits and workshops are also being developed to support programme teams, while professional development builds on early pilot modules.

Dr Ní Shé highlighted that this structured approach provides both flexibility and consistency, enabling Trinity to scale up ESD while respecting disciplinary differences. Ultimately, the framework aims to ensure that every student develops sustainability competencies as part of their Trinity education.

About the author



Dr Caitríona Ní Shé
TRINITY COLLEGE DUBLIN

Dr Caitríona Ní Shé is an Academic Developer in the Centre for Academic Practice at Trinity College Dublin.

36. Enacting Education for Sustainable Development in Trinity Business School

DR CICELY ROCHE AND DR NORAH CAMPBELL



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=226>

Dr Cicely Roche presented the rollout of a mandatory first-year ESD module in Trinity Business School, developed collaboratively by the ESD Fellows team and led in practice by Dr Norah Campbell. The module, *Enacting Sustainable Development*, is now taken by all incoming business students across five programmes—over 500 learners in 2024.

The module was co-designed through a partnership model involving academics, librarians, professional staff, and student interns. Piloted with staff in 2023, it blends lectures with small-group workshops facilitated by trained leaders, enabling students to explore sustainability themes through debates, case studies, and systems mapping.

Central to the design are UNESCO sustainability competencies and Trinity's graduate attributes, with teaching framed around the planetary boundaries “wedding cake” model. Content is discipline-specific: Dr Campbell, for example, contextualised the nitrogen cycle through everyday examples like packaged salad bags, crisps,

and shamrocks—linking environmental science to culture and business.

Assessment balances knowledge and engagement: multiple-choice tests sit alongside workshop participation and reflective writing. Early feedback has been overwhelmingly positive, with students reporting greater awareness of system interconnections and appreciation of workshop debates on real-world issues such as mining, immigration, and misinformation.

Dr Roche emphasised that success depended on both top-down strategic commitment and bottom-up collaboration. The module demonstrates that large-scale, interdisciplinary ESD teaching is possible when supported by leadership, professional development, and courageous disciplinary champions. It now serves as a blueprint for expanding ESD across Trinity curricula.

About the authors



Dr Cicely Roche
TRINITY COLLEGE DUBLIN

Dr Cicely Roche is an Associate Professor in the School of Pharmacy and Pharmaceutical Sciences and a Fellow in Education for Sustainable Development at Trinity College Dublin.

Dr Norah Campbell
TRINITY COLLEGE DUBLIN

Dr Norah Campbell is an Associate Professor in Trinity Business School at Trinity College Dublin.

37. A Roadmap to Inform and Track Trinity's ESD Journey

DR JOHN GALLAGHER



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=228>

Dr John Gallagher presented Trinity's work to map and measure the integration of ESD across programmes and modules, providing both a baseline and a roadmap for future action. Recognising that embedding sustainability requires evidence, his project focuses on tracking where and how ESD appears in teaching, and how this aligns with Trinity's sustainability strategy.

The mapping framework mirrors the institutional design model: linking ESD themes, UNESCO competencies, pedagogical approaches, and assessment strategies. Module descriptors, programme handbooks, and assessment outlines are analysed using keyword searches, manual review, and increasingly AI-assisted methods. The process aims to identify both explicit sustainability content and implicit opportunities for expansion.

Dr Gallagher stressed that mapping has two key functions. At the institutional level, it provides quality assurance, supports national

reporting, and informs rankings. At the disciplinary level, it enables lecturers to see how their modules align with ESD and where they could expand—without adding excessive workload. By surfacing best practice, it also creates opportunities for staff to learn from one another.

The roadmap seeks to ensure that all students encounter sustainability meaningfully during their time at Trinity, whether at undergraduate or postgraduate level. Dr Gallagher highlighted the importance of capturing not only which SDGs are referenced, but also the interconnections—so that students develop systems thinking rather than viewing goals in isolation.

This dual top-down and bottom-up approach will provide a transparent, scalable way to track Trinity's progress, embedding ESD as a measurable and integral part of the student journey.

About the author



Dr John Gallagher
TRINITY COLLEGE DUBLIN

Dr John Gallagher is an Associate Professor in the Department of Civil, Structural and Environmental Engineering at Trinity College Dublin.

Music and Climate: A Case Study in Ecomusicological Pedagogy

DR JONATHAN HODGERS



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=231>

Dr Jonathan Hodgers introduced *Music and Climate*, a five-credit module launched in 2022 in Trinity's Department of Music. The course demonstrates how ESD can be embedded through the creative arts, using music as a lens to explore climate change, sustainability, and cultural responses.

With small class sizes of around a dozen students, the module adopts a discussion-based, iterative teaching model with continuous feedback. It is structured around three strands:

1. Industry practices – examining sustainability in festivals, green touring, and venue management.
2. Musical representations of climate – from protest songs to experimental works evoking environmental instability.
3. The industry's carbon footprint – analysing the environmental costs of physical media and streaming platforms.

Students engage in Socratic seminars, presentations, essays, and viva assessments, building critical thinking and communication

skills. The iterative structure ensures each assessment builds on the last, reinforcing deep engagement.

The module aligns naturally with several SDGs, particularly Quality Education (4), Responsible Consumption (12), and Climate Action (13). It also cultivates UNESCO competencies such as systems thinking, anticipatory and normative skills, and self-awareness through group dialogue.

Feedback has been strongly positive, with students particularly struck by the hidden environmental costs of streaming, which challenged their assumptions. Dr Hodggers emphasised that music provides an inherently interdisciplinary space, drawing on humanities, STEM, and business perspectives. By situating climate action within cultural expression, the module empowers students to see sustainability not just as science or policy, but as something deeply embedded in everyday cultural life.

About the author



Dr Jonathan Hodggers
TRINITY COLLEGE DUBLIN

Dr Jonathan Hodggers is a Lecturer in the Department of Music in the School of Creative Arts at Trinity College Dublin.

PART X
MUNSTER
TECHNOLOGICAL
UNIVERSITY

39. A University Wide Approach for an Inclusive Curriculum for a Sustainable Future

DR NIAMH POWER



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=247>

Dr Niamh Power outlined MTU's journey toward embedding Education for Sustainable Development (ESD) at an institutional scale. Recognising that sustainability cannot be advanced in silos, MTU has developed a university-wide framework that integrates ESD into strategy, policy, curriculum design, and review processes.

The process began with the MTU Strategic Plan, where sustainability and the UN SDGs were identified as strategic enablers. This commitment was operationalised through the curriculum framework, adapted from the national N-TUTORR framework but enhanced with MTU's own emphasis on student-centred learning, inclusivity, and sustainability competencies. UNESCO's ESD competencies and the EU's GreenComp framework underpin this work, ensuring graduates develop not only knowledge but also skills in systems thinking, anticipatory decision-making, and responsibility.

Policies for programme design and approval now explicitly require sustainability to be addressed, while the Faculty Enhancement Review process ensures compliance and continuous improvement. The newly launched Sustainability Strategy 2025–2035 adds further weight, with 100 action points assigned to responsible individuals, spanning education, operations, and culture.

Dr Power emphasised that this approach is not about ticking boxes but about creating a culture of sustainability visible across the university environment. By aligning strategic leadership with staff training, curriculum review, and student engagement, MTU aims to graduate students with the competencies to lead in a sustainable future, while modelling sustainability through its own practices.

About the author



Dr Niamh Power

MUNSTER
UNIVERSITY

TECHNOLOGICAL

Dr Niamh Power is a Lecturer in Civil, Structural and Environmental Engineering at Munster Technological University and Chairperson of the Environmental Science Association of Ireland.

40. CARES: Curriculum Advancements & Rapid

Embedding of Sustainability

DR AISLING O'GORMAN AND MARIA CULLINANE



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=249>

Dr Aisling O'Gorman and Maria Cullinane presented CARES, a student-staff collaboration to rapidly embed sustainability into engineering curricula. The project, funded under SATLE, pilots new approaches in Sustainable Energy and Chemical & Biopharmaceutical Engineering, with the goal of scaling across disciplines.

CARES takes a design thinking approach, emphasising co-creation with students. Undergraduate students joined the project team, contributing to curriculum redesign, piloting UNESCO/GreenComp sustainability competencies in modules, and even facilitating a Concern World Café on climate justice and biodiversity alongside students from other disciplines. Their involvement empowered them as both learners and educators, enriching the redesign process with authentic student perspectives.

A major focus has been the redesign of MTU's common first-year "Creativity, Innovation, Teamwork" module, taken by students across 119 programmes. Students identified which aspects to retain (e.g. teamwork, academic writing, the Business Model Canvas) and proposed ways to embed sustainability more deeply through green competencies, continuous assessment, and project-based work.

This ensures sustainability is not just content to “add on” but a thread woven into assessments and teamwork.

CARES also benchmarks against international frameworks like *Engineering for One Planet* and the UK's *Reimagined Degree Map*, adapting them for MTU. By combining staff leadership with student empowerment, the project demonstrates how sustainability can be embedded rapidly and meaningfully in curricula, while modelling the collaborative ethos of ESD itself.

About the authors



Dr Aisling O’Gorman
MUNSTER TECHNOLOGICAL
UNIVERSITY

Dr Aisling O’Gorman is a Programme Coordinator and Lecturer in Chemical and Biopharmaceutical Engineering at Munster Technological University.



Maria Cullinane
MUNSTER TECHNOLOGICAL
UNIVERSITY

Maria Cullinane is the Programme Coordinator for Sustainable Energy Engineering at Munster Technological University.

4I. ‘A Healthy MTU’: Leveraging universities as settings for health, wellbeing, and sustainable development.

DR ANDREA BICKERDIKE



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=251>

Dr Andrea Bickerdike presented A Healthy MTU, a multi-campus initiative positioning the university as a setting for health, wellbeing, and sustainability. Rooted in the WHO Healthy Universities model and Ireland’s Healthy Campus Charter, the programme recognises that wellbeing and sustainability are inseparable—and that universities, by their scale and reach, can act as powerful enablers of both.

The initiative takes a whole-campus approach, embedding health and sustainability across leadership, culture, physical and virtual environments, and curricula. Examples include:

- *Project STEPS*, a student-led walking intervention linked to active travel and green spaces, integrated into Level 8 and 9 modules.

- A community partnership programme where sports science students designed adapted physical activity for older adults.
- A Kerry campus initiative linking World Mental Health Day with outdoor immersion activities, exploring both wellbeing and SDGs.

Student workshops on healthy, sustainable food preparation, reducing waste while promoting equity.

Aligned research examines nutrition metrics and the campus food environment, assessing health, equity, and sustainability outcomes. Importantly, A Healthy MTU bridges policy and practice, integrating wellbeing into research, curriculum, and culture simultaneously.

Dr Bickerdike emphasised that health and sustainability challenges share root causes in environmental, societal, and economic systems. By addressing these holistically, MTU is embedding wellbeing as part of its sustainability culture, ensuring graduates and communities benefit alike.

About the author



Dr Andrea Bickerdike

MUNSTER
UNIVERSITY

TECHNOLOGICAL

Dr Andrea Bickerdike is a Lecturer in Health and Wellbeing and Director of “A Healthy MTU” at Munster Technological University.

42. A Design Thinking approach to implementing Sustainability Thinking in teaching practice

LISA ZIMMERMANN



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Lisa Zimmermann shared her experience of embedding sustainability thinking in visual communications education. In a field lacking established regulation or consensus on sustainability, she emphasised the importance of preparing students for the everyday design decisions that shape environmental and social outcomes.

Rather than relying solely on broad global frameworks like the SDGs, Lisa advocates for discipline-specific sustainability skills. Her teaching focuses on three parameters:

1. Responsibility – awareness of design's impact on society and the environment.
2. Materiality – critical understanding of materials, formats, and media, whether digital or print.

3. User Experience (UX) Principles – applying design thinking to ensure communication is meaningful, inclusive, and efficient.

She illustrated this with design briefs that incorporate sustainability considerations at decision points, encouraging students to weigh trade-offs in real-world contexts. Importantly, she often avoids overusing the term “sustainability,” which can overwhelm or feel vague, instead embedding it implicitly in design choices.

Ms Zimmermann positions sustainability thinking as a skillset rather than a subject, cultivated through iterative design thinking and reflection. Her approach blends top-down interventions (frameworks, curriculum redesign) with bottom-up experimentation, empowering students to apply sustainability in tangible ways within their profession.

By grounding sustainability in the everyday realities of design practice even creative disciplines can foster systemic change through granular decision-making, preparing students to lead in industries only beginning their sustainability journeys.

About the author



Lisa Zimmermann
MUNSTER TECHNOLOGICAL
UNIVERSITY

Lisa Zimmermann is an Assistant Lecturer in Visual Communications at Munster Technological University.

PART XI

NATIONAL COLLEGE OF
ART AND DESIGN

43. NCAD Staff Circular Economy Sandpit

ENDA O'DOWD



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=265>

Enda O'Dowd described the Circular Economy Sandpit, a professional development initiative for NCAD staff designed to build shared understanding of sustainability and materials literacy across the college. Drawing on his background in polymer technology, product design, and medical device design, Mr O'Dowd introduced colleagues from fine art, design, education, and visual culture to the complexities of the circular economy, using open-ended “how might we” questions to frame creative discussion.

The sandpit explored tools such as life cycle analysis (LCA) and Granta EduPack, helping staff interrogate the environmental properties of materials they and their students use. Case studies highlighted the realities of recycling at end-of-life, from the technical challenges of recovering metals from hoverboards to the risks of battery explosions in recycling plants. Mr O'Dowd contrasted the elegant simplicity of circular economy diagrams with the messy realities of supply chains, such as cobalt mining in the Congo and global plastic waste markets diverted to countries with weaker regulation.

Participants reflected on questions of extended producer

compliance schemes sometimes obstruct innovation. Mr O'Dowd also challenged anthropocentric assumptions in cradle-to-cradle models, emphasising entropy, material leakage, and the need to design products and systems that last.

By situating sustainability in real-world complexities rather than oversimplified models, the sandpit encouraged NCAD staff to embed critical material awareness, systemic thinking, and narratives of durability and reuse into art and design education.

About the author



Enda O'Dowd
NATIONAL COLLEGE OF ART AND
DESIGN

Enda O'Dowd is a Lecturer and Programme Coordinator for the MSc in Medical Device Design at the National College of Art and Design.

44. Creative Boardroom: Collaborate 4 Climate

LOUISE ALLEN



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=267>

Louise Allen presented Creative Boardroom: Collaborate 4 Climate, an intergenerational programme that brought together 24 company directors and 20 design students from NCAD and IADT to explore climate action through design thinking. Funded by Creative Ireland's Climate Action Fund and delivered through the Creative Futures Academy, the project partnered with the Institute of Directors north and south of the island.

The initiative addressed how climate change and the circular economy can be integrated into board-level decision-making. Directors and students engaged in five workshops covering key systems—food and agriculture, textiles, mobility, and the built environment—supported by experts from SEAI, the EPA, and international sustainability organisations. Using the UK Design Council's double diamond methodology, participants co-created prototypes and actionable strategies.

Students contributed 18 design proposals, focusing on textiles and food systems, while directors identified five major barriers to climate action in boardrooms. Solutions ranged from building shared understanding of climate challenges to incentivising sustainable practices and elevating climate as a central boardroom agenda item.

The project culminated in an exhibition at NCAD Gallery showcasing key climate statistics, student concepts, and board-level commitments. Designed with a low carbon footprint, the exhibition communicates urgent challenges through clear, relatable facts (e.g. the water footprint of a pair of jeans), and is now touring workplaces across Ireland.

Ms Allen highlighted that the programme fostered reverse mentoring, with students' creativity and optimism influencing directors' perspectives, while directors provided mentorship on

organisational realities. This innovative collaboration demonstrates how design education can shift boardroom culture toward systemic climate action.

About the author



Louise Allen

NATIONAL COLLEGE OF ART AND
DESIGN

Louise Allen is the Director of the Creative Futures Academy at the National College of Art and Design.

PART XII

INSTITUTE OF ART, DESIGN
AND TECHNOLOGY

45. Strategic Overview and IADT Roadmap

RÓNÁN O MUIRTHILE



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=282>

Rónán Ó Muirthile outlined IADT's emerging climate and sustainability roadmap, positioning the institute's strategy as both an operational and educational framework for embedding ESD. He emphasised that while IADT is early in its journey, the language of sustainability is now explicit in its institutional strategy, committing to embedding climate action into curricula, daily practices, and decision-making.

Concrete progress has already been made: energy usage has been reduced by 33.5% since 2020, a Climate Action Committee and student "Planeteers" network are active, and a dedicated Sustainability and Climate Officer is being recruited to coordinate efforts. Challenges remain, particularly with older building stock requiring deep retrofitting, but targets are aligned with 2030 national and SEAI goals.

Mr Ó Muirthile stressed the importance of agency and communication, highlighting how sustainability initiatives must empower students rather than exacerbate climate anxiety. Through staff training, revised procurement policies, and everyday

A materiality survey with staff and students revealed near-universal prioritisation of sustainability themes, underscoring the demand for action at all levels. For Mr Ó Muirthile, the next critical step is developing a formal ESD strategy, ensuring sustainability permeates all programmes rather than being confined to standalone modules. He concluded that the challenge ahead is to move from strong policy language to consistent, embedded practice that combines operational change with transformative education.

About the author



Rónán O Muirthile

INSTITUTE OF ART, DESIGN AND
TECHNOLOGY

Rónán O Muirthile is the Head of Faculty and Climate Champion at the Institute of Art, Design and Technology.

46. The Good Guide to Creative Practice

HEITOR LAFORGA DE ARAUJO MONTERIO



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=285>

Heitor Laforga presented *The Good Guide to Creative Practice*, a student-led initiative developed during the MA in Design for Change. Conceived as a practical handbook for students, the Good Guide integrates ethical, sustainable, and inclusive principles into creative education, making complex issues accessible and actionable.

Developed collaboratively with fellow students and staff, the Good Guide is structured around three pillars: People (ethics and inclusion), Planet (environmental sustainability), and Technology (responsible use of digital tools). It provides clear explanations, reflective prompts, and links to further resources, enabling students to consider the social and ecological impacts of their practice.

The team benchmarked existing resources, conducted expert interviews, and surveyed students, finding that first-year cohorts showed particularly strong engagement with sustainability. This feedback shaped the guide's tone and format, ensuring it resonates across creative disciplines. Since completion, it has been integrated into IADT's first-year induction, hosted on the Public Design Lab site, and expanded with thematic toolkits funded through the N-TUTORR project.

Mr Laforga emphasised that the Good Guide is about agency: helping students feel their decisions matter and that they can embed values-driven approaches in their work. By providing simple entry points into what can feel overwhelming, the resource promotes critical thinking, inclusivity, and responsibility in creative education. Its success has led to continued uptake and recognition, with students and staff using it as a practical reference for aligning creative practice with the SDGs and ESD principles.

About the author



Heitor Laforga de Araujo
Monterio

INSTITUTE OF ART, DESIGN AND
TECHNOLOGY

Heitor Laforga de Araujo Monterio is an interdisciplinary designer and researcher, an alumnus of the Institute of Art, Design and Technology, and one of the creators of The Good Guide.

47. SDG Introduction for Students and Curriculum Support for Staff

LOUISE GLYNN



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from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=287>

Louise Glynn described how sustainability has been embedded in the Connect Module, a cross-faculty, first-year course involving 12

programmes and around 400 students. Originally designed to support student transition and collaboration, the module was expanded through the N-TUTORR project to include sustainability and SDGs as core themes.

Students create digital artefacts addressing themes such as climate action, inclusion, and digital transformation. Ms Glynn embedded resources including interactive UN SDG dashboards, data visualisations, and videos (e.g., Jeffrey Sachs on the history of the SDGs, Hannah Ritchie's positive framing of sustainability) to situate global goals in practical, creative contexts. Outputs have included infographics, collages, and campaign materials, showcasing how students interpret sustainability in their own disciplines.

To support staff, colleagues developed an intranet subsite with tools, policies, and resources for embedding sustainability across curricula. This includes toolkits, case studies, and links to institutional policy, inspired by models from ATU, UCC, and MTU. A staff survey on SDG use revealed varying levels of awareness, with some lecturers using sustainability themes without identifying them as SDGs – highlighting opportunities for staff development and curriculum alignment.

Ms Glynn stressed the importance of making SDGs visible, accessible, and measurable across teaching. By combining student-facing activities with staff supports, IADT is building a culture where sustainability is embedded across programmes, ensuring that students encounter ESD both through learning outcomes and in the wider institutional environment.

About the author

Louise Glynn

INSTITUTE OF ART, DESIGN AND
TECHNOLOGY

Louise Glynn is a Lecturer in Computing at the Institute of Art, Design and Technology.

48. Media and Climate Change, & Campus Permeability

CLYDE DOYLE



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=289>

Clyde Doyle showcased IADT's practice-based and place-based ESD initiatives, developed through the Public Design Lab and the MA in Design for Change. His projects span cross-faculty teaching, funded collaborations, and campus transformation.

He described the Fernhill Park Experience, an SFI-funded collaboration using augmented reality to teach primary school students about sustainability and energy through role-playing as park rangers. This project demonstrated how technology and play can build environmental literacy and agency in younger learners.

Building on this, Mr Doyle has led development of a cross-faculty Climate Action module, trialled with first-year students. Structured around "Climate Conversations, Climate Connections, and Climate

Action,” it builds literacy, resilience, and critical optimism, encouraging students to imagine and design positive futures. Feedback showed that even students not initially interested left with a stronger sense of agency and purpose, a key aim of the programme.

Looking ahead, Mr Doyle presented the creation of a Pocket Forest and Teaching Glade on campus, designed using the Miyawaki method for rapid growth. This outdoor classroom will function as both a biodiversity site and a hybrid learning space, with indigenous planting creating a living laboratory for ESD and community collaboration.

These initiatives reflect a commitment to critical optimism, interdisciplinarity and action-oriented learning as creative pedagogical approaches that can support students to move beyond climate anxiety and engage constructively in meaningful change-making.

About the author



Clyde Doyle
INSTITUTE OF ART, DESIGN AND
TECHNOLOGY

Clyde Doyle is a Lecturer in Design + Visual Arts at the Institute of Art, Design and Technology.

49. Media and Climate Change, & Campus

Permeability

DR CORMAC DEANE



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Dr Cormac Deane described two interconnected themes: teaching climate communication through media, and rethinking the physical permeability of IADT's campus as a climate action strategy.

His final-year module, *Media and Climate Change*, equips media students to critically analyse how climate science and sustainability are represented in journalism, film, and digital platforms. Topics include science communication, climate culture wars, global north-south dynamics, and the emotional effects of data visualisation. The course frames climate change as a trans-scalar problem: one where human lifetimes and local contexts are dwarfed by planetary scales. Assignments require students to attend and report on local sustainability events, helping them connect everyday civic initiatives (e.g., active travel consultations) to global climate challenges.

Dr Deane linked this pedagogical lens to the design of IADT's campus, which is currently only accessible from one side, limiting integration with its surrounding community. By opening up new pedestrian and cycling routes, IADT could transform into a permeable campus, connecting thousands of residents with sustainable travel infrastructure. Such design choices exemplify how small, local interventions can ripple across decades, shifting

transport patterns, community interaction, and environmental impact.

He stated that ESD must help students move beyond feelings of guilt and paralysis by situating climate action as a collective, structural issue, not just an individual burden. Both his teaching and advocacy emphasise the importance of linking local, immediate actions to global, long-term scales – showing students how media and design can bridge the gap between awareness and agency.

About the author



Dr Cormac Deane

INSTITUTE OF ART, DESIGN AND
TECHNOLOGY

Dr Cormac Deane is a Lecturer in Film and Media in the Department of Humanities at the Institute of Art, Design and Technology.

PART XIII

QUEEN'S UNIVERSITY
BELFAST

50. Strategic Overview: Queen's University Belfast

NATALIE LE SEELLEUR



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=297>

Natalie Le Seelleur outlined Queen's University Belfast's evolving institutional approach to embedding ESD. With 23,000 students and nearly 3,000 modules across 15 schools, the challenge for Queen's has been ensuring sustainability is consistently visible, measurable, and meaningful across such a broad curriculum.

To address this, Queen's has developed a new ESD Framework grounded in four strands: (1) curriculum and systems integration, (2) student experiential learning through the Roots framework, (3) campus and community engagement via Living Labs, and (4) staff development.

In 2024, Queen's conducted its first university-wide curriculum mapping, reviewing 2,600 modules using a framework adapted from UCC's SDG Toolkit. Results showed that 43% of modules were sustainability-focused or inclusive, with over 700 explicitly referencing sustainability in learning outcomes. However, inconsistencies, lack of common language, and limited visibility highlighted the need for structural reform.

Practical measures now include embedding ESD prompts into

student information system by 2025. The Roots experiential learning pathway, aligned with the EU GreenComp framework, provides tiered opportunities for students to build sustainability competencies through projects, reflection, and leadership. Living Labs connect teaching and research with the campus and local communities, while new mandatory staff training ensures all staff engage with sustainability basics, supported by tiered CPD opportunities.

Ms Le Seelleur emphasised that Queen's is approaching ESD as a whole-institution change process, designed to move sustainability from siloed initiatives to a visible, embedded, and scalable part of the student experience.

About the author

Natalie Le Seelleur
QUEEN'S UNIVERSITY BELFAST

Natalie Le Seelleur is the Climate and Sustainability in the Curriculum Officer at Queen's University Belfast.

51. Designing an Academic Development Programme to Support Embedding ESD in the Curriculum

DR ALISON CALVERT



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Dr Alison Calvert presented Queen's flagship CPD initiative, Leading ESD in the Curriculum, a SEDA accredited programme designed to build academic confidence and capacity in embedding sustainability. Developed with colleague Dr Kieran Higgins, the programme responds to a clear skills gap: staff recognised the urgency of climate and sustainability but often lacked confidence in translating ESD principles into their teaching.

The programme consists of six two-hour sessions, requiring full engagement, active learning, and reflective practice. Participants complete four assessed tasks, including reflective essays and the review and redesign of a module mapped against the SDGs and ESD competencies. Accreditation provides professional recognition, a strong motivator for staff engagement.

Piloted in 2023–24 with 10 academics and expanded to 11 more the following year, the programme attracted staff from diverse disciplines, demonstrating that sustainability is relevant beyond STEM. Participants reported statistically significant improvements in skills and confidence, with the largest gains in their ability to integrate ESD into teaching.

Feedback highlighted the value of ringfenced professional development time, opportunities to share practice across disciplines, and the transformative nature of active learning. Challenges included workload pressures and completing assessments, but the community of practice formed among participants has provided continued peer support.

Dr Calvert emphasised that the programme empowers staff to

act as ESD leaders within their schools, creating a ripple effect. By embedding sustainability into modules and modelling reflective practice, participants are directly transforming student learning and helping to normalise ESD across Queen's curricula.

About the author

Dr Alison Calvert
QUEEN'S UNIVERSITY BELFAST

Dr Alison Calvert is a Senior Lecturer in the School of Biological Sciences at Queen's University Belfast.

52. Education for Sustainable Development in the Engineering Classroom

DR BEATRICE SMYTH



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=302>

Dr Beatrice Smyth shared her experience of translating ESD principles into the engineering classroom following participation in Queen's Leading ESD in the Curriculum programme. While she has long taught sustainable energy, the CPD course reshaped her

approach by emphasising not only knowledge acquisition but also skills, values, and emotional engagement—crucial to motivating students to act on sustainability.

Previously, Dr Smyth focused on technical competencies such as calculating carbon footprints. Now, she integrates ESD by asking students to apply that knowledge to real-world contexts—reducing their own carbon impact and considering future professional responsibility to lower organisational footprints.

Her modules now include practical demonstrations (e.g., hydrogen fuel cell cars), industry case studies, and site visits, such as to anaerobic digestion plants and Queen's new Business School building with geothermal heating. Guest lectures from researchers and industry further connect students to live challenges. She also redesigned the final-year project module so that sustainability and ethics are considered from the planning stage, reinforced by peer-to-peer workshops.

Student response has been highly positive, with many noting increased engagement, enjoyment, and understanding of how engineering theory applies to sustainability challenges. Dr Smyth acknowledged challenges, including workload and ensuring inclusivity in group discussions, but described the shift as both pedagogically rewarding and energising.

Looking ahead, she is focusing on embedding ESD more deeply into assessment design, inclusive teaching, and Living Labs collaborations. For Dr Smyth, ESD has reinvigorated teaching while preparing students to apply engineering skills in ways that contribute to sustainable futures.

About the author

Dr Beatrice Smyth

QUEEN'S UNIVERSITY BELFAST

Dr Beatrice Smyth is a Senior Lecturer in the School of Mechanical

and Aerospace Engineering at Queen's University Belfast.

53. 'A walk on the wild side': Embedding ESD through Collaborative Online International Learning (COIL)

DR NIAL MAJURY



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from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=304>

Dr Niall Majury presented *Remaking Cities*, a Collaborative Online International Learning (COIL) module co-developed with the University of Pittsburgh. The initiative uses ESD principles to enable students to critically explore urban regeneration and sustainability through comparative, cross-cultural analysis.

The module, delivered to small cohorts of geography, planning, and urban studies students, examines regeneration in Belfast and Pittsburgh—two post-industrial cities with histories of division and inequality, alongside rapid redevelopment. Students work in transatlantic teams, undertaking stakeholder interviews, site visits, and comparative analyses framed through conceptual lenses such as “global city,” “creative city,” or “sustainable city.”

Classes are co-taught weekly, combining lectures, guest speakers, and project-based group work. Students create outputs including walking tour vlogs, stakeholder engagement events, and reports shared with community partners, ensuring that their work has real-world relevance.

Dr Majury acknowledged the challenges of COIL, including differences in institutional resources, academic cultures, and assessment norms, but emphasised the transformative learning potential. Students valued the authenticity of the tasks, the cross-cultural collaboration, and the chance to produce outputs with impact beyond the classroom. Feedback described it as the “most real-life class” they had taken.

The module exemplifies how COIL can deepen sustainability competencies by situating local issues within global contexts, while fostering empathy, critical awareness, and collaborative problem-solving. Dr Majury argued that such models help students confront the complexity of sustainability challenges and build the global citizenship skills essential for future leaders.

About the author

Dr Niall Majury

QUEEN'S UNIVERSITY BELFAST

Dr Niall Majury is the Director of Education in the School of Natural and Built Environment at Queen's University Belfast.

PART XIV

UNIVERSITY COLLEGE

DUBLIN

54. Overview of UCD's Strategic Sustainability Approach

PROFESSOR TASMAN CROWE



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=318>

Professor Tasman Crowe provided an overview of UCD's Sustainability Plan to 2030, launched earlier this year to complement the university's *Breaking Boundaries* strategy. Sustainability is embedded as a cross-cutting theme throughout the institutional mission, with UCD positioning itself as a “thought and action leader” in sustainability across education, research, operations, and community engagement.

UCD has already been recognised as a global leader, ranked in the QS World Top 50 for Sustainability in 2024 and 2025, awarded a Gold Smarter Travel Mark, and designated an Irish SDG Champion Institution. Professor Crowe emphasised the importance of combining bottom-up enthusiasm within the university community with strategic top-down frameworks to drive transformative change.

Governance structures underpinning the plan include the Vice-President for Sustainability at management level, a central sustainability unit, and core working groups of staff and students

addressing areas such as operations, research, and education. The participatory approach ensures that recommendations are well-researched and widely supported.

Six high-level objectives guide UCD's plan, with "empowering staff and students" particularly central to ESD. This involves enhancing sustainability education, training, and student experience while linking teaching with campus operations as a living lab for change.

Professor Crowe also highlighted UCD's seed funding programmes, supporting interdisciplinary research, staff-led campus initiatives, and student-led projects such as repair cafés, carbon literacy training, and sustainable fashion campaigns. These schemes illustrate how the university is fostering innovation, collaboration, and ownership of sustainability challenges at every level.

About the author



Professor Tasman Crowe
UNIVERSITY COLLEGE DUBLIN

Professor Tasman Crowe is the Vice-President for Sustainability at University College Dublin.

Learning for Life: Integrating ESD into the Student Journey

PROFESSOR EMMA O'NEILL



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=320>

Professor Emma O'Neill discussed how UCD is embedding ESD across the whole student journey, ensuring that all learners encounter sustainability not only in classrooms but also in co-curricular and campus life.

Professor O'Neill framed ESD as essential to achieving SDG 4: Quality Education, while also enabling progress across all other SDGs. She stressed the need for transformative learning rather than “more of the same,” equipping students to tackle complex, interdisciplinary “wicked problems” such as climate change, biodiversity loss, and global inequality. This means developing not just knowledge, but also values, agency, and the ability to collaborate across disciplines.

At UCD, the goal is that all incoming students are introduced to sustainability and given meaningful opportunities to engage. This includes sustainability-focused programmes (such as the BSc Sustainability), widely available elective modules, and the integration of ESD throughout existing curricula. Early initiatives, such as first-year orientation sessions with student polls on

Professor O'Neill emphasised the importance of using UNESCO's eight key sustainability competencies—covering systems thinking, critical thinking, futures literacy, values, and action-oriented skills—as a shared language that transcends disciplinary boundaries. This competency-based approach is being piloted even in areas not traditionally linked to sustainability, such as veterinary medicine, demonstrating how ESD can unify diverse disciplines and strengthen graduate attributes.

UCD's vision is to ensure that every student leaves with the skills, mindset, and confidence to act as a sustainability change-maker, both professionally and personally.

About the author



Professor Emma O'Neill
UNIVERSITY COLLEGE DUBLIN

56. Sustainability at UCD SDG Dashboard

DR AINHOA GONZÁLEZ



*One or more interactive elements has been excluded
from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=326>

Dr Ainhoa González introduced the UCD SDG Dashboard, an interactive, co-created digital platform that centralises sustainability information across the campus. Designed to make UCD's contributions to the UN Sustainable Development Goals more visible, the dashboard allows students, staff, and the wider community to explore sustainability initiatives in a dynamic, map-based format.

Developed with HEA SATLE funding and through a student-staff co-creation process, the dashboard builds on survey input from nearly 1,400 respondents and consultations with key stakeholders, including UCD Estates, the Energy Institute, and student societies. The result is a tool that brings together over 100 data layers on sustainable infrastructure, services, and initiatives, covering everything from energy and water use to biodiversity, transport, and community projects.

The dashboard is structured around the 17 SDGs, with each goal linked to its own interactive web map. Users can click on campus features to access detailed information—such as building energy consumption, greenhouse gas emissions, or the location of water fountains—supported by photos and contextual data. A citizen science feedback function allows users to submit new information or suggest improvements, ensuring continuous growth and accuracy.

Already, the dashboard has been embedded in teaching, particularly within sustainability and geography modules, where students use it for data collection, analysis, and applied projects. It also supports operational planning, helping identify gaps and opportunities for targeted action.

Dr González highlighted the dashboard as both a practical educational tool and a transparency mechanism, empowering the

UCD community to understand, monitor, and contribute to sustainability efforts in real time.

About the author



Dr Ainhoa González
UNIVERSITY COLLEGE DUBLIN

57. BSc Sustainability at UCD Case Study

KIRSTEN SOUTHARD



*One or more interactive elements has been excluded
from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=322>

Kirsten Southard introduced the BSc Sustainability, a flagship interdisciplinary degree at UCD now in its fifth year, with the first graduates completing in 2023. The programme was designed to equip students with the breadth and depth needed to address complex sustainability challenges, underpinned by four guiding

principles: interdisciplinarity, flexibility, applicability, and global perspective.

The degree begins with a common first year, exposing students to environmental science, social science, policy and law, economics, and business. From second year, students specialise in one of three pathways—Environmental Science, Social Science, Policy and Law, or Business and Economics—while continuing to study compulsory modules from the other streams. This ensures that all graduates develop both specialisation and a broad, systems-based understanding of sustainability.

Core modules have been developed specifically for the programme, including *Introduction to Sustainability*, *Challenges to Sustainability*, *Sustainability Research Tools*, and *Career Innovation and Communication*. Later years incorporate applied experiences, such as an international field trip to Copenhagen and a capstone interdisciplinary project with external partners, where students tackle real-world challenges and present solutions using professional tools such as ArcGIS StoryMaps and video outputs.

The programme also connects with UCD's broader Living Lab initiative, giving students opportunities to contribute directly to campus projects such as biodiversity monitoring, waste audits, and energy assessments.

Ms Southard emphasised that the BSc Sustainability is designed not only to prepare graduates for sustainability-focused careers but also to nurture future leaders who can think critically, work collaboratively, and act holistically in the face of global challenges.

About the author

Kirsten Southard
UNIVERSITY COLLEGE DUBLIN

58. Co-Creating UCD's Sustainability Toolkit

KENDRA PALECZNY



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=324>

Kendra Paleczny presented the UCD Sustainability Toolkit, a student-led initiative developed over 18 months in response to student demand for accessible resources to better understand and act on sustainability. Based on a survey of over 300 students—where 80% reported feeling very worried about climate change—the toolkit was designed to provide both climate literacy and practical action guidance.

The digital resource, hosted on Brightspace and also made publicly available via Moodle, is divided into two parts. Part One: Climate Literacy builds foundational understanding across the three sustainability pillars—environmental, social, and economic—through short videos, quizzes, and interactive activities. Structured in three levels (“What’s the problem?”, “How does it affect us?”, and “What can we do?”), it aims to move learners from awareness to empowerment, tackling misconceptions and highlighting issues such as climate justice and ecosystem services.

Part Two: Climate Action offers practical, place-based tips across

consumption, and involvement. Actions are presented in an accessible “easy–medium–hard” format, with clear local guidance on what to do, where to go, and who to contact on or off campus.

Beyond the digital space, the project also inspired UCD Circular, a student-led initiative promoting circular economy practices through clothing swaps, repair stands, and a “borrow rack.” Ms Paleczny emphasised that the toolkit goes beyond a simple resource; it serves as a platform for peer-to-peer engagement, empowerment and collective action. It ensures students feel equipped to contribute meaningfully to sustainability on campus and beyond.

About the author



Kendra Paleczny
UNIVERSITY COLLEGE DUBLIN

PART XV

TECHNOLOGICAL
UNIVERSITY OF THE
SHANNON

59. The Impact of SATLE-Funded ESD Projects in TUS

DR NUALA HARDING



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=346>

Dr Nuala Harding outlined how Strategic Alignment of Teaching and Learning Enhancement (SATLE) funding has enabled TUS to significantly advance its ESD ambitions. Multi-annual funding has allowed the university to build sustained institutional capacity by establishing core roles, including an ESD Champion and Educational Developer, Ireland's first dedicated OER Librarian, and an Instructional Designer supporting the development of open-access learning resources.

Central to this work is the Level 9 Special Purpose Award, *Embedding ESD in the Curriculum*, which forms part of the flexible MA in Academic Practice. Led by Dr Noëlle O'Connor, the programme adopts authentic assessment and competency-based learning, drawing international participation and now serving as an elective for PhD researchers. Alongside this, SATLE has supported a broad suite of learning enhancement projects and communities of practice aligned with four interconnected SDGs: Quality Education, Responsible Consumption and Production, Industry, Innovation & Infrastructure, and Reduced Inequalities.

Dr Harding showcased examples ranging from tower gardens

inclusive education collaborations. All outputs, including academic integrity courses and previous compendia, are shared openly through TUS's OER platforms and the National Forum resource hub. She emphasised that the cumulative impact extends from curriculum development to staff capability building and international partnerships, demonstrating how SATLE funding has transformed TUS's ability to embed sustainability across programmes and practices.

About the author



Dr Nuala Harding
TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Nuala Harding is the Head of the Centre for Pedagogical Innovation and Development (CPID) at the Technological University of the Shannon.

60. Embedding ESD in Teaching, Learning and Assessment: The TUS ESD Compendium

DR NOËLLE O'CONNOR



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=348>

Dr Noëlle O'Connor introduced the newly launched TUS Compendium of Embedding Education for Sustainable Development in Teaching, Learning and Assessment, the first publication of its kind in Irish higher education. Featuring [44 submissions](#) from across the university's faculties and campuses, the compendium brings together examples of teaching innovations, assessment redesign, community-engaged learning, research-informed practice, and co-curricular initiatives that foreground sustainability.

She explained that the compendium emerged from a deliberate effort to recognise and showcase the diverse ways staff are already integrating sustainability—often without labelling it as ESD. Submissions span engineering, business, design, hospitality, social sciences, and flexible learning, reflecting both the breadth of activity and the bottom-up pedagogical creativity within TUS. By structuring the compendium around the SDGs and highlighting actionable insights, it serves as both a celebratory record and a practical resource for colleagues seeking to embed ESD meaningfully in their own modules.

Dr O'Connor noted that the compendium has already strengthened internal networks, created opportunities for interdisciplinary collaboration, and positioned TUS as a sectoral leader in documenting sustainable teaching practice. The resource will continue to evolve as new case studies emerge, supporting a culture of critical reflection, shared learning, and continuous enhancement.

About the author



Dr Noëlle O'Connor
TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Noëlle O'Connor is a Senior Lecturer, Researcher, and Educational Developer at the Technological University of the Shannon.

6I. The Go Green Project!

DR RITA SCULLY



*One or more interactive elements has been excluded
from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=345>

Dr Rita Scully presented the *Go Green Project*, an EU-funded collaboration involving three universities and secondary-school teacher teams. The project aims to support post-primary teachers—often experts in their subject but not in sustainability—to confidently embed ESD into classroom practice. Consultations across partner countries revealed strong teacher enthusiasm but

also uncertainty about where to begin, prompting the development of a suite of structured, accessible resources.

Key outputs include five e-learning packages introducing sustainability concepts, competencies, ethics, interdisciplinary approaches, and problem-based learning. These are accompanied by more than 30 detailed lesson plans, each aligned with multiple subjects and featuring learning outcomes, activities, timings, resources, and assessment tools. Teachers can filter lessons by discipline and adapt them to local contexts, with many also choosing to use the videos and materials directly with their students.

The project additionally produced a draft cross-curricular sustainability syllabus designed to encourage policymakers to embed ESD across subjects rather than contain it within a standalone module. Templates, pre- and post-assessment tests, and implementation guides ensure that the materials are practical and ready for classroom use. All resources are freely available, supporting widespread adoption. Dr Scully emphasised that the project empowers teachers by providing structured, flexible tools that make sustainability education both achievable and engaging.

About the author



Dr Rita Scully
TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Rita Scully is a member of the Department of Built Environment at the Technological University of the Shannon.

62. GreenHive: A European Ecosystem for Sustainability Education

DR MARIE TAYLOR



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=354>

Dr Marie Taylor introduced *GreenHive*, a European project aimed at embedding sustainability within the vocational education and training (VET) sector while building cross-sector communities of practice. Drawing on the EU GreenComp sustainability competency framework, GreenHive seeks to increase teacher confidence, develop open educational resources, and connect schools, individuals, and organisations through shared learning hubs.

The project produced national and comparative reports analysing the status of sustainability education across partner countries, a best-practice database containing over 50 examples, and a methodological framework for establishing local sustainability hubs. These hubs enable teachers, students, and community actors to collaborate, share tools, and develop local solutions while feeding insights into a European-wide digital platform.

GreenHive also developed MOOCs, micro-videos, workshop guides, toolkits, and training schemes that promote active learning,

systems thinking, and learner agency. TUS piloted multiple communities of practice, demonstrating how the model fosters local action while enabling international knowledge exchange. Dr Taylor highlighted that by grounding its resources in GreenComp and focusing on coordinated collaboration, GreenHive equips educators and learners with the competencies required for the green transition across Europe.

About the author



Dr Marie Taylor
TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Marie Taylor is a member of the Sustainable Development Research Institute (SDRI) at the Technological University of the Shannon.

63. Design for Sustainability & Circular Economies

DR ADAM DE EYTO



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=356>

Dr Adam de Eyto presented the Level 9 Certificate in *Design for Sustainability and Circular Economies*, a hybrid 12-week continuing professional development programme delivered through LSAD in partnership with Design Skillnet. Now in its fifth year, the certificate supports designers and other professionals to integrate sustainability, circularity, and regenerative practices into their work.

Participants engage with expert practitioners and explore topics such as life-cycle assessment, material flows, systems and service design, environmental and social governance, and regenerative design. Teaching combines online workshops with in-person intensives, ensuring that learners can reflect on their own practice while benefiting from cross-disciplinary dialogue. The programme culminates in an applied project that situates sustainability challenges within participants' real-world professional contexts.

Dr de Eyto emphasised that the course responds to industry-level demand for designers who can lead sustainability transitions, with graduates applying their learning in sectors spanning fashion, product design, architecture, and communication. He noted that the programme is highlighted within the TUS ESD Compendium as an example of how creative disciplines can meaningfully embed sustainability at postgraduate level.

About the author

Dr Adam de Eyto
TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Adam de Eyto is the Head of Design at the Limerick School of Art & Design at the Technological University of the Shannon.

64. Safe Inhaler Disposal Campaign: A Student-Led Climate Action Initiative

DR GARY STACK



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from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=358>

Dr Gary Stack discussed a student-led initiative developed within the BSc Pharmacy Technician programme to address the significant climate impact of metered-dose inhalers (MDIs). Following teaching on sustainable healthcare, students were struck by the carbon footprint associated with propellant-based inhalers and identified incorrect disposal as an area where they could take meaningful action.

Working in partnership with a local pharmacy, students designed and delivered an awareness-raising campaign during TUS Athlone's Green Week. The event promoted correct inhaler technique, encouraged the safe return of expired or unused inhalers to pharmacies, and educated the campus community on the

environmental implications of MDIs. Students developed digital and print resources, demonstrated inhaler use, and collected returned devices for safe disposal.

The initiative served both as a public-facing sustainability action and as an authentic learning experience embedded within the programme's Medicines Optimisation module. Reflective learning logs revealed increased student confidence, professional identity formation, and a strong sense of agency in addressing sustainability issues within healthcare. Dr Stack highlighted that the campaign illustrates how discipline-specific ESD can empower students to enact tangible climate-related actions within their future professional practice.

About the author



Dr Gary Stack

TECHNOLOGICAL UNIVERSITY OF THE
SHANNON

Dr Gary Stack is a member of the Department of Pharmaceutical Sciences and Biotechnology at the Technological University of the Shannon.

PART XVI

ROYAL COLLEGE OF
SURGEONS IN IRELAND

65. Overview of ESD in RCSI

CATHERINE SULLIVAN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=376>

Catherine Sullivan provided an overview of how the Royal College of Surgeons in Ireland (RCSI) is embedding Education for Sustainable Development (ESD) and planetary health across the institution.

She began by outlining the external drivers shaping RCSI's sustainability approach, including the UN Sustainable Development Goals, the national ESD to 2030 strategy, and sustainability criteria within professional accreditation bodies. She emphasised that the climate crisis is fundamentally a health crisis, increasingly recognised by clinicians, researchers, the WHO, and most importantly by students, staff, and patients—creating a strong mandate for curricular change.

Ms Sullivan described RCSI's institutional commitment through its 2023–2027 strategy, which foregrounds sustainability, the SDGs, and community engagement. These priorities are reinforced by the Learning, Teaching and Assessment Strategy, where sustainability is integrated throughout.

Operationally, ESD work is advanced through the Sustainability and Climate Health Committee, supported by four working groups spanning education, research, Net Zero, and Green Campus. The education working group is currently mapping medicine, pharmacy, physiotherapy, and dentistry curricula to the SDGs,

using UCC's mapping model, with the aim of strengthening sustainability learning outcomes and competencies.

A major initiative highlighted was CHIME – Climate, Health and Medical Education, a collaborative effort involving RCSI, Irish Doctors for the Environment, and all medical schools on the island of Ireland. CHIME supports the integration of climate change, ecological instability, and sustainability into health professions education and has gained significant traction nationally.

Ms Sullivan noted the institution has made substantial progress through strong internal collaboration and partnerships across schools and with national networks. Their approach has combined bottom-up innovation and top-down support, enabling meaningful curricular integration across programmes.

About the author

Catherine Sullivan

ROYAL COLLEGE OF SURGEONS IN IRELAND

Catherine Sullivan is the Data and Insights Manager in the Office of Insights and Planning at the Royal College of Surgeons in Ireland.

66. Developing and Delivering a Dedicated Module on Sustainability and Planetary Health

DR AISLING O'LEARY



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=371>

Dr Aisling O'Leary outlined how planetary health and sustainability are being embedded across the pharmacy curriculum, with a particular focus on a standalone elective module now in its third iteration. Grounded in SDG 3 (Good Health and Wellbeing), the module responds to the growing recognition that healthcare, while vital, carries a substantial ecological footprint through carbon emissions, plastic waste, pollution, and resource-intensive clinical practice. Drawing on the Planetary Health Education Framework, Dr O'Leary emphasised the centrality of interconnectedness between planetary systems and human health, the inequalities arising from environmental degradation, and the need for future pharmacists to understand both adaptation and mitigation strategies.

The module adopts a multimodal, action-oriented pedagogy incorporating experiential learning, case-based learning, service learning, and reflective practice. Students examine the ecological impacts of medicines, explore sustainable prescribing, analyse environmental contributors to disease, and engage with clinical and non-clinical vignettes that integrate planetary health into routine pharmacy scenarios. Field trips, interactive digital activities, and transdisciplinary guest speakers broaden student perspectives and highlight the pharmacist's role in advocacy and behaviour change. Assessment has evolved to include personal sustainability challenges, quantifying avoided emissions through behaviour change, and group projects focused on sustainable campus initiatives.

Dr O'Leary also weaves planetary health concepts across her wider teaching, including health technology assessment, global public health, and clinical therapeutics. Recent student projects such as waste audits and inhaler audits, along with ongoing research collaborations on greener medicines frameworks, further strengthen the link between pharmacy education and sustainable healthcare. She concluded by emphasising the need for pedagogical shifts toward affective learning and values-based teaching to ensure graduates leave with both the competencies and the agency required for transformative climate action in healthcare.

About the author



Dr Aisling O'Leary

ROYAL COLLEGE OF SURGEONS IN
IRELAND

Dr Aisling O'Leary is a Senior Lecturer in the School of Pharmacy and Biomolecular Sciences at the Royal College of Surgeons in Ireland.

67. Integrating Planetary Health into the Medicine Curriculum

DR ROSS BRANNIGAN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=373>

Dr Ross Brannigan described RCSI's systematic integration of sustainable development and planetary health across its restructured medical curriculum. Moving from a traditional modular model to a spiralled, systems-based curriculum enables recurring engagement with sustainability concepts throughout all taught years. Early teaching highlights the healthcare sector's responsibility for 4-7% of global greenhouse gas emissions and situates climate change as an urgent health threat. Students examine national and international responses, including the HSE Climate Action Plan, and learn how greener models of care align with public health goals.

Two main challenge-based learning opportunities embed sustainability in authentic contexts. First, a Student Selected Module introduces planetary health concepts, sustainable care pathways, barriers and facilitators to green healthcare, and stakeholder analysis. Students work in groups to propose practical, evidence-informed interventions on topics such as inhaler impact, staff travel, and single-use gowns, presenting strategies that balance patient safety with environmental benefit. This module reaches approximately 15-20% of each incoming cohort.

Secondly, all second-year students complete a Sustainable Quality Improvement (QI) project focused on reducing the environmental impacts of a chosen area of clinical practice while maintaining or enhancing care quality. Students explore trade-offs between access, equity, environmental cost, and patient outcomes, producing innovative proposals ranging from reducing food waste

to trialling alternative surgical scrubbing methods. This work aims to cultivate advocacy, systems thinking, and leadership – competencies highlighted as essential for achieving carbon-neutral healthcare.

Alongside curricular integration, RCSI's involvement in national initiatives such as the CHIME network and its strong performance in the Planetary Health Report Card demonstrate institutional commitment. Dr Brannigan emphasised that today's medical students are increasingly climate-aware and eager to contribute to change, and that integrating sustainability across didactic, project-based, and clinical learning is key to preparing them as future leaders in sustainable healthcare.

About the author



Dr Ross Brannigan

ROYAL COLLEGE OF SURGEONS IN
IRELAND

Dr Ross Brannigan is a Lecturer in the Department of Public Health and Epidemiology in the School of Population Health at the Royal College of Surgeons in Ireland.

Sustainable Development Through the RCSI Student Engagement and Partnership (StEP) Programme

DR GRAEME KELLY



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from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=378>

Dr Graeme Kelly presented how sustainability is being embedded into healthcare education through the RCSI Student Engagement and Partnership (StEP) Programme. Established in 2020, StEP supports co-created projects between students and staff, aligning with RCSI's institutional strategy and its commitment to advancing the UN SDGs. More than 170 projects involving over 650 staff and student partners have been funded, with many naturally addressing themes of sustainability, equity, curriculum innovation, and inclusion.

To better understand impact, the StEP team undertook a comprehensive review of funded projects, assessing their alignment to the UN SDGs using a newly developed self-assessment toolkit. After exploring automated approaches – including large language models – the team found variable accuracy and opted instead for a structured, human-led framework

ranging from no alignment to international-level impact. The analysis revealed strong alignment with SDG 3 (Good Health and Wellbeing), SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 10 (Reduced Inequalities), and SDG 17 (Partnerships for the Goals), reflecting both RCSI's health sciences identity and its institutional culture of equity and collaboration.

Dr Kelly highlighted two case studies illustrating the programme's influence. The *Represent* project addresses the under-representation of diverse skin tones in medical teaching materials. Student partners created a repository of more than 120 clinical images and delivered staff workshops, ensuring more inclusive diagnostic education. A second project, *Chagas Hub Ireland*, established a community screening initiative for migrants from regions where Chagas disease is endemic. The project promotes equitable access to healthcare and advances awareness of neglected tropical diseases, directly aligning with SDG 3 and SDG 10.

Dr Kelly emphasised that StEP has become a meaningful vehicle for embedding sustainability into everyday educational practice, fostering student agency, and strengthening partnerships that advance RCSI's strategic commitment to social responsibility and the SDGs.

About the author



Dr Graeme Kelly
ROYAL COLLEGE OF SURGEONS IN
IRELAND

Dr Graeme Kelly is a Senior Technician in the Department of

Chemistry at the Royal College of Surgeons in Ireland.

69. Advancing Inclusive and Equitable Healthcare Education for the Future

PROFESSOR GOZIE OFFIAH



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=380>

Professor Gozie Offiah presented RCSI's work to advance an inclusive, equitable, and anti-racist healthcare curriculum aligned with SDG 5 (Gender Equality) and SDG 10 (Reduced Inequalities). As co-chair of the Race Equality Forum, Professor Offiah outlined how RCSI became the first institution in Ireland to implement a Race Equality Action Plan (2021–2025), now followed by a second plan extending to 2029. The plan comprises six workstreams spanning leadership, data, policy, training, education, research, and people-focused supports, each designed to strengthen institutional culture and address systemic inequities.

Within the education and research workstream, RCSI is embedding inclusive excellence into teaching and assessment through curriculum review, staff training, simulation-based approaches, and authentic case design. Initiatives include the student-led Anti-Racism Reading Group, diversity audits of clinical images and lecture materials, and enhanced representation in

case-based learning. Professor Offiah noted that new cases are co-developed with members of minoritised communities to ensure accuracy, cultural authenticity, and respectful portrayal. Facilitated small-group discussions encourage students to examine bias, reflect on their own perspectives, and consider how inequality impacts diagnosis, treatment, and patient outcomes.

A major area of current work is a university-wide research project on decolonising the curriculum, involving medicine, pharmacy, nursing, physiotherapy, and biomedical sciences. Using validated tools and mixed-methods analysis, the project evaluates staff and student perceptions of inclusivity across domains such as representation, content, language, communication, culture, and assessment. Early findings indicate the need for more inclusive examples in learning materials, greater clarity in terminology, and expanded opportunities for engagement beyond formal teaching. The research aligns with RCSI's Athena Swan commitments and informs ongoing curriculum reform.

Professor Offiah concluded that advancing equitable healthcare education requires structural change, evidence-based revision, and the continual elevation of staff and student voices. By integrating diverse perspectives and addressing systemic bias, RCSI aims to graduate clinicians equipped to deliver culturally competent, socially just, and equitable care in an increasingly diverse global society.

About the author



Professor Gozie Offiah

ROYAL COLLEGE OF SURGEONS IN
IRELAND

Professor Gozie Offiah is a Senior Lecturer and Director of Curriculum in the School of Medicine at the Royal College of Surgeons in Ireland.

PART XVII

MAYNOOTH UNIVERSITY

70. Integrating Futures Thinking and Transformative Climate Justice

PROFESSOR JENNIE STEPHENS



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=391>

Professor Jennie Stephens introduced a university-wide shift towards embedding futures thinking and transformative climate justice into teaching, research, and community engagement at Maynooth University. Drawing on her work within ICARUS and the social sciences, she emphasised a reframing of climate change as a systemic justice issue rather than solely an environmental or technological problem. Climate justice highlights how ecological disruption is a symptom of deeper structural inequities, and thus positions students to critically interrogate power, economic systems, and the social conditions shaping climate impacts.

Professor Stephens outlined pedagogical approaches that foreground unlearning, critical reflection, and collective visioning. Her second-year elective, *Climate Action and Sustainable Development*, co-taught with colleagues in Geography, centres on semester-long team projects where students imagine equitable and sustainable future systems – from housing and food to mobility and fashion – in 2050. Using systems thinking tools such as the

iceberg model and scenario building, the module encourages students to identify leverage points for transformation and to consider the strategic, political, and cultural barriers to climate action, including corporate obstruction.

Complementing this undergraduate work, Maynooth has established a new micro-credential in Climate Action and Sustainable Development, designed to support teachers implementing the new Leaving Certificate subject of the same name, alongside existing postgraduate programmes in Climate Change and Spatial Justice. Professor Stephens highlighted the growing demand for integrative climate justice education and the importance of strengthening institutional coordination across faculties to support a more coherent and future-oriented ESD landscape.

About the author



Professor Jennie Stephens
MAYNOOTH UNIVERSITY

Professor Jennie Stephens is a Professor of Climate Justice at Maynooth University.

7I. MSU Sustainability Initiatives

LILY KILMARTIN-GATH



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=394>

Lily Kilmartin-Gath presented a series of student-led sustainability initiatives driven by the Maynooth Students' Union, demonstrating the strong climate awareness and motivation among the university's student body. A flagship project is the MSU Return Bin Charity Scheme, launched during Green Week, which encourages students to donate cans and bottles via four dedicated Re-turn bins across campus. These are collected and returned by MSU staff, with all proceeds donated to charity. Plans are in place to expand the scheme to the South Campus to maximise accessibility.

MSU has also worked to promote reusable practices, notably securing the introduction of a 20-cent reusable cup discount at MSU Londis coffee stations. A promotional campaign – including student-made social media content – has been central in raising awareness and shifting behaviours. Ms Kilmartin-Gath highlighted ongoing efforts to gather data on the uptake of reusable cups, recognising the value of evidence-based decision-making and potential integration with future student projects.

Further initiatives include MSU's participation in the Clean Air Campus Project, a collaboration with Healthy Campus aimed at transitioning Maynooth to a smoke- and vape-free environment. Survey work and policy development are currently underway. MSU also co-organises regular litter picks with the Green Campus Committee, engaging students, staff, local volunteers, and community partners such as Kildare County Council. Green Week remains a major annual platform for awareness-raising, showcasing sustainable practices and encouraging active engagement.

Collectively, these initiatives reflect a strong culture of student engagement, community collaboration, and practical climate action on campus.

About the author



Lily Kilmartin-Gath
MAYNOOTH UNIVERSITY

Lily Kilmartin-Gath is the Environmental Officer in the Maynooth Students' Union at Maynooth University.

72. Co-creating a Sustainability Community of Practice

DR ALISON FARRELL



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=396>

Dr Alison Farrell outlined the development of a new Sustainability Community of Practice (CoP) at Maynooth University, established to connect staff, students, researchers, and professional services engaged in sustainability-related work. The CoP is grounded in Wenger and Trayner's conception of practice-based learning, bringing together individuals who share a common concern and wish to deepen their expertise through regular interaction. Although still in its early stages, the group has rapidly grown to include representatives from across seven faculties and more than 40 departments and units.

The CoP aims to address fragmentation by creating a shared space where diverse practices — from teaching innovations to campus operations and community partnerships — can be surfaced, exchanged, and strengthened. Dr Farrell described the tone of the emerging community as inclusive, bottom-up, collaborative, and consciously embracing the “messiness” inherent in interdisciplinary sustainability work. Early activity has focused on convening facilitators, surveying members to identify needs, meeting with senior university leadership, and hosting an inaugural gathering to refine the CoP's identity, purpose, and naming.

Planned next steps include expanding student participation, connecting with external networks, curating a bank of open educational resources, and contributing to institutional policy and curriculum development. The CoP is closely aligned with Maynooth's current work on an institutional Education Framework, where sustainability, social justice, and environmental justice are key pillars. Dr Farrell noted that the community intends to build actionable projects while providing a supportive space for colleagues at all levels of experience to share challenges, successes, and emerging practices. The initiative reflects an important step towards a more connected, coherent, and institutionally embedded approach to ESD at Maynooth.

About the author



Dr Alison Farrell
MAYNOOTH UNIVERSITY

Dr Alison Farrell is a Teaching Development Officer and Co-Convener of the Maynooth University Sustainability Community of Practice at Maynooth University.

73. ESD through Praxis: Case Studies from Maynooth University

DR PATRICIA HEALY KETTLE



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here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=398>

Dr Patricia Healy Kettle presented an ESD approach grounded in praxis, emphasising the interconnections between ecological

systems, human health, food production, and social relations. Drawing from environmental sociology, her work highlights the need for paradigm shifts that reunite nature and society, counteracting processes of disconnection, disembeddedness, and loss of traditional ecological knowledge. Dr Healy Kettle stressed that sustainable development requires both unlearning entrenched assumptions and cultivating new forms of literacy – particularly nature-based, soil, and ecological literacies that expand student understanding of human–nature reciprocity.

She illustrated this through two case studies. The first derives from her work with the Sustainable Ecosystems Research Group, an interdisciplinary platform integrating natural and social science perspectives on soil health, biodiversity, crop management, and sustainable practices. The group undertakes research, community engagement, collaboration with local authorities, and public-facing activities such as Science Week, Research Week, and nature walks, developing multiple avenues for experiential sustainability learning.

The second case study focused on the Maynooth Green Campus Sustainable Food and Agriculture Working Group, where Dr Healy Kettle serves as chair. The group has created an edible garden by transforming a previously unused grey space into a vibrant pedagogical landscape. The garden supports interdisciplinary teaching, student wellbeing activities, outreach with local schools, and community engagement. Events such as World Health Day, intercultural celebrations, and sustainability-themed workshops are regularly hosted in the space. The project demonstrates how campus environments can function as living laboratories that nurture reciprocal relationships with nature and remove barriers to participation by providing accessible, hands-on learning opportunities.

Dr Healy Kettle argued that achieving sustainable agricultural transitions and broader societal resilience requires collaborative efforts among educators, policymakers, communities, and practitioners. She highlighted the need for enhanced nature literacies, interdisciplinary integration, and holistic approaches

that value ecological, human, and economic dimensions. Her work underscores the transformative potential of praxis-based ESD in reconnecting learners with land, food, and ecological systems.

About the author

Dr Patricia Healy Kettle
MAYNOOTH UNIVERSITY

Dr Patricia Healy Kettle is an Environmental Sociologist and Critical Skills Instructor at Maynooth University.

PART XVIII

HIBERNIA COLLEGE

74. Exploring ESD at Hibernia College

PATRICIA NUNAN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=411>

Patricia Nunan outlined Hibernia College's multi-layered approach to embedding Global Citizenship Education (GCE) and Education for Sustainable Development (ESD) throughout the Professional Master of Education (PME) Post-Primary. Rooted in the Teaching Council's *Céim* standards, which designate GCE as one of seven core elements for Initial Teacher Education, the programme now treats GCE/ESD not as an add-on but as a curriculum lens through which teaching, learning, and professional identity are viewed.

Ms Nunan traced the programme's journey from early, once-off awareness-raising events—such as a whole-college GCE Awareness Week—to more meaningful structural embedding in programme learning outcomes, module design, assessment, and school placement supports. Long-standing collaboration with the Ubuntu Network has been central, providing funding, professional development, and a community of practice that continually challenges the programme to deepen its integration of GCE.

Recent developments include a dedicated elective in Education for Sustainable Development; redesign of programme outcomes to

within subject methodologies; and the creation of video exemplars demonstrating authentic classroom practice. Ms Nunan emphasised that sustained impact requires coherent messaging, cross-faculty collaboration, and consistent modelling by lecturers and tutors. The programme now aims to build further exemplars, expand partnerships, and continue developing school-based CPD to support cooperating teachers as co-educators in the GCE/ESD space.

About the author



Patricia Nunan
HIBERNIA COLLEGE

Patricia Nunan is the Director of the PME Post-Primary at Hibernia College.

75. Embedding Global Citizenship and Sustainable Development Across the Curriculum

DR ANNEMARIE DORAN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=413>

Dr Annemarie Doran highlighted how GCE functions as a foundational value across the PME curriculum, shaping both content and pedagogy. At module level, GCE is woven through Foundations of Education, Inclusion and Diversity, Curriculum Studies, Research Methods, and Professional Practice. Students critically engage with themes such as positionality, justice, inequality, and the purposes of education within an interconnected world. Universal Design for Learning, ethical reasoning, and global perspectives in curriculum design provide further anchors.

The integration extends into subject methodologies, where student teachers examine how their disciplines can authentically explore global issues. Examples include sustainability and environmental impact in Agricultural Science, ethical consumption and responsible enterprise in Accounting, data-rich sustainability projects in Mathematics, climate justice themes in MFL and English, and social justice frameworks in Politics & Society. Cross-curricular links – such as combining science and geography for systems thinking – are actively encouraged.

Pedagogically, the programme models active, dialogic, and inquiry-based methods including debate, simulation, problem-based learning, and collaborative reflection. Digital tools such as Padlet support shared meaning-making around global challenges. Dr Doran emphasised that these practices aim to cultivate graduates who are empathetic, reflective, and capable of fostering agency, critical thinking, and global responsibility in their future classrooms. For Hibernia, embedding GCE is therefore both a moral

imperative and a pedagogical commitment aligned with national and international policy frameworks.

About the author



Dr Annemarie Doran
HIBERNIA COLLEGE

Dr Annemarie Doran is an Assistant Professor in Education in the PME Post-Primary at Hibernia College.

76. Building a Community of Practice for Sustainable Teacher Education

RICHARD EGAN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=415>

Richard Egan described how Hibernia's Community of Practice

(CoP) model has become a critical mechanism for ensuring coherence and consistency in GCE/ESD across the PME Post-Primary. Given the blended structure of the programme and the large network of adjunct faculty and school placement tutors, the CoP creates a regular forum where academic tutors and placement tutors meet to share practice, explore pedagogical challenges, and align expectations between university teaching and school-based assessment.

One CoP session focused specifically on GCE/ESD, featuring inputs from a history methodology lecturer and a school placement tutor. Together they demonstrated how GCE pillars—including unlearning, examining root causes, local-global connections, and solidarity—can be authentically integrated within Junior Cycle history through topics such as famine, migration, conflict, and the Industrial Revolution. Participants examined how to link subject content to Sustainable Development Goals and how to design success criteria that promote critical literacy, empathy, and social analysis.

To support ongoing faculty development, Hibernia has also established an online Adjunct Faculty Hub containing curated GCE resources, subject-specific materials from WorldWise Global Schools, and outputs from CoP sessions. Mr Egan noted that this work aims to strengthen programme coherence, deepen staff capacity, and ensure that student teachers encounter consistent modelling of GCE across lectures, webinars, and school placement observations. The CoP model will continue to expand as the college builds further exemplars and digital supports.

About the author

Richard Egan
HIBERNIA COLLEGE

Richard Egan is the Deputy Director of the PME Post-Primary and School Placement Lead at Hibernia College.

PART XIX

NATIONAL COLLEGE OF
IRELAND

77. Changing Lives Through Education: Macro to Micro

NICOLA HORGAN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=421>

Nicola Horgan opened the National College of Ireland ESD Spotlight Session with an overview of NCI's mission-driven approach to “changing lives through education,” highlighting how sustainability has been interwoven through the institution's values, partnerships, and programmes since its foundation in 1951. She outlined NCI's evolution into a diverse, not-for-profit higher education institution with strong representation across business, computing, psychology, education, and innovative collaborative programmes.

Framed as a journey “from macro to micro,” Ms Horgan described how sustainability commitments are embedded at international, national, and local levels, flowing from strategic partnerships and research consortia down to concrete teaching and student-facing initiatives. The institution's current strategy positions sustainability centrally across academic design, operations, and community engagement. A key insight from recent programme reflection emphasised the need to bridge the gap between high-level sustainability discourse and students' everyday practices.

Ms Horgan noted that many learners—even those engaged in

environmental principles. This realisation has informed a renewed pedagogical emphasis on first principles and accessible case studies that speak to diverse cohorts, including learners who spend only a short time in the college. She concluded by reaffirming NCI's commitment to "leaving no one behind," grounding strategic ambitions in a student-centred ethos that foregrounds practical agency, inclusivity, and sustainable development at all scales.

About the author

Nicola Horgan

NATIONAL COLLEGE OF IRELAND

Nicola Horgan is an Assistant Professor and Programme Director at the National College of Ireland.

78. Changing Lives Through Education: Stewardship and Governance

BERTIE KELLY



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=423>

Bertie Kelly outlined NCI's approach to sustainability through the

lens of stewardship, transparency, and responsible governance. As a not-for-profit registered charity that operates outside the traditional public university model, NCI relies heavily on diversified commercial income and therefore places particular emphasis on ensuring that every investment demonstrates both educational and environmental value.

Mr Kelly described major institutional initiatives to improve resource efficiency, including a full LED retrofit across campus, district heating optimisation, enhanced waste management systems, and forthcoming upgrades to aging plant and machinery that are projected to reduce emissions by 30–40%. A partnership with Green Tally – founded by an NCI alumnus – has enabled systematic, data-driven measurement of scope 1, 2 and now scope 3 emissions, with findings published publicly to reinforce a culture of transparency.

He also pointed to the alignment between operational sustainability and academic innovation, noting that NCI embeds environmental, social, and economic sustainability across its strategy, campus operations, and research agenda. For Mr Kelly, stewardship is enacted in everyday decisions as much as in major capital investments, and is strengthened through clear communication with students, staff, and stakeholders. This governance model positions sustainability not as a standalone initiative but as an integrated institutional practice.

About the author

Bertie Kelly

NATIONAL COLLEGE OF IRELAND

79. Changing Lives Through Education: Digital for

Sustainability

PROFESSOR HORACIO GONZALEZ



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=425>

Professor Horacio Gonzalez Velez presented NCI's sustainability-focused research portfolio, emphasising the growing importance of energy-efficient computing, digital transformation, and climate-aligned innovation. He argued that sustainability in computing is no longer optional: it is now a design constraint shaped by EU climate neutrality targets and the energy intensity of data centres, artificial intelligence, and digital infrastructure.

Within the Cloud Competency Centre, NCI conducts research on adaptive, energy-aware computing architectures, digital-green skills pipelines, and policy-ready evidence to inform Irish and European sustainability transitions. Professor Gonzalez Velez highlighted several major funded projects. *GreenShift* explores AI-enabled innovation for transport and mobility in partnership with leading European supercomputing centres. *Digital for Business*, a flagship €20m initiative coordinated by NCI, focuses on SDG-aligned advanced digital skills across cloud, cybersecurity, analytics and AI. Additional projects examine green ICT, smart communities, and the future of sustainable digital ecosystems.

He noted that these projects offer model practices, FAIR research outputs, and measurable insights that can support national ESD roadmaps. By integrating research, skills development and policy engagement, NCI positions digital sustainability as both an

academic priority and a societal contribution, aligning the college's work with Ireland's digital-green transition and its commitment to producing graduates and research with direct national impact.

About the author

Professor Horacio Gonzalez
NATIONAL COLLEGE OF IRELAND

80. Changing Lives Through Education: Citi UpStart

PROFESSOR PAUL STYNES



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=428>

Professor Paul Stynes described Citi UpStart, a year-long entrepreneurship accelerator embedded within NCI's master's programmes. Co-designed with Citi, the initiative integrates sustainability, innovation, and industry mentorship to support students in developing responsible, solutions-driven business concepts. From 140 applicants, 40 students formed eight interdisciplinary startup teams, each paired with experienced Citi mentors.

Through workshops on entrepreneurship, sustainability, leadership, emerging technologies, and expert talks on topics such

as generative AI and risk management, students learned to balance commercial viability with environmental and social purpose. The programme culminated in a Dragons' Den style final where teams pitched to judges from Citi, Enterprise Ireland, the ICT Skillnet, and start-up leaders. Projects addressed challenges such as food waste, mental health, migrant employment, and sustainable energy.

Evaluation showed 92% overall student satisfaction, with strong gains in innovation and technical skills. Notably, four teams are progressing toward formal company formation, and another is advancing product-market research after prototype development. Professor Stynes emphasised that Citi UpStart demonstrates ESD in action: students learn *through* sustainability by applying values, technological knowledge, and entrepreneurial thinking to real-world problems.

About the author

Professor Paul Stynes
NATIONAL COLLEGE OF IRELAND

81. Changing Lives Through Education: Internal Voice – External Impact

JOHN ANDREWS



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=430>

John Andrews highlighted how sustainability is being embedded across teaching, learning, and digital innovation at NCI. Central to this work is the *Digital Sustainability Badge*, a six-hour, fully asynchronous SDG-focused micro-credential developed through collaboration between the Digital Learning team and the Centre for Education and Lifelong Learning. The badge consists of four core modules—introduction, climate change, social justice, and personal action—plus learner-selected electives, allowing flexible engagement with SDG topics.

Although not mandatory, the badge provides a cross-programme foundation in sustainability and serves as a shared learning resource lecturers can direct students to when undertaking assignments linked to the SDGs. Mr Andrews noted that the badge creates an avenue for students to express individual commitment beyond programme requirements, while also offering a broader SDG overview than discipline-specific modules typically allow.

Drawing from interviews with faculty across computing and business, Mr Andrews reported increased student awareness and engagement, with growing evidence of sustainability shaping assignments, project framing, and reflective practice. He also shared qualitative feedback from an MBA student who described the Sustainable Business Leadership module as transformative, influencing her to develop a sustainability strategy for her organisation. John concluded that NCI's "internal voice" — the experiences and reflections of staff and students — increasingly drives meaningful external impact, reinforcing sustainability as a shared institutional culture.

About the author

John Andrews

NATIONAL COLLEGE OF IRELAND

PART XX

UNIVERSITY OF LIMERICK

82. ESD in University of Limerick Strategies and Frameworks

DR ÍDE O'SULLIVAN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=434>

Dr Íde O'Sullivan outlined how Education for Sustainable Development (ESD) is embedded systematically within UL's strategic, curricular, and quality assurance frameworks. UL's strategic plan, UL@50, positions sustainability as a core institutional value, emphasising ethical action, global responsibility, and addressing national and international challenges. This commitment is operationalised through the university's HEA Performance Compact target: by 2030, 100% of UL programmes will be reviewed and aligned with the university's Curriculum Framework.

The Curriculum Framework—central to UL's *Action for Wisdom Teaching, Learning and Assessment Strategy*—defines a set of graduate attributes closely aligned with international ESD frameworks, particularly GreenComp. UL graduates are expected to be responsible, curious, courageous, articulate and agile, reflecting competencies in ethical reasoning, systems thinking, resilience, creativity, and global engagement.

The Framework also articulates a learning environment characterised by research-led, challenge-driven, experiential, collaborative and interdisciplinary learning. This pedagogical orientation ensures that programmes foster active citizenship and empower students to contribute meaningfully to planetary wellbeing. The Framework is integrated into all stages of programme design, approval and review; at both programme and module level, faculty must evidence alignment with graduate attributes, ESD-supportive pedagogies, and the principles of inclusive, research-informed curriculum design. Together, these structures ensure that ESD is not an isolated initiative but a fully embedded expectation across the university's curricular landscape.

About the author

Dr Íde O'Sullivan
UNIVERSITY OF LIMERICK

83. Blurring Boundaries to Shape Change: The Role of Stakeholder Engagement in ESD at the Kemmy Business School

DR ANNMARIE RYAN



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from this version of the text. You can view them online here:

<https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=436>

Dr Annmarie Ryan explored how stakeholder engagement is used as a transformative pedagogical strategy in the Kemmy Business School (KBS), with the aim of connecting disciplinary learning to real-world socio-environmental challenges. Building on KBS's long-standing commitments to social justice and responsible management education—reinforced through its status as a PRME Champion School—Dr Ryan discussed how ESD invites academics to rethink disciplinary assumptions, interrogate values, and situate business education within the realities of climate change, inequality, and systemic interdependence.

Dr Ryan presented a framework illustrating three modes of stakeholder engagement: guest contributions within the classroom; live cases and problem-based learning where students co-create solutions with external partners; and immersive, studio-based collaboration where boundaries between university and community dissolve. The *Digital Futures Lab* exemplifies the deepest form of this engagement. Here, master's students work alongside regional actors—such as the Midwest Bioregion Network—to analyse system-level food sustainability challenges, generate design-led interventions, and present these in public exhibitions.

This approach develops students' agency, systems thinking, and capacity for interdisciplinary collaboration, while enabling stakeholders to articulate needs, shape briefs, and engage in co-creation. Dr Ryan emphasised that such deeply embedded engagement demands resourcing, facilitation, and recognition, but yields significant value: it integrates teaching, research and societal impact, and offers a powerful space for students to practise active citizenship and transformative problem-solving.

About the author

Dr Annmarie Ryan
UNIVERSITY OF LIMERICK

84. An Evidence-Informed Teaching Approach to Social Justice Pedagogies: Co-creating Toolkits for Teacher Educators and Preservice Teachers

DR ANTONIO CALDERÓN



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=438>

Dr Antonio Calderón presented a multi-year, evidence-informed initiative that integrates social justice pedagogies into teacher education programmes within the Faculty of Education and Health Sciences. Working with undergraduate and PME cohorts in Physical Education, the project aims to build capacity among both

preservice teachers and teacher educators to engage confidently and critically with ESD-related themes such as inequality, inclusion, and power.

Grounded in ongoing cycles of data collection, reflection and resource development, Dr Calderón and colleagues co-created two open-access toolkits through the *JusticeEd* and *SATLE* projects, supported by Research Ireland, the New Foundations scheme, and HEA funding. The toolkits include visually designed case studies, reflective prompts, intersectional scenarios, and classroom-ready materials that simulate complex situations related to culture, identity, school structures, and teacher agency. The visual cases—printed and used in tutorials and school placement preparation—help student teachers navigate uncomfortable conversations, bridge theory and practice, and build confidence in enacting social justice pedagogies during placement.

The toolkits also document student teacher experiences, lesson plans, and digital portfolios, enabling an iterative, dynamic resource that evolves with ongoing feedback. Dr Calderón emphasised that this approach supports the national ESD strategy's priorities on pedagogical innovation and educator capacity-building, and provides a scalable model for ESD integration across teacher education disciplines.

About the author

Dr Antonio Calderón
UNIVERSITY OF LIMERICK

85. Integrating Social Entrepreneurship into Language Learning: Preparing

Business Students for Real-World Challenges

MARTA FORTES SÁEZ



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=441>

Marta Fortes Sáez presented an innovative international project linking language learning with social entrepreneurship, intercultural competence and sustainable development. Fifty business students from UL and the University of Valencia collaborated in multilingual teams to investigate local societal or environmental challenges and to propose socially driven entrepreneurial solutions. Using a combination of English, Spanish and virtual reality meeting environments, students engaged in intercultural exchanges, interviews with local entrepreneurs and NGOs, and collaborative design of sustainability-oriented business concepts.

Quantitative analysis using pre- and post-project surveys showed statistically significant gains in digital skills, intercultural competence, and overall confidence. Qualitative reflections demonstrated improvements in critical thinking, socio-emotional skills, teamwork and leadership, with students reporting enhanced openness, adaptability and linguistic proficiency. The integration of digital storytelling enabled teams to communicate solutions in

Follow-up interviews after cooperative education placements revealed that students transferred these skills into workplace contexts, citing improved intercultural communication, professional digital practices, and confidence in engaging with diverse teams. Supported by the Spanish Ministry of Science and Innovation, the project demonstrates a powerful model of embedding ESD competencies into language curricula while enhancing business relevance and global citizenship.

About the author

Marta Fortes Sáez
UNIVERSITY OF LIMERICK

86. Transforming the Learning Environment through the My Green Labs Initiative

GORDON ARMSTRONG



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=443>

Gordon Armstrong described UL's My Green Labs initiative, a

student-driven effort to enhance sustainability within laboratory environments across the Faculty of Science and Engineering. Recognising that scientific labs can be up to ten times more energy-intensive than office spaces—and major contributors to water use and single-use plastic waste—postgraduate researchers in the Bernal Institute initiated a structured sustainability review using the international My Green Labs certification framework.

Working collaboratively with technical staff and external assessors, UL's labs undertook baseline surveys, identified opportunities for reducing energy, waste and chemical usage, and co-developed a "Green Lab Manual" documenting sustainable practices. Over successive certification cycles, additional improvements have been introduced, including energy-efficient freezer management, reduced-volume protocols in teaching labs, improved chemical procurement processes, and aligned travel and hybrid-working policies.

Equally significant is the cultural shift the initiative has fostered. Students now advocate for sustainability enhancements, prompting collaboration between research groups, technical teams, procurement, and estates. Green Lab practices are being integrated into undergraduate and postgraduate research training, enabling students to carry sustainability-aware laboratory practices into industry and future research roles. With emerging national moves toward requiring sustainability evidence in research funding applications, Mr Armstrong highlighted the importance of such initiatives in positioning UL as a sectoral leader in responsible scientific practice.

About the author

Gordon Armstrong
UNIVERSITY OF LIMERICK

PART XXI

DUNDALK INSTITUTE OF TECHNOLOGY

87. How the SDGs Shaped Our Rural Development Module

EAMONN MULLEN



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=448>

Eamonn Mullen described the transformation of a sustainable rural development module delivered within DkIT's Level 8 Sustainable Agriculture programme. Originally introduced to address the social sustainability dimension often missing from agriculture curricula, the early iterations of the module struggled to engage students who viewed its themes as abstract, peripheral, or overly "policy-focused." Programme review in 2016 provided the catalyst for rethinking its purpose, structure and pedagogy, supported by collaboration with sustainability education specialist Dr Suzanne Linnane.

The revised module used the UN Sustainable Development Goals (SDGs) as its organising framework, enabling students to connect global sustainability challenges to the realities of rural life, farming, infrastructure, services, water quality, and community resilience. Mr Mullen and Dr Linnane shifted from traditional lecture-heavy delivery to workshop-based, participatory learning, emphasising local relevance and lived experience. Students undertook SDG

audits of local organisations, engaged with external facilitators such as Development Perspectives, and explored nature-based solutions for rural environmental challenges. Assessment was redesigned to centre authentic, creative tasks, including TikTok-style explainer videos, peer-led workshops, community events, and reflective vlogs documenting personal efforts to live out SDG-linked sustainability challenges.

The annual “SDG Vlogging Challenge” has become a signature feature, where students attempt actions such as living on minimal water use, eliminating plastic waste, or following a plant-based diet. Mr Mullen highlighted the impact of this shift: deeper student buy-in, greater ownership of learning, and the emergence of student leaders through public-facing events such as World Water Day. He emphasised that ESD in agriculture requires both head and heart—connecting scientific knowledge with empathy, creativity and personal reflection—to enable future farmers and agricultural professionals to engage meaningfully with sustainability transitions.

About the author

Eamonn Mullen

DUNDALK INSTITUTE OF TECHNOLOGY

Eamonn Mullen is a Lecturer in Agriculture and Science at Dundalk Institute of Technology.

88. The ReSPoNSE

Partnership and the MBS in Responsible Entrepreneurship

DR TERESA O'ROURKE



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=450>

Dr Teresa O'Rourke presented ReSPoNSE—the multi-institutional partnership that designed and now delivers Ireland's first **MBS in Responsible Entrepreneurship**, funded through the HEA's Entrepreneurship Education Initiative (Strand 1). Led by DkIT, in collaboration with MTU, ATU, UCC, and TUS, the €246,000 project co-designed, validated, and launched a fully funded, one-year, hybrid master's degree aimed at developing responsible entrepreneurial leaders who can create sustainable ventures or drive socially responsible innovation within existing organisations.

Dr O'Rourke outlined how the programme brings together academic expertise from multiple institutions, industry partners and national networks to reimagine entrepreneurship education through an ESD lens. The programme emphasises social justice, inclusion, sustainability, ethics, and strategic responsibility. Delivery is shared across partner institutions, with modules co-created and taught by distributed teams. Students participate in residential workshops, online seminars, industry-led projects, and a final major capstone: either a responsible new venture creation or an applied responsible-industry project.

The inaugural cohort reflects broad diversity in age, background and professional experience, with strong representation from women and mid-career professionals seeking to integrate sustainability into their business practice. The programme emphasises accessible, inclusive entrepreneurship, encouraging participation from underrepresented groups and supporting recognition of prior learning. Early student engagement suggests

strong interest in progressing ideas through partner incubation hubs. Dr O'Rourke noted that ReSPoNSE demonstrates the potential of collaborative design to reshape national entrepreneurship education, embedding sustainability principles and preparing graduates to act as responsible change-makers.

About the author

Dr Teresa O'Rourke
DUNDALK INSTITUTE OF TECHNOLOGY

Dr Teresa O'Rourke is the Programme Director of the MBS in Responsible Entrepreneurship at Dundalk Institute of Technology.

89. The 20-Year Story of the Campus Wind Turbine at DkIT

DR RAY BYRNE



*One or more interactive elements has been excluded
from this version of the text. You can view them online*

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=452>

Dr Ray Byrne presented the two-decade evolution of DkIT's on-campus wind turbine, a pioneering project installed in 2005 and recognised as the first wind turbine sited on a higher education

campus worldwide. Conceived by the late Dr Larry Stout, whose industry experience in wind engineering informed its design and feasibility studies, the project undertook comprehensive assessments of turbine siting, resource potential, grid integration, and community consultation. Early, transparent engagement with local residents resulted in full planning approval without objection – remarkable given the turbine’s scale and novelty at the time.

The 850 kW Vestas V52 turbine has since become a defining feature of the DkIT landscape and an integral element of campus sustainability. Dr Byrne outlined its long-term performance: annual generation typically ranges from 1.3 to 1.6 GWh, supplying approximately 30% of the institute’s electricity demand. Over its lifetime, it has delivered substantial financial savings through reduced grid consumption and limited revenue from exported electricity. Historically, the turbine offset between 700 and 900 tonnes of CO₂ annually, figures that have gradually declined in line with Ireland’s decarbonising electricity grid.

Operational management has included scheduled blade inspections, maintenance of major components, and a significant gearbox replacement in 2019. The turbine has also served as a living laboratory for students, researchers, and technicians. It has supported renewable energy teaching across undergraduate and postgraduate programmes, featured in wind turbine servicing training delivered in partnership with the Danish Wind Power Academy, and welcomed numerous school groups and teacher CPD initiatives. In research, the turbine has provided rich datasets for Interreg, SEAI, and international collaborative projects, with an open-access public repository (2006–2020) enabling global use of its 10-minute resolution performance data.

Dr Byrne emphasised the turbine’s enduring legacy as both an energy asset and a pedagogical resource. As it enters its post-20-year phase, it offers valuable opportunities for future research, teaching, and strategic planning – including considerations of refurbishment, repowering, hybridisation with solar and storage, and deepened integration into DkIT’s broader sustainability

agenda. Far from a static installation, the turbine continues to function as an anchor point for applied ESD practice on campus.

About the author

Dr Ray Byrne

DUNDALK INSTITUTE OF TECHNOLOGY

Dr Ray Byrne is a Lecturer and Researcher in the School of Health and Science at Dundalk Institute of Technology.

PART XXII

SUBMITTED CASE STUDIES

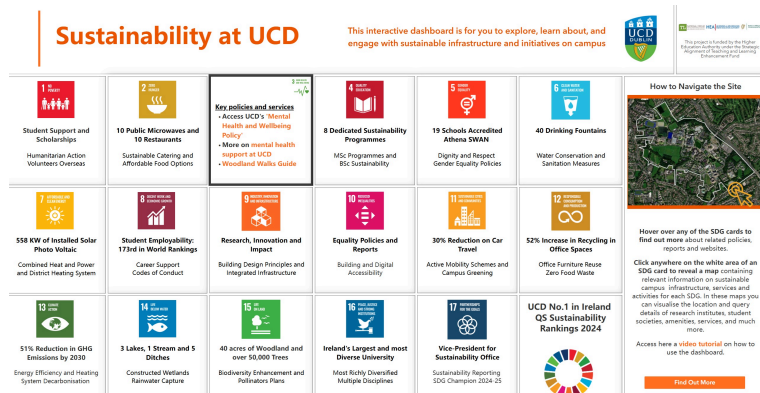
90. UCD Sustainable Action: Collaborative Mapping and Learning

DR AINHOA GONZÁLEZ; LENA TURNER; LUKA STOJANOVIC;
MATTHEW KIRWAN; CIARA MURRAY; ELLA CHENEY; MAASA ALI;
SIOFRA HANDIBODE; CAROLINE MANGAN; JOHN FAHEY; KIRSTEN
SOUTHARD; PROFESSOR TASMAN CROWE; ARLENE CRAMPSIE;
AND TOBI MORAKINYO

Institution

University College Dublin

Outline



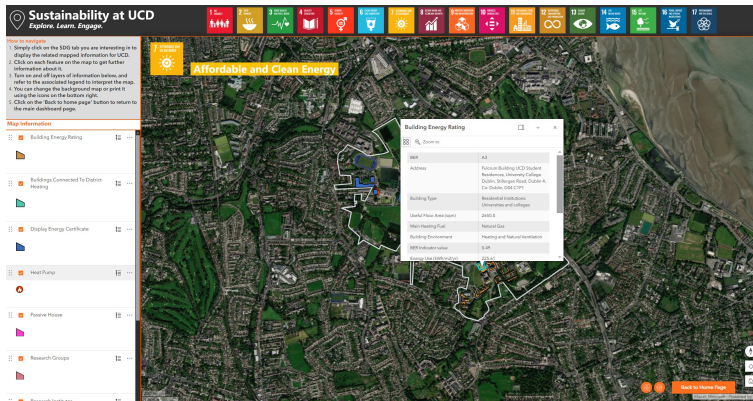
The project was inspired by the SATLE call theme 3 'Education for Sustainable Development', the need to take stock of what UCD

is currently doing to promote sustainability within campus, and the opportunity to raise awareness and encourage student/staff engagement with such initiatives. The power of Geographic Information Systems (GIS) to spatially gather and visualise data as well as to develop interactive online maps shaped the project idea further. Overall, these considerations contributed to the ultimate aim of the project: co-creating an interactive GIS-based online dashboard that brings together information on available campus infrastructure, activities and services, thus providing curricular innovation for sustainability and informed citizenship.

Intended Learning Outcomes

The dashboard is intended to provide a robust teaching and learning platform for undergraduate and graduate students across a range of disciplines. Through the co-creation, updating and direct use of the tool, the project contributes to pathways for individual and group student agency in local sustainability.

Impact and Outcomes



Short-term impacts of the dashboard include students and staff awareness raising on sustainability infrastructure, activities and initiatives within UCD. Anecdotally, some students have already indicated that the dashboard has promoted engagement with certain infrastructure and initiatives (e.g. water fountains and societies) and inspired research ideas (e.g. on waste management policies and existing segregation bins). Estates and Services have also indicated that the dashboard has enabled digitising and centralising, as well as making publicly available, some relevant information pertaining campus operations (e.g. bicycle parking, EV charging points, green roofs, etc.). Two module coordinators have applied the dashboard in the classroom to support their teaching and have reporting it to be of benefit to them by showcasing types of sustainability efforts within higher level institutions, and by illustrating pragmatic approaches to online mapping and public engagement.

Collaboration, Partnerships & Student Participation

This project was envisioned as a student-staff collaboration from the outset. The project proposal was co-developed with undergraduate and postgraduate students. These and additional students from a range of undergraduate and graduate programmes formed a robust student team of seven people to support the co-creation of the dashboard. Key representatives from the Sustainability Office, UCD Global, Estates and Services and the School of Geography formed the core staff team, with contributions from a range of Schools. The wider UCD student community was also given the opportunity to contribute to the project through a campus-wide survey. 1369 students and staff responded to this survey and their feedback on the types of information they would find useful to be mapped for UCD, and key functionalities required of the dashboard shaped its development.

Student Engagement

Seven students formed the core student team in the project, with direct contributions from another three. 815 students responded to the campus-wide survey (see details below), and the dashboard has already been used in three modules (engaging approximately 250 students) and is regularly referred to by the Sustainability Student Society.

Disciplines

- Education
- Information and Communication Technologies
- Social Sciences, Journalism and Information
- Teaching and Learning

Best Practices & Resources

Top Tips

- Co-creation approaches foster mutual learning between students and staff
- Visualising the location of sustainable infrastructure, services and activities, and providing easy to access details on how to contact/access these, facilitates awareness and engagement.

Useful Resources

- The dashboard is publicly available here: <https://cms.ucd.ie/sustainability/resources/>
- The report with the results of the campus-wide survey can be found here: <https://ucdireland.maps.arcgis.com/sharing/rest/content/items/76f7a057036f42229b24be988524bd18/data>

Funding Details

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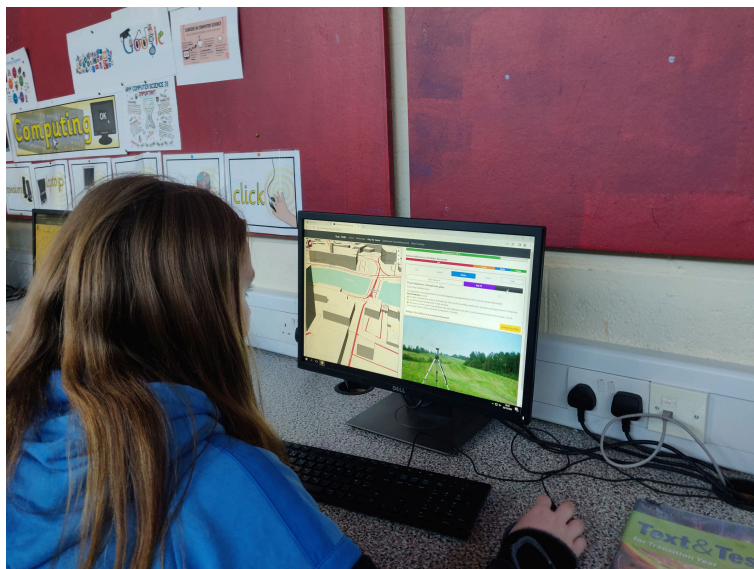
9I. Climate Smart: Transition Year Module

ANNA DAVIES; STEPHAN HUGEL; AND GRAINNE RYAN

Institution(s) and Partner Organisations

- Trinity College Dublin
- An Taisce

Outline



The Climate Smart Transition Year (TY) unit has seven online workshops with short videos and multiple-choice questions that can fit within a single or double class. The module finishes with a serious game where students adopt the persona of mayor and invest in adapting their city to climate change. You can follow the TY module on one of two pathways, one focused on Dublin the other on Cork, and you can take the module either in English or Irish. Choose what suits your students best.

1. Introduction to climate change adaptation and mitigation
2. Flooding and climate change in Dublin
3. Sensing, monitoring and predicting floods
4. Mapping and visualising floods
5. Adapting to our changing climate
6. Approaches to adaptation

7. Play the Climate Smart serious game

The Climate Smart serious game is an interactive map-based role play game embedded in the Climate Smart platform. Developed by Trinity College Dublin, it can be played on computers, tablets and smart phones. The game puts you in charge of Dublin in 2045 and your task is to create, consult on, and implement Dublin's adaptation plans. You'll need to manage future floods while protecting people's safety and keeping your voters happy.

Evaluation of the module reveals statistically significant positive changes in terms of knowledge and agency. Findings are reported in a number of peer reviewed journals including: [Playing for Keeps: Designing Serious Games for Climate Adaptation Planning Education With Young People | Article | Urban Planning](#).

Climate Smart was selected to participate in an EU showcase at the 2024 Education for Climate Day in Brussels and was a runner up at the Educational Games Based Learning Competition in 2024 in Aarhus, Denmark.

Intended Learning Outcomes

On completion of this module students will be able to:

- Describe the basic mechanisms of climate change [workshop 1]
- Understand why the earth has been warming more rapidly since the 1950 [workshop 1]
- Explain the difference between climate mitigation and climate adaptation, and how they are both needed when taking climate action [workshop 1&2]
- Discuss how climate change may affect the future of Ireland and society [workshop 2]

- Identify the different types of flooding that can occur, and what their causes are and how they will be affected by climate change [workshop 3]
- Demonstrate an understanding of how floods are sensed, mapped, and predicted in Ireland [workshop 4]
- Explain the differences between, and the advantages and disadvantages of, different climate adaptation mechanisms to counteract increases in flooding through climate change [workshop 5]
- Understand the processes of planning, consultation, revision and implementation that will be necessary to make just transitions to a climate resilient Ireland [workshop 6&7]

Teaching and Learning Approach

The module considers, social, economic and environmental dimensions of climate change adaptation. Multi-model methods are used to optimise learning opportunities for different types of learners, with videos (with subtitles), multiple choice questions, and text-based versions of the workshops available alongside the serious game. The concept of adaptive capacity and capabilities is used to structure the ESD learning. The results of this work are published in a peer review journal: [Expanding adaptive capacity: Innovations in education for place-based climate change adaptation planning – ScienceDirect](#)

Assessment Strategy

Students are assessed through in-workshop multiple choice questions. The capstone serious game provides an opportunity to test overall learning through leading adaptation investments in a

city. Feedback is provided at the end of the game in terms of how well students adapted their city to climate change. Multiple game plays are possible to embed learning.

Impact and Outcomes

Statistically significant positive impacts on students knowledge and understanding of climate change adaptation were revealed through pre and post surveys of student participants. The results are reported here: [Expanding adaptive capacity: Innovations in education for place-based climate change adaptation planning – ScienceDirect](#)



Collaboration, Partnerships & Student Participation

Students, teachers, climate scientists, serious game designers and policy shapers all contributed to the design of the Climate Smart TY module. Students from Ringsend Community College were particularly pivotal in early ideation for Climate Smart. This led to the prototype of the serious game. Further refinement and development of the workshop videos and materials took place with students from ten schools in Dublin in 2022. The refined resources were rolled out across 40 schools in Dublin, with schools in Cork contributing to the development of a new geographical pathway through the module focused on that area. COGG were commissioned to translate materials into Irish to ensure accessibility for Irish Schools. Overall more than 4320 students have followed Climate Smart to completion with 82 schools and 110 teachers participating from across the country, and even some schools overseas following the programme.



Disciplines

- Education
- Natural Sciences, Mathematics and Statistics
- Social Sciences, Journalism and Information

Best Practices & Resources

Top Tips

- Teachers should familiarise themselves with the teachers handbook and have a go at playing the game in advance of running the unit with students.

- Make sure to look at the ‘hands-on’ activities that are listed in the handbook to break up the online video workshops. Activities include developing a flood awareness poster for your school.

Useful Resources

- <https://www.cogitatiopress.com/politicsandgovernance/article/view/3892>
- <https://www.tandfonline.com/doi/abs/10.1080/00167487.2024.2297611>

Email: climatesmart@eeu.antisce.org

Explore the climate smart platform: www.climatesmart.ie

Funding Details

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92. The Living Lab: A Model for Sustainable Land Management, Biodiversity, Engagement and Education

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Institution(s) and Partner Organisations

- South East Technological University
- ABP Food Group
- Ballybeg Family Resource Centre
- CALMAST – Bealtaine Living Earth Festival
- Department of Agriculture, Food and Marine (DAFM)
- Eco-Innovation Research Centre (EIRC)
- Grantstown Nurseries
- Erasmus+ Networking and Training for Youth Workers
- Irish Bee Conservation Project
- The Irish Science Teachers' Association (ISTA)
- Members of the Land Sciences Agri-Food Industry Board
- Mount Congreve
- National Biodiversity Data Centre (NBDC)

- National Organic Training Skillnet (NOTS)
- National Technological University Transformation for Recovery and Resilience (N-TUTORR)
- Outdoor Recreation Infrastructure Scheme
- Presentation Primary School
- Seedtech
- Solas Centre
- Special Branch Carvers
- St Paul's Community School
- Tomar Trust
- Top of the City Community Garden
- Waterford and South Tipperary Community Youth Service
- Waterford Area Partnership
- Waterford Comhairle na nÓg
- Waterford City and County Council
- Waterford Lions Club
- Waterford Trees for Life
- Xcelerate Centre



Description

The Living Lab at SETU Carriganore Campus is a long-term, evolving initiative that integrates sustainability into education, research, and community engagement, providing a practical model for sustainable land management. Aligned with Education for Sustainable Development (ESD) frameworks, it fosters hands-on learning, applied research, and collaboration with industry and policymakers to drive real-world sustainability solutions.

Home to Ireland's National Biodiversity Data Centre (NBDC), and an access point to the Waterford Greenway, the Living Lab serves as a multi-functional platform for teaching, research, and public engagement. Through experiential learning, it equips students with the skills and knowledge to address environmental challenges while supporting institutional sustainability policies and strategic goals.

However, realising its full potential requires ongoing research, innovation, and investment.

As a registered land bank with DAFM, the Living Lab provides a demonstration site to trial and showcase sustainable agricultural practices, including agroforestry and regenerative land use. The establishment of biodiversity-friendly enhancements such as bat boxes, native honey bee conservation boxes and posts for habitat formation by solitary and mining bees at the site, show how small changes can improve sites for biodiversity. The Living Lab provides hands-on learning opportunities for students and serves as a case study farm, supporting educators, farmers, and policymakers in navigating Common Agricultural Policy (CAP) reforms related to climate resilience and biodiversity conservation through applied research and practical demonstration.

Horticulture projects include planting pollinator-friendly species for translocation to the Greenway and SETU campuses, and developing a social and therapeutic garden at Carriganore House, specialising in cultivating medicinal plants using organic practices. In collaboration with Waterford Council, the Living Lab was also involved in the creation of a Biodiversity Hotspot along the Greenway, linking into St Declan's Way, walking trail, forming one of the Greenway's interactive biodiversity waypoints for citizen scientists <https://storymaps.arcgis.com/stories/6b4a9beff84c41c2a173ece54795441d>

The Living Lab is a research hub, supporting undergraduate, postgraduate, and doctoral studies in soil science, biodiversity conservation, and land management. Examples of ongoing research projects include the exploration of soil phosphorus dynamics, nutrient retention, and runoff processes, alongside biodiversity studies assessing the role of bats in ecosystem services using cutting-edge non-invasive genetic tools. Secure field sites and laboratory facilities enable applied, problem-solving research that contributes to evidence-based policy and industry practices.

Beyond research, the Living Lab fosters education and public engagement, embedding sustainability into teaching and outreach.

Training workshops for Leaving Certificate Agricultural Science teachers provide hands-on field and laboratory experience, while MSc and undergraduate students apply soil, plant and biodiversity assessment and monitoring techniques in real-world contexts. Since 2021, tree planting projects such as the Native Irish Tree Trail and Ogham Tree Calendar have engaged students, secondary school groups, Erasmus+ volunteers, and industry teams, creating living, outdoor learning environments that reinforce biodiversity conservation and active citizenship.

As part of its Green Infrastructure and Community Engagement efforts, the Living Lab is transforming a historic coach house into a multipurpose sustainability hub, housing biodiversity laboratories for education, research, and outreach. The Biodiversity and Sustainability Forum, established in spring 2024, fosters interdisciplinary collaboration, bringing together researchers, students, industry leaders, and policymakers to co-develop integrated sustainability solutions. Interest in the forum continues to grow, with engagement from the agri-food and biopharmaceutical industries, as well as academic and policy stakeholders such as Teagasc, Waterford Council, and DAFM. Similarly, engagement with the Land Sciences Agri-Food Industry Board enables local stakeholders to share insights and respond to emerging issues, many of which focus on sustainability.

The Living Lab requires long-term investment in sustainability, providing a holistic, interdisciplinary approach to ESD by embedding sustainability into research, teaching, and community-driven action. Continued collaboration, funding, and policy support will expand its impact, positioning it as a leading model for sustainability education and innovation both regionally and nationally.

SETU Land Sciences Living Lab



Legend

Features

- ★ Bat Box
- Native Bee Box
- Bee Post
- ⊙ Honey Bee Hive

Land masses

- Border
- Wetland
- Trial Plots
- Research yard
- Recreation
- Agroforestry plot
- Biodiversity area

- Community tree planting
- Community/Educational garden
- Forage
- Forest
- Habitat restoration
- Horticultural yard

Intended Learning Outcomes

- Knowledge of Sustainable Practices – Understand and apply principles of agroforestry, habitat restoration, and sustainable land management.
- Practical Skills Development – Gain hands-on experience in tree planting, native tree identification and cultivation, pollinator-friendly planting, habitat restoration, and soil productivity enhancement.
- Interdisciplinary Collaboration – Engage with experts across forestry, horticulture, agriculture, biodiversity, and soil science.
- Community and Stakeholder Engagement – Develop outreach skills through collaboration with schools, industry, and government bodies.
- Research and Critical Thinking – Conduct biodiversity monitoring, field-based research, and sustainability assessments.
- Pollinator, Native Plant and Wildlife Conservation – Learn about bat and bee box installation, pollinator habitats, native plant cultivation, and native species' ecological roles.
- Soil Health and Productivity – Apply soil science principles, including composting and regenerative land management.

Teaching and Learning Approach

Environmental Sustainability (E)

Students engage in sustainable land management through tree planting, hedgerow installation, agroforestry, and pollinator-friendly planting, contributing to biodiversity conservation and

carbon sequestration. Soil health and regenerative agriculture principles are applied to improve natural soil productivity.

Social Responsibility (S)

The initiative fosters inclusive education by engaging students at all levels, alongside local schools, industry, and community groups. The social and therapeutic garden will provide an accessible space for horticulture and wellbeing.

Governance and Policy Awareness (G)

Through the Biodiversity and Sustainability Forum, members explore how sustainability aligns with national and EU biodiversity strategies. Student-led research can contribute to evidence-based decision-making, and students in Land Sciences programmes gain the knowledge needed to engage with sustainability initiatives.

Assessment Strategy

Students complete field trip reports, documenting observations, data collection, and analysis to deepen their understanding of biodiversity, agroforestry, and sustainable land management practices. Applied assessments require students to evaluate on-farm biodiversity, agroforestry systems, and soil health, proposing evidence-based sustainability improvements. Research and project-based assessments provide real-world applications of sustainability concepts. As the initiative evolves, further opportunities will arise to develop research projects using the glasshouse and associated facilities.

While hands-on experience gained through the Living Lab is not always directly measured, its impact is reflected in exams, coursework, and professional development. To assess long-term outcomes, the Lab is developing an evaluation framework and will implement annual progress reports, tracking key performance indicators (KPIs) to monitor impact and effectiveness, enabling strategic future development.

Impact and Outcomes

The Living Lab delivers significant benefits in student learning, community engagement, and climate action, reinforcing SETU's commitment to sustainability and biodiversity. Students gain hands-on experience, applying these skills to real-world climate resilience challenges. The initiative fosters interdisciplinary collaboration, bridging forestry, horticulture, agriculture, and biodiversity while advancing SETU's strategic goals. Through the Biodiversity and Sustainability Forum, the Living Lab engages students, faculty, industry partners, and policymakers to co-develop sustainability solutions. Partnerships with local communities, schools, and environmental organisations support tree planting, habitat restoration, organic growing, and pollinator-friendly initiatives. The social and therapeutic garden at Carriganore enhances student research and community well-being. As an evolving project, it continues to expand through new biodiversity initiatives, habitat enhancements, and sustainable land-use practices.



Collaboration, Partnerships & Student Participation

The Living Lab thrives on interdisciplinary collaboration, student engagement, and partnerships with external stakeholders. Undergraduate, MSc, and PhD students actively engage in research, biodiversity enhancement, and outreach activities, integrating sustainable agriculture and landscape management into education through hands-on experience.

The Biodiversity and Sustainability Forum connects SETU faculty, staff, students, industry, and policymakers, fostering collaboration on environmental challenges. Partnerships with Waterford Trees for Life, forestry students, local schools, and community groups have led to tree planting, social gardening, and biodiversity projects, embedding sustainability within the wider community.

The Carriganore site is also home to several key facilities, including the SETU Xcelerate Centre, the Walton Institute, the SETU Sports Arena and the NBDC. Within this dynamic setting, the Living Lab serves as a bridge National between academic research, sustainable land use, and industry applications.

Student Engagement

- PhD Research Projects (Level 10): Current projects utilising the site (n = 3).
- MSc programmes in Organic and Biological Agriculture; Organic and Biological Horticulture and Sustainable Agri-food Systems, including those participating in stand alone 10 credit modules (Level 9) (over 300 since 2022)
- Undergraduate Programmes: (n = 600)
 - o BSc (Hons) Agricultural Science (Level 8)
 - o BSc (Hons) Land Management (Level 8)
 - o BSc in Agriculture (Level 7)
 - o BSc in Horticulture (Level 7)
 - o BSc in Forestry (Level 7)
- School Outreach Initiatives, Youth reach, workplace outreach e.g. tree planting (n = 520)
- Biodiversity Walks e.g. Biodiversity and Heritage weeks e.g. pollinators, bat walks (n = 100)
- Biodiversity and Sustainability Forum (n = 120) (four meetings have involved the Living Lab to date)
- Secondary School Science Teacher upskilling (n = 60)

Programmes

- BSc in Agriculture (Level 7)

- BSc in Horticulture (Level 7)
- BSc in Forestry (Level 7)
- BSc (Hons) in Agricultural Science (Level 8)
- BSc (Hons) in Land Management (Level 8)
- MSc in Organic and Biological Agriculture (Level 9)
- MSc in Organic and Biological Horticulture (Level 9)
- MSc in Sustainable Agri-food Systems (Level 9)
- PhD Research Projects (Level 10)
- School Outreach (Engaging primary and secondary school students)

Disciplines

- Agriculture Forestry, Fisheries and Veterinary
- Education
- Natural Sciences, Mathematics and Statistics
- Teaching and Learning

Best Practices & Resources

Top Tips

- Volunteers and community groups tend to appreciate having a clear point of contact. Once that connection is made, we can facilitate links within the school or department. This can work both ways to help initiate projects.
- The SETU Land Sciences Living Lab has evolved organically over the past number of years, led by members of SETU's Land Sciences who have both professional and personal interests in

its development. From our experience, we believe that fostering these personal interests is key to the sustained growth of the project. Going forward, it would be valuable if staff time and commitment could be formally recognised, helping to prevent burnout among those leading the efforts as the project expands.

- Outreach initiatives such as the Land Sciences Biodiversity and Sustainability Forum and the Land Sciences Agri-Food Industry Board have been instrumental in the dissemination and ongoing development of the Living Lab, in collaboration with the local region and stakeholders.

Useful Resources

- The Native Woodland Trust provides excellent information on native tree species, and can be a useful resource when planning a planting project
<https://www.nativewoodlandtrust.ie/>
- The National Biodiversity Data Centre provides excellent resources related to biodiversity maps, species guides and training and upskilling opportunities
<https://biodiversityireland.ie/>
- Developing links with local Biodiversity, Heritage and Climate Officers at County Councils is a useful first step in working collaboratively with local stakeholders to develop initiatives such as this. There are sometimes small grants available that may support collaborative opportunities.
<https://www.heritagecouncil.ie/our-work-with-others/biodiversity-officer-programme>

Funding Details

- NTUTORR (National Technological University Transformation for Recovery and Resilience) – Supported the February 2024 Demonstration Native Hedgerow planting.
- Outdoor Recreation Infrastructure Scheme 2023 awarded €30,000 for the Greenway pocket recreation project.
- TOMAR Funding supports the restoration of Carriganore House, including the social and therapeutic garden.
- Research Connexions – supported the establishment of the Biodiversity and Sustainability Forum
- EU Conexus – supports costs associated with the running of the Biodiversity and Sustainability Forum
- Funding from the MSc programmes in Organic and Biological Agriculture, Organic and Biological Agriculture and MSc in Sustainable Agri-food Systems, with support from part funding provided by National Organic Training Skillnet: NOTS enabled the refurbishment of the glasshouses (€30K) in the Living Lab as well as purchases of equipment to support living lab teaching activities.
- Indirect and in kind Funding: ABP Food Group funds tree procurement and transport for school groups, while NTUTORR supports hedgerow planting. Industry sponsors like West Pharma contribute to specific events. Volunteer and organisational support come from the Waterford Lions Club, Erasmus+, and SETU staff and students, who provide manpower, expertise, and equipment.

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93. Embedding sustainability into a Pre-sessional programme at UCC

KERRY PLATTS AND MAYUMI LIWANAG

Institution

University College Cork

Description

The initiative we embarked on this year was integrating several sustainable development goals into UCC's Pre-Sessional programme's curriculum. Our Pre-Sessional programme is aimed at international applicants who have already met their academic requirements but require an improvement in their English language level in order to receive a full offer for their chosen degree programme. Course length varies between 6 and 16 weeks depending on their entry requirements.

The main reason for integrating the topic of sustainability was to ensure there was a common theme running through the programme, which can enhance language acquisition, involves deeper cognitive processing skills and also supports more meaningful interaction between students. As we have students from a wide range of disciplines attending these programs, it has always proven difficult to find topics that are both interesting, engaging and relevant to the students' individual disciplines.

By using the sustainable development goals as a theme and designing tasks and assessments that required students to relate a sustainable development goal to their disciplines, the programme did prove itself to be engaging and made students more aware of global issues and of how their subjects could relate to sustainability. This, potentially, could have an impact on student's future behaviours and actions in terms of the sustainable development goals

Intended Learning Outcomes

- To recognise and evaluate a link between a sustainable development goal and the student's individual discipline
- To critically engage with the chosen sustainable development goal
- To seek out personal, local and global perspectives
- To recognise and appreciate diversity
- To make students aware of [UCC's Sustainability and Climate Action Plan 2023 – 2028](#)
- To become a more global citizen

Teaching and Learning Approach

With participatory & collaborative learning at the heart of all English language teaching, we aimed to couple this with Content and Language Integrated Learning (CLIL) by selecting a number of SDG goals that were relevant to the students' disciplines, such as SDG4 Quality education for all (relevant for students taking an MA in Teaching Chinese to speakers of another language) and SDG12 Responsible Consumption & Production (relevant to students taking an MSc in Food Business & Innovation or MengSc Mechanical Engineering). These were then divided into two-week blocks. We sourced relevant articles/lectures on these topics and used these to teach/practise related vocabulary, syntax, and grammatical structures in a variety of interactive ways while developing the students' 4 language skills (listening, reading, speaking and writing), as well as reflective and critical thinking skills.

Assessment Strategy

As this was the first year that we embedded sustainable development goals into our programme, we did not specifically assess content relating to sustainability, but rather we focused on the assessment of their English language level with points awarded if they made a valid connection to an SDG. They were encouraged to be critical, so points were also awarded for their level of criticality and engagement with the topic.

Impact and Outcomes

Student feedback was very positive, with 95% of students stating that they enjoyed learning about the SDGs and, more importantly, the full cohort (100%) stated that they learned how to be more sustainable in the future. Additionally, 100% of students also agreed that the material was both relevant and of interest to them. In tutorials, informal feedback from students was very positive, with comments such as ‘The reading topics are very interesting and give me a bigger picture of the world’ and ‘The topics we talk about can be connected to our disciplines’. Following a trip to Cobh, a small town in Cork, one of the students commented in her reflective journal: ‘Also, I was surprised and impressed to see that Cobh has such an environmental protection project.’ – something she may not have considered before studying these areas in class

Collaboration, Partnerships & Student Participation

As we were piloting the inclusion of sustainability goals this year, there was no collaboration with external partners. However, teachers working on the Pre-session programme collaborated on sourcing relevant materials, such as readings and recorded lectures. On the other hand, students participated with their own research topic which had to include reference to at least one sustainable development goal. They also worked on a presentation with two other classmates, each studying in a different discipline. This multidisciplinary presentation had to show a common link/thread to a sustainable development goal and their disciplines.

Student Engagement

22 students for 2025.

Discipline

Teaching and Learning

Programme

UCC Pre-Sessional Programmes

Best Practices & Resources

Top Tips

- Try to find some 'feel good' sustainability information. One issue that arose was the lack of positive stories when engaging with the SDG's which could lead to a certain amount of negative feelings from students as the stories we were dealing with were generally 'bad news' stories.
- Connect the SDGs with local issues, at the University, city you live in or the regions that students come from. This would ensure even higher student engagement is at a higher level as they can see the relevance of the SDGs.

Useful Resources

- A useful framework for integrating sustainability into curriculum: Cambridge Sustainability Framework for ELT : <https://assets.cambridgeenglish.org/events/sustainability-framework-for-elt.pdf>
- Freely available teaching materials for English for Academic Purposes (EAP), emphasizing the importance of sustainability and collaboration among educators. <https://developeap.weebly.com/downloads-and-useful-resources.html>
- A very useful website that has news articles written by academic experts, working with professional journalists with links to academic sources, amongst others. The Conversation www.theconversation.com

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94. GreenComp in Curriculum Design: A Case Study on Sustainability Competencies in Higher Education

DR NIAMH O'BRIEN; KEITH BYRNE; AND NEILL WYLIE



Institutions and Partner Organisations

South East Technological University (SETU), EU-CONEXUS – SETU

Description

This initiative examines the process of design and implementation of a sustainability-focused micro-credential within higher education, developed collaboratively across with academic and student stakeholders in SETU. It responds to the growing demand for flexible, skills-based learning pathways that address urgent sustainability challenges while maintaining pedagogical integrity and academic rigour. The project involved the amalgamation of instructional design models along with GreenComp: the European sustainability competence framework, to ensure that sustainability-focused micro-credentials are created specifically to meet the growing need for people to improve and develop the knowledge, skills and attitudes to live, work and act more sustainably. In doing so, the initiative provides a clear, transferable model that demonstrates how sustainability competencies can be meaningfully embedded into higher education curricula through micro-credential design.

This initiative, focused on the collaborative instructional design of the Level 9 micro-credential worth 10 ECTS titled Environmental Sustainability in Education, was developed by the research team at SETU. A multi-layered framework was utilised that combined the ADDIE model (Analysis, Design, Development, Implementation, Evaluation), ABC Learning Design (ABC-LD), and the European Sustainability Competence Framework (GreenComp).

The pedagogical approach to this needs-driven micro-credential was co-designed using ABC-LD in face-to-face workshops involving academic experts, student representatives, and interdisciplinary teams from within SETU. The design process included persona development, content wireframing, ABC

storyboarding, and strategic mapping of GreenComp competencies to ensure that sustainability principles were embedded intentionally and visibly throughout the learning experience.

Internal piloting and evaluation of this micro-credential targeted postgraduate students in education-related disciplines. Delivered over six weeks via blended learning, the module included online lectures, guided readings, reflective tasks, and a final assessment. Students engaged with GreenComp-aligned activities that promoted ways to think, plan and act with empathy, responsibility, and care for the planet and for public health.

A mixed-methods evaluation was conducted post-delivery, including surveys and interviews to assess learner outcomes. Designer observations and field notes provided additional insights into engagement patterns and pedagogical effectiveness.

This initiative demonstrates how micro-credentials can be designed to uphold academic standards while fostering transformative sustainability learning. It offers a replicable model for embedding GreenComp into short-form learning and highlights the value of collaborative, interdisciplinary instructional design in addressing complex educational challenges.

Intended Learning Outcomes

- Develop sustainability competencies aligned with GreenComp
- Apply systems thinking and critical reflection in educational contexts
- Demonstrate agency and adaptability in promoting sustainability in education contexts
- Engage in interdisciplinary problem-solving and collective action

Teaching and Learning Approach

The initiative embedded Education for Sustainable Development (ESD) through a multi-layered framework combining ADDIE, ABC Learning Design (ABC-LD), and the European Sustainability Competence Framework (GreenComp). ABC-LD workshops enabled collaborative mapping of learning activities, aligning assessment strategies and content to the 12 GreenComp competencies. Learning activities were designed to foster systems thinking, critical reflection, and transformative learning and included cognitive reframing through the SULI test, reflection points to associated media and literature, group discussions and Climate Fresk Workshop. Delivery was blended, integrating online lectures, face-to-face sessions, and collaborative group work to support a diversity of learners. Universal Design for Learning principles ensured inclusivity and accessibility. Students also engaged with co-creation practices, learning how to design and shape sustainability-focused education projects collaboratively with peers and stakeholders.

Assessment Strategy

Assessment within the newly developed micro-credential comprised of two formal assignments, each weighted at 50%. The first was a Critical Reflection Assignment (Mindset Reflections), where students completed six structured reflection tasks across the module. These tasks connected theory, literature, and practice, culminating in a cohesive reflective portfolio that demonstrated evolving sustainability perspectives.

The second was a Sustainability Project (Co-Creation in

Educational Settings), which required students to design and report on a sustainability initiative. This project emphasised co-creation, stakeholder engagement, and alignment with institutional and national policies. Together, these assessments captured both individual reflection and applied collaborative practice, providing robust evidence of learning, engagement and effective enablement of change.

Impact and Outcomes

Students reported increased sustainability understanding, awareness, confidence, and behavioural change. Surveys indicated a perceived increase in all 12 GreenComp competencies along with the adoption of sustainability practices in their teaching and organisation. Feedback included transformative learning statements such as: “It awakened me to reality” and “I realised sustainability can be taught in many practical ways, not just as theory”.

The initiative elevated our professional toolkit and strengthened our ability to embed sustainability within education. For both our own practice and that of our students, it enabled deep learning and supported a shift in teaching paradigms. For the research team, it fostered meaningful interdisciplinary collaboration and informed the development of future micro-credentials.

Disciplines

- Agriculture Forestry, Fisheries and Veterinary
- Education
- Generic programmes and qualifications
- Health and Welfare

- Natural Sciences, Mathematics and Statistics
- Teaching and Learning

Programme

Environmental Sustainability in Education (10 ECTS micro-credential)

Collaboration, Partnerships & Student Participation

During the development workshops a participatory co-design methodology was employed drawing on instructional design principles from ADDIE and the ABC frameworks. Students and external stakeholders contributed to the construction of learner personas, the development of instructional materials, and the design of assessment strategies through online and face-to-face workshops. This collaborative approach ensured that both industry perspectives and learner needs directly informed the creation of the sustainability-focused micro-credential.

Students participated actively and provided evaluative feedback on the micro-credential via structured surveys at the mid-point and after completion. Participants in the *Environmental Sustainability in Education* module represented primary, post-primary, further and higher education teachers and educators, ensuring a diversity of perspectives. This shaped the refinement of the micro-credential and highlighted the value of embedding student voice in curriculum innovation.

Student Engagement

Postgraduate students at SETU (one cohorts -15 students)

Best Practices & Resources

Top Tips

- Utilise a multi-layered instructional design framework for coherence and impact. Drawing on ADDIE, ABC-LD, and GreenComp in tandem created a structured yet flexible process that supported clarity of purpose, strong pedagogical alignment, and visible integration of sustainability competencies. This multi-layered approach ensured that design decisions were transparent and that both staff and students could connect learning activities with broader sustainability goals.
- Engage stakeholders early through collaborative workshops to ensure relevance and inclusivity. Inviting colleagues, students, and external experts into the design process from the outset created shared ownership and enriched the final outputs. Collaborative workshops helped us align the curriculum to real-world professional and disciplinary contexts, while also fostering interdisciplinary dialogue. This inclusivity strengthened the authenticity and applicability of the learning experience.
- Embed sustainability competencies visibly and intentionally to support transformative learning. By aligning with GreenComp,

competencies were made explicit in teaching, learning, and assessment. This intentional visibility enabled both staff and students to reframe their practice, expand their teaching and learning paradigms, and engage in transformative approaches to sustainability education.

Useful Resources

- GreenComp Framework – European Commission ABC Learning Design Toolkit
- MicroCreds Project – Irish Universities Association
- [Cards \(Front and Back\)](#)
- [Cards \(Flip Side\)](#)

Funding Details

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95. Reflections on Trinity College Dublin's first-ever Responsible Futures International audit

SARAH MURPHY



Institution

Trinity College Dublin

Description

[Responsible Futures](#) is a programme partnering universities and colleges with their students to embed sustainability throughout all

student learning, including what students learn and how through their courses, extra-curricular activities and the culture and values of their institution.

For over a decade, Responsible Futures has worked closely with 53 universities and colleges around the world to mainstream Education for Sustainable Development, ensuring that all learners are supported to develop skills and knowledge to shape a more just and sustainable world.

The programme supports universities and colleges to work with their students on a framework to encourage actions, initiatives and approaches to embedding ESD. The framework is designed to be applied in different institutional contexts while maintaining rigorous approaches to evaluating university and colleges' progress in embedding ESD. It is flexible in responding to dynamic changes in the Further and Higher Education sector and provides bespoke support for each institution while working closely with student unions, academic and professional services staff, senior leadership teams, and more. Every two years, students are trained and empowered to lead an audit to explore ESD activities within their institution and determine whether it can gain or retain the Responsible Futures accreditation, as well as provide recommendations for further work and collaboration. Findings from students' evidence review, interviews of staff, and focus groups are then consolidated into an individualised audit report outlining findings, successes, and opportunities for improvement. The programme is therefore cyclical and iterative in nature, providing opportunities throughout for institutions to monitor and reflect on progress.

In 2023, SOS UK and the International Association of Universities (IAU) partnered to deliver an [international pilot of Responsible Futures](#), having signed a Memorandum of Understanding to jointly advance ESD at the international level. SOS UK and the IAU [worked closely](#) with seven selected universities and their students to co-design the pilot, including co-creating the Responsible Futures international framework, and developing the student-led audits. In

the pilot year, over 30 student auditors were supported to assess their institutions' progress in embedding sustainability in learning, receiving positive feedback from students and institutions involved. Trinity College Dublin was one of the seven institutions invited to the [pilot](#) and has made an impressive start to its engagement on the programme.

As Órla Fitzgerald, an ESD Intern and Environmental Science graduate who played a key role in gathering evidence for the audit, describes, *"the Responsible Futures framework is what every [university] should strive for. This is our first year participating, meaning that it is our baseline and we can build on this over the years. It also serves as a support for those who wish to create change, which is something we need more of."*

In addition, common feedback from students highlights how the audit enables them to learn more about the 'behind-the-scenes' of education and sustainability in their places of learning as well as greater appreciation of the importance of students in taking an active leadership role for this. For example, one Trinity College Dublin student reflected on how taking part in the audit improved their understanding of *"how staff and students care deeply about climate change and sustainability and how much the student body are doing to raise awareness around complex environmental and social justice issues."*

Finally, when reflecting on their experience with the audit at Trinity College Dublin, one student auditor describes how *"[the] Responsible Futures accreditation is important because it embeds sustainability across an institution's curriculum, culture, and operations. Hopefully, this accreditation can help foster a culture of accountability and continuous improvement, ensuring that the institution aligns with global sustainability goals while engaging in meaningful action."*



Intended Learning Outcomes

1. Improved whole-institution approaches for sustainability

- Increased collaboration and buy-in from students, staff and senior leadership.
- Greater continuity of ESD work despite turnover of staff and students within institutions.

2. Increased student leadership for ESD

- Stronger working relations between student groups and the institution.
- Enhanced students' employability through developing their critical thinking, analytical, auditing, and communication skills.

3. Mainstreaming innovative sustainability learning across institutions

- Embedding ESD throughout formal, informal, and subliminal curriculums.

- Co-creating course content with students and applying coursework to inform campus sustainability projects / living labs.

4. Increased collaboration between institutions for sustainability

- International knowledge exchange and sharing of good practice, guidance, and resources to progress ESD.
- Collaborations between different institutions on funded projects such as ESD in academic quality processes and green skills.

Teaching and Learning Approach

The Responsible Futures audit exemplifies real-world, experiential ESD in practice and holds participatory methods, interdisciplinary learning, and student leadership at its heart. Trinity College Dublin students were supported through active learning techniques to engage critically with the Sustainable Development Goals, understand the importance of ESD for democratising education, and what green skills are needed for high-quality auditing. Teamwork is an essential aspect of the student-led documentary evidence review, thus enabling students to benefit from an interdisciplinary experience by learning from the disciplines, perspectives, and lived experiences of their fellow auditors. Students continued to work in teams to co-create questions for interviewing Trinity College Dublin's Sustainability Manager, an ESD Academic Fellow, and the President of the Trinity College Dublin Students' Union. Students enjoyed taking ownership to lead the interviews, which enhanced their understanding of the wider narratives of evidence reviewed.

Assessment Strategy

During the audit, students are trained and supported with how to analyse evidence, score, conduct professional interviews, and provide constructive feedback to institutions on their efforts to embed sustainability. On both days of the audit, students complete feedback forms about how the audit has improved their knowledge and skills for employability and what they have learnt from being an ESD auditor and interviewer. Focus groups and interactive discussion are also conducted to enable students to share their perspectives, ideas, and lived experiences in different ways while also enabling opportunities to gather qualitative findings on their experience with the Responsible Futures programme. Following the audit, students had the opportunity to attend a debrief about results from the audit and next steps for progressing sustainability in their institution. The programme also measures impact through peer learning events and bespoke support for each participating institution.

Impact and Outcomes

Trinity College Dublin achieved Responsible Futures accreditation in February 2025 and key findings and recommendations from the audit were shared with the student and staff body during [Trinity Green Week](#) in March 2025. Surveys demonstrated that students developed skills in delegating responsibilities, leadership, time management, communication, and data analysis. Furthermore, Órla Fitzgerald, the ESD Intern who played a key role in gathering evidence, among wider ESD initiatives, was [awarded](#) the Trinity College Dublin Sustainability Leadership Award 2025.

Feedback from students included:

- “I learnt how to interview someone for the first time while developing leadership skills by delegating sections of work to each member in my group.”
- “I have developed a deeper understanding of sustainability practices and the role of educational institutions in this. I can apply these insights to my PhD research on climate justice, particularly in fostering interdisciplinary approaches to sustainability.”



Collaboration, Partnerships & Student Participation

Trinity College Dublin students and staff have played a significant role in the success of its first-ever Responsible Futures audit. The

collation of audit evidence by Sarah Murphy (Sustainability Assistant) and Órla Fitzgerald, (Student Intern) are a testament to the importance of student-staff collaborations in the run-up to the audit. In October 2024, 10 students led a two-day in-person audit of the college's efforts to embed sustainability throughout the curriculum. They played key leadership roles in analysing documentary evidence submitted and in conducting interviews of staff and Students' Union student officers. Student auditors shared a variety of excellent feedback and recommendations to inform the institution's audit feedback report and accreditation. A Senior Programme Officer from the International Association of Universities, Isabel Toman, also attended the audit and shared insights into the IAU, while Sarah Murphy provided students with valued perspectives into the behind-the-scenes of sustainability at the institution.

Student Engagement

11 students across fields in Natural Science, Biomedical Science, Business Economics and Social Studies, Mathematics, and Humanities, were engaged and played a key role for the audit.

There were 10 student auditors and one student intern studying:

- Sustainability Intern – Environmental Science
- Biological and Biomedical Science
- Mathematics
- English
- Business Economics and Social Studies
- Geography and Geoscience
- Environmental Science
- Climate Entrepreneurship
- Business Administration
- Global Challenges for Sustainability
- Geography

Discipline

- Education
- Teaching and Learning

Programme

Responsible Futures International

Best Practices & Resources

Top Tips

Include student auditors from a variety of disciplines and course levels, beyond those already knowledgeable and engaged in sustainability issues. This allows for richer insights and discussions during the student-led audit. It can also be enlightening for institutions and other students to hear about alternative perspectives and feedback on, for example, how to increase student engagement with sustainability, from the eyes of those outside the 'green echo chamber.' Student auditors also reflected on how this experience enabled them to learn how different disciplines approach sustainability challenges, hence interdisciplinarity is an invaluable aspect of any approach to Education for Sustainable Development.

Useful Resources

- TCD Green Week and Responsible Futures accreditation announcement blog
- Responsible Futures International news story about TCD joining the pilot
- Responsible Futures International Pilot impact report

Funding Details

Institutional funding through Trinity Sustainability allowed for student auditors to be paid for their work.

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96. Creative Boardroom: Collaborate₄Climate (CBC₄C)

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Institutions and Partner Organisations

Institute of Directors Ireland (IoD), Institute of Directors Northern Ireland (IoD NI), Creative Futures Academy (CFA), National College of Art and Design (NCAD) Institute of Art, Design + Technology Dun Laoghaire (IADT), University College Dublin (UCD)

Description

Creative Boardroom: Collaborate4Climate is a partnership between Creative Futures Academy (CFA), the Institute of Directors Ireland (IoD), and the Institute of Directors in Northern Ireland, funded through Creative Ireland's Climate Action & Shared Island fund. A

project key objective was to reshape behaviours and attitudes so that participants felt empowered to promote change. Using an iterative design-led process, this programme sought to develop strategies that promote change at the boardroom level within companies and organisations across the Island of Ireland. Central to this dialogue was the voice and perspective of future generations, taking an intergenerational approach, the programme harnessed the expertise and collective imagination of Ireland's Chartered Director and CFA student communities.

Creative Boardroom: Collaborate4Climate focused on the four complex systems—transport and mobility, the built environment, agriculture and food, and textiles that contribute most significantly to our carbon emissions. It aimed to educate, collaborate, motivate and innovate.

The initiative brought together the creative expertise of three higher education institutions: UCD, IADT and NCAD. Academic leads from NCAD and IADT developed an in-depth series of workshops combining design processes with expert insight into climate-related challenges and solutions. These showcased innovative approaches and demonstrated how climate challenges can be addressed and reframed as opportunities.

From the outset, Creative Boardroom: Collaborate4Climate sought to generate a community of agents for positive climate change – creative climate champions – among boardroom company directors, across the island of Ireland, North and South. It fostered a Community of Practice between the 24 Chartered Directors and 20 Students, that sought to reshape behaviours and attitudes so that participants felt empowered to promote change within their direct spheres of influence, and beyond their immediate authority, both as leaders and community collaborators. The programme was built around the following three pillars to build understanding, incite action and inspire others:

Know — Have a common understanding of the urgency for change and the key principles and frameworks associated with sustainability and the circular economy.

Act — Feel empowered to act and to practically use design thinking tools to collectively and inclusively approach challenges, and develop new solutions.

Shout — Feel motivated and inspired to spread the word to communities of interest, and lead change locally.

Using design thinking as a core methodology to unpack complex climate challenges, the programme built a shared understanding of the scale of the challenge and provided practical tools: journey mapping; bright star matrix; how might we enquiry; iceberg modelling and more to navigate this complexity.

For most chartered directors, the programme was a timely introduction to creative processes and design-led methodologies that brought a new way to unpack the challenges they face. The voice of the students carried young and energetic perspectives on how challenges could be addressed and brought into sharp focus the need for immediate and sustained action to safeguard their future.



Intended Learning Outcomes

Creative Boardroom: Collaborate4Climate succeeded in building a replicable and scalable model for climate-focused collaboration. It offered a new standard for board-level climate leadership—one that integrates creativity, diverse perspectives, and practical action. The output of the programme was an exhibition that can now travel and is downloadable on the Creative Boardroom website for others to view and display. There was also an extensive Evaluation Report produced, which serves as a guide and offers an assessment of the successes and challenges.

The momentum generated now extends beyond the programme itself, catalysing ongoing dialogue and change across the island of Ireland. The programme is a call to lead with purpose, to act with imagination, and to collaborate across generations, sectors, and borders for a sustainable future.

Teaching and Learning Approach

Design thinking is a creative process for solving problems. It relies on observing, with empathy, how people interact with their environments, and employs an iterative, hands-on approach to creating innovative solutions to various problems. Taking a design-led approach helped to unpack the overwhelmingly complex challenges of climate change creatively at a manageable scale.

Using the Design Council UK's Double Diamond framework (Discover, Define, Develop, Deliver), participants tackled climate challenges with empathy, creativity, and systemic insight.

This approach enabled them to promote understanding of circular strategies to reduce emissions, identify tailored, viable

climate solutions and foster cross-sector collaboration as well as embed innovation in strategy and practice.

In working with this group in a creative, engaging, evidence-based, and systematic way, the programme encouraged dialogue, engagement, understanding, and positive action.

Assessment Strategy

There were 5 main workshops during which students and directors were guided through exercises that focused on exchanging ideas and uncovering opportunities. After each workshop, students took away their learnings to be explored visually as part of their regular studio work. Led by the communication design lecturers, the students focused on delivering visual communications strategies and prototypes to identified challenges. These primarily addressed food waste, behavioural change and awareness of fast fashion and textile waste.

During the programme, students gained an understanding of how, as designers, they can have agency. The peer-to-peer interaction with Directors was critical to developing their understanding of the world of work and legal and regulatory constraints.

Impact and Outcomes

Students used their learnings to explore solutions related to their third-year communications design coursework. From the students' perspective, the programme was an insightful and empowering journey. Engaging in intergenerational collaboration and applying design thinking across intensive workshops helped them deepen their understanding of the systemic nature of the climate

emergency and gain valuable insights into the real-world barriers to change and how collaborative approaches can overcome them. A recurring reflection among students was the realisation that design is not just an aesthetic tool, but an effective vehicle for sparking real change, giving them a new sense of voice and agency for driving real-world impact. Their exposure to the workings of the business community, facilitated by direct collaboration with the Directors, proved invaluable, fostering a new appetite to become changemakers and influence their peers.



Collaboration, Partnerships & Student Participation

Students were nominated by NCAD and IADT faculty and given a design brief. The brief invited them to consider specific challenges relating to two core systems: agriculture and food and consumables (with textile waste as a focus). Over the course of the programme, students iterated, prototyped and tested ideas and presented their solutions to the Chartered Directors. A selection of

their proposals we showcased at the concluding exhibition in NCAD.

The Director participants were Chartered Directors from organisations such as Viatris, EirGrid, ESB, BDO, RTB, Uisce Éireann, An Bord Plenala, JCDecaux and Best Menswear, to name just a few. They learned how to identify the common barriers blocking change at the boardroom level and develop new ways forward, considering ESG factors in relation to company sustainability and ethical impacts.

In addition to the student, director and academic contributions, the programme brought together chartered directors, students, artists, designers, entrepreneurs and innovators. A significant number of national and international experts contributed to the programme.

Student Engagement

- 20 students participated in the programme: 18 NCAD undergraduate and 2 IADT postgraduate.
- 24 Chartered Directors participated in the programme as CPD.
- 800 visitors including students visited the exhibition in the National College of Art and Design throughout November and December 2024.

Discipline

Arts and Humanities

Best Practices & Resources

Top Tips

- Consider your learners: For students, the onboarding process was essential. Two chartered directors (also members of the CBC4C steering group) participated in the onboarding session to explain the role and responsibilities of Chartered Directors, the organisations they represent, ESG regulation and requirements, the aims of the overall programme and how students could meaningfully contribute. A similar process was followed to onboard the Chartered Directors.
- Be prepared to iterate and flex! The initial approach to the climate challenge was broad. It focused on the 4 key systems pillars: Food & Agriculture, Mobility and Transport, Consumables (Textiles) and The Built Environment. Midway through the project, the design team and steering group realised that additional workshops were needed so that practical and actionable steps could be identified to use in a boardroom context.
- Learning Environments are important: The project used multiple sites for workshops, these included corporate settings: An Post, ESB HQ and the IDA combined with spaces in NCAD, UCD and IADT. This helped to contextualise and embed understanding of the environments within which this intergenerational group operated.

Useful Resources

- Creative Boardroom website – Phase 1 <https://creativefuturesacademy.ie/partnerproject/creative-boardroom-collaborate4climate-phase1/>
- A digital version of this exhibition is available to download here: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/<https://creativefuturesacademy.ie/wp-content/uploads/2024/11/Creative-Boardroom-Collaborate4Climate-Exhibition-2024.pdf>
- A full Evaluation Report of this Programme is available here: <https://creativefuturesacademy.ie/news/creative-boardroom-collaborate4-climate-phase-1-evaluation-report/>

Funding Details

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97. Archive of the Senses – an
elective mobility for creative

arts students from IADT and NCAD

FIONA SNOW; DR ELAINE SISSION; DR JOHN GREANEY; AND CLYDE DOYLE



Institutions and Partner Organisations

- Institute of Art, Design and Technology
- Creative Futures Academy
- National College of Art & Design
- DLR County Council Heritage Office

Description

Archive of the Senses is a six-week elective module designed around

walking as a creative practice and site-specific methodologies. Through the lenses of psychogeography and affect theory, students explore the sensory and emotional dimensions of places along Dublin Bay. The goal is to uncover local maritime histories and stories by engaging with maps, archives, and found objects, and to develop creative work in response.

This active module involves site visits, walks, seminars, readings, and independent learning through carefully structured activities, including: exploring industrial heritage and coastal environments at Dún Laoghaire's West Pier, examining site, affect and atmosphere at the historic Dún Laoghaire Oratory, and investigating ecosystems, topography, walking-as-practice and culture through guided walks at Dalkey Quarry, and the seashore. Each session follows a structured approach combining preparatory materials, embodied site experience, and reflective discussion that connects local observation to broader creative practice contexts. These carefully selected sites—industrial, cultural, and natural—enable students to understand sustainability challenges as interconnected systems rather than isolated issues, developing the integrated problem-solving approaches central to ESD.

Students document their experiences through self-directed reflective notebooks that capture ongoing processes of site engagement, mapping, sensory observation, and creative experimentation. These notebooks can include walking exercises, drawings, found objects, photographs, written insights, emotional responses, conceptual mappings, and whatever combination of media works best for individual students. The documentation process itself becomes a professional skill, teaching students how to research, reflect, and develop ideas over time rather than rushing to finished products.

The module culminates in presentations where students contextualise their experience, share the development of their ideas, and articulate possible future directions for new creative

works. This open-ended structure allows students to locate their work within their own emerging creative practices and reflect on the transferable value of the skills they have developed. Students are encouraged to consider how walking-based and ecologically attuned research methodologies might inform future creative projects, demonstrating their ability to integrate new approaches and points of view into existing practice.

This initiative embodies Education for Sustainable Development (ESD) principles through its pedagogical design and learning outcomes. The module employs action-orientated and transformative learning approaches, positioning walking as both method and subject of inquiry. Students develop critical UNESCO ESD competencies including systems thinking through examining interconnected relationships between urban development, coastal ecosystems, and cultural heritage; critical thinking through psychogeography and site analysis; collaboration through cross-institutional peer learning; and self-awareness through sustained reflective practice. The experiential methodology integrates problem-based learning as students investigate real heritage sites and environmental contexts, whilst inquiry-based approaches encourage students to frame their own research questions and creative responses. This learner-centred model supports students in developing the competencies, values, and skills needed for sustainable creative practice, preparing them as professionals who can work across environmental, cultural, and community contexts in ways that contribute to sustainable futures. This approach develops anticipatory thinking as students envision how their creative practice might contribute to sustainable futures, building capacity not just to understand sustainability challenges but to act as agents of change through their professional work.

Developed within the Creative Futures Academy's (CFA) innovative elective framework which we designed, this cross-institutional module demonstrates how creative education can prepare practitioners who understand the relationship between place,

community, heritage, and sustainable creative practice. The module builds professional competencies in environmental observation, heritage interpretation, and community and peer engagement whilst developing collaborative networks essential for careers in the evolving creative economy, where practitioners increasingly work across disciplines and with diverse community partners.



Intended Learning Outcomes

As a module within the CFA at IADT's *elective framework* this module worked within the generic learning outcomes for the module which are:

1. Acquire and apply a novel professional skillset to a foundational level of proficiency.
2. Conduct a skills audit to critically assess specialised and transferable skills against industry requirements.
3. Develop a strategic plan to integrate new skillsets for the enhancement of their professional practice.
4. Design and present a self-directed project that demonstrates the successful application or integration of a new skillset.

Teaching and Learning Approach

The module employs structured walking as the primary pedagogical method, with each session combining embodied site experience, preparatory readings, and reflective discussion. From its conception, the module was designed with ESD as a core priority, ensuring students had meaningful opportunities to engage with their local but often unknown natural and cultural environments. This approach was grounded in a view of active and situated pedagogy that recognises that learning happens most effectively when students form personal, embodied connections to place and heritage. Students engage in sensory mapping exercises supported by contextual materials on psychogeography, maritime history, and creative research methodologies. The approach emphasises process, encouraging experimentation and documentation through diverse media. Tutors facilitate pre-walk briefings and post-walk reflections, helping students connect local observations to broader creative practice contexts. This experiential methodology develops students' professional competencies in site-responsive research, community engagement, and reflective practice whilst building their capacity for self-directed creative inquiry.



Assessment Strategy

Assessment centres on two interconnected elements: a reflective notebook documenting the student's creative research process, and a final presentation contextualising their learning within their broader creative practice. The notebook captures ongoing processes of site engagement, sensory observation, and creative experimentation, with students self-directing format and content to include sketches, photographs, collected materials, written reflections, and conceptual mappings. The final presentation requires students to articulate how their walking-based research might inform future creative projects, demonstrating their ability to integrate new methodologies into existing practice. This assessment approach supports the module's focus on professional development, evaluating students' capacity to expand their creative toolkit whilst reflecting critically on their learning process.

Impact and Outcomes

Students reported expanded understanding of creative research methodologies and enhanced capacity for environmental observation and heritage interpretation. Interviews revealed lasting changes in their creative practice, incorporating walking-based and site-specific methodologies into ongoing projects. The cross-institutional model fostered meaningful collaborations, with participants maintaining professional connections beyond module completion. Students developed practical skills in working with heritage sites and environmental contexts, building competencies valued by cultural organisations and community partners. Faculty gained valuable experience in place-based pedagogy and cross-institutional collaboration. Working with colleagues across institutional departments (Art/Design/Psychology) led to an IADT team invitation (in partnership with DLR) to co-author a Creative Europe funding proposal on environmental literacy, well-being, and walking as creative practice with six EU HEIs, demonstrating the module's potential for scaling innovative creative education approaches whilst contributing to sustainable cultural practice.

Collaboration, Partnerships & Student Participation

Third year undergraduate students from IADT and NCAD participated as equal collaborators in this cross-institutional initiative, building professional networks and transdisciplinary competencies essential for sustainable creative careers. The module's emphasis on connection to land, community, water, and heritage through walking practice develops professional skills in

community engagement, environmental stewardship, and place-based creative methodologies. Students actively led their environmental documentation processes whilst collaborating across disciplines, modelling the collaborative approaches increasingly valued in sustainable creative industries. External partnerships with local heritage sites and natural environments provide authentic contexts for professional development, whilst the peer-to-peer learning structure mirrors the collaborative networks that characterise successful sustainable creative practices and emerging green creative economies.

Student Engagement

11 (4 NCAD students; 7 IADT students)

Discipline

Arts and Humanities

Programmes

IADT – BA (Hons) Design for Film; BA (Hons) Art NCAD – BA (Hons) Art

Best Practices & Resources

Top Tips

- Use local environments as primary learning spaces: Structure learning around accessible coastal and heritage sites, developing students' capacity for site-responsive creative practice. This approach makes abstract research concepts tangible whilst building professional skills in environmental and heritage interpretation that are increasingly relevant in contemporary creative work.
- Emphasise process documentation over finished outcomes: Design assessment strategies that value ongoing reflection and creative experimentation through notebook formats that each student controls. This supports diverse learning styles whilst building professional competencies in research documentation essential for grant applications, residencies, and collaborative projects.
- Foster genuine cross-institutional collaboration: Create opportunities for students from different institutions to work together as equals, building the professional networks and collaborative skills essential for sustainable creative careers whilst breaking down institutional barriers that can limit creative opportunities.

Useful Resources

- https://greatergood.berkeley.edu/article/item/how_awe_walks_helped_my_students_slow_down
- <https://www.nationalgeographic.com/magazine/article/call-to-wild>
- <https://soundcloud.com/the-royal-irish-academy/sets/history-of-emotions-podcast>

Funding Details

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98. Teaching Sustainable Healthcare using the Sustainable Development Goals

DR ANGELA FLYNN



Institution and Partner Organisations

- University College Cork
- Health Services Executive

Description

This initiative was developed within the context of a growing climate crisis and burgeoning evidence on the significant impact of healthcare on our carbon footprint. Health services in developed countries are thought to account for 5-15% of carbon emissions. There is a growing urgency surrounding the need for urgent climate action and to respond to alarming climate change. There is

ongoing significant investment in the health service through building retrofitting and, according to the HSE's Climate Action Strategy 2023 – 2050, more climate friendly heating & cooling systems to help meet public sector energy-related climate targets. Those on the frontline of healthcare often feel they have the least opportunity to make changes toward more sustainable healthcare delivery.

The goal of this final year elective module is that nursing and midwifery students will gain an understanding of the United Nations Sustainable Development Goals (SDGs) and their relevance to healthcare.

I wanted to support students with gaining an understanding of the SDGs as a globally accepted strategic framework, language, philosophy and plan of action to address the environmental, social and economic dimensions of sustainable development. This module also seeks to help students with relating sustainability to healthcare needs. Finally, students gain an understanding of the climate crisis as a health crisis. To do this we relate sustainability to healthcare practices and work towards seeing health professionals as climate champions engaging in climate-smart healthcare.

The new module content was developed by combining evidence from recent peer reviewed publications in healthcare and sustainability with teaching materials developed by the team on the EU Erasmus+ funded [NurSus project](#). A collaboration with the German partner in this project enabled access to their materials and reusable learning objects. Some of these were used to structure lectures and were supplemented by additional more updated content. The lecture titles and core subjects were then mapped against the 17 SDGs and the 7 learning outcomes for the module. Students therefore could easily see how their learning related to the SDGs.

At the beginning of the module students were assigned to one of five groups each with a preassigned focus on one of 5 challenges in healthcare sustainability which they would work on ahead of the module assessment.

- Issue 1 Waste management in clinical settings
- Issue 2 Aprons and Gloves: usage and overuse
- Issue 3 Food Waste in hospitals
- Issue 4 Energy and Water usage in healthcare
- Issue 5 Single-use plastics in healthcare



Intended Learning Outcomes

On successful completion of this module, students should be able to:

- Have a deep understanding of the 17 UNSDGs and an awareness of the 169 targets
- Relate sustainability to healthcare needs and the climate crisis as a health crisis in a multiplicity of global contexts
- Understand the impact of climate change on health care needs of populations

- Describe the role of health professionals in achieving many of the UNSDGs
- Understand the intersectionality of the UNSDGs across environmental, social and economic areas of the social world inhabited by our patients and clients
- Be a proactive and well-informed health professional who relates their practices to the UNSDGs and is a committed climate champion.
- Promote the use of the UNSDGs as a measure of quality practices and research.

Teaching and Learning Approach

This initiative took a transformative learning pedagogy as it engaged students in sustainable healthcare positioning them as change agents. This approach encouraged critical reflection on existing practices and norms, prompting them to question assumptions and envision new ways of delivering more sustainable healthcare. By empowering them to work together and research their specific issue, students underwent transformative learning making them active contributors to more sustainable healthcare. This not only builds knowledge but also cultivates their role as change agents and future climate champions.

Assessment Strategy

On the day of the elevator pitches the venue was set up with 5 stands (one for each group) at which students could bring props, illustrative data, images, laptops or any other materials that to assist in getting their message across to their audience.

Sustainability of these materials and the avoidance of waste was naturally of importance.

Collectively, the presentations of students in the group will address the questions:

- What is the issue?
- What do we know about it?
- What can we do about it?
- What impact might solutions have on practices?
- If we make changes, which of the SDGs will we be working towards?

Students were encouraged to draw on their experiences in clinical practices and on research-based evidence from current literature. Attendees could move from stand to stand to hear the various pitches and could be asked by the module team to provide feedback on students' presentations.

Student presentations were assessed as groups using a rubric for group presentations adapted from the work of Garcia-Ros (2011).

Impact and Outcomes

This initiative has impacted on the capacity of participating students to understand the impact of healthcare activities on the sustainability of health services and has enabled them to act as change agents in their role as health professionals. The module has been evaluated very positively by students and has received very positive review from the external examiner for the programmes. Collaboration with health services colleagues has also been developed leading to important benefits for ongoing research and educational activities.



Collaboration, Partnerships & Student Participation

The assessment involves students preparing to give an ‘elevator pitch’ on these core issues at a specially arranged open session. The session was open to all students and staff of the College of Medicine and Health, as well as other outside invitees. Outside invitees included the members of the Green committees in each of the hospitals, the HSE Sustainability officer, the Cork Healthy Cities co-ordinator and other relevant stakeholders. Students in each group worked together to research their allocated issue and to prepare to each give up to 2-minute informal presentation (elevator pitch) on the issue with a solution-focused approach.

Student Engagement

25 per cohort. So far overall reach of 75 students.

Disciplines

- Education
- Health and Welfare
- Teaching and Learning

Programme

BSc Nursing and BSc Midwifery

Best Practices & Resources

Top Tips

- Empower and allow students to act as change agents – they have great powers of influence and are our future colleagues who can change practices.
- Move away from traditional assessment modes for an innovative experience.
- Look internationally for work already done by others to feed into your efforts.

Useful Resources

- The module descriptor for this module can be found online at <https://ucc-ie-public.courseleaf.com/modules/?details&srcdb=2025&code=NU4115>
- The NurSus project and their resources can be found online at <http://www.nursus.eu/>
- The HSE's Climate Strategy can be found here <https://www.hse.ie/eng/about/who/climate-and-health/climate-change-and-health.html>

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99. Integrating RPL into ESD Initiatives: Developing Staff Capacity through the RPL Digital Badge

DR CLARE WALSH; DR CIARA STAUNTON; AND MARIA CASEY

Institution(s) and Partner Organisations

- HEA National Forum for the Enhancement of Teaching and Learning in Higher Education
- Co-sponsor Technological University Association (TUA)
- Co-Sponsor Irish University Association (IUA)
- Atlantic Technological University
- Dublin City University
- Dundalk Institute of Technology
- Dún Laoghaire Institute of Art, Design and Technology
- Maynooth University
- Munster Technological University
- South East Technological University
- Trinity College Dublin
- Technological University Dublin
- Technological University of the Shannon: Midlands Midwest
- University College Cork
- University College Dublin
- University of Galway
- University of Limerick

Description

Significance

Recognition of prior learning (RPL) as a mechanism supports the implementation of ESD initiatives in three critical ways. Firstly, RPL expands access to ESD initiatives, secondly RPL values diverse knowledge (including formal, informal and non-formal learning) and lifelong learning. Thirdly, RPL supports pathways for learners to develop the knowledge, skills, and competencies they need to

participate in and contribute to a sustainable society and economy throughout their lives. In summary, RPL enhances access and inclusivity in ESD initiatives, particularly those initiatives that involve programmes that sit on the National Framework of Qualifications (NFQ). Developing staff capacity to practice RPL is therefore significant as an enabler to implementation of ESD initiatives.

Context & Purpose

The RPL Digital Badge, offered as part of the NFETL Open Courses initiative, was designed by Dr Deirdre Goggin (MTU) and Dr Cathal de Paor (MIC) and first delivered in 2020. Delivery of the RPL Digital Badge as part of the HCI RPL in Higher Education Project aims to support the project objective of enhancing staff capacity to practice RPL by specifically targeting higher education staff as well as individuals working across the wider education landscape. The aim is to engage higher education staff, including those in faculty, professional services and administrative roles, to explore RPL within their own work settings and to gain a wider understanding of the broader workings of RPL. The Badge is actively promoted through social media channels, www.priorlearning.ie, www.opencourses.ie, LinkedIn and other channels available to the RPL in HE Project team.

Description of the initiative

Delivered over eight weeks, the first six weeks of the course comprise the Introduction to RPL Digital Badge with two additional weeks allocated to a Facilitator Badge. From a practical perspective, the badge consists of live webinars (once per week for 90 minutes), peer triad engagement (one hour per week) and self-paced study for approximately one hour per week, totalling 25 notional learner effort hours. Peer Triad engagement is a core component in the delivery of the NFETL Open Courses. The peer triad model of engagement is distinctive in the sense that participants exchange ideas and experiences related to RPL, enhancing and broadening capacity. The diversity of individuals within the triads foster valuable shared learning.

Intended Learning Outcomes

By the end of course, participants should be able to:

1. Explain the concept of RPL and reflect on its application within their own setting.
2. Reflect on the potential impact of RPL for an institution, its staff and students.
3. Identify existing policies and consider their alignment with practice.
4. Analyse the relationship between programme and module learning outcomes and the RPL candidate.

Teaching and Learning Approach

The RPL Digital Badge is a learner-centred course, utilising a flexible approach to delivery with an emphasis on RPL practice. The course is built around participants' own professional contexts where they are encouraged to reflect on their practice and apply new insights directly to their own settings. Reflective journal and peer triads are key learning tools.

The course is delivered both synchronously (live weekly webinar, recorded) supported with asynchronous resources such as short videos. Each week, the live webinar includes a guest speaker (RPL expert, practitioner, learner, regulator) offering specific professional and practice insights. Engagement in a peer triad is also a core component, enabling participants to share experiences and ideas and where learning is socially constructed through dialogue. Cross-disciplinary and cross-institutional interactions further enhance learning.

Assessment Strategy

The goal of assessment in this course is not to grade participants, but to support meaningful reflection on RPL practice and application of learning in the participants own professional context. The assessment therefore is formative as its purpose is to deepen learning, not to award marks. This is achieved through the submission of a reflective journal, participation in a peer triad and submission of a peer triad contract confirming that members of the triad have achieved the course learning outcomes. Participants engage in reflection on what they have learned and how it influences their practice. Submission can be in any format including written, video, podcast, poster or by any other means relevant to the participant. This self-assessment approach encourages participants to share reflections, give feedback, and learn from others' experiences.

Impact and Outcomes

An evaluation based on the Kirkpatrick Model (stage 1 relevance and satisfaction) was conducted after each delivery, culminating in an aggregate response from 175 participants across five iterations. The instrument contains eight rating scale statements and one open ended question on potential areas for improvement. Overall, 96 percent of respondents agreed or strongly agreed that they are satisfied with the RPL Digital Badge. The open-ended question asked respondents to identify any areas for improvement. This question elicited 101 responses with 79 positive comments. As a result of this question and feedback the learner voice was introduced for the second iteration with one full webinar devoted

to learner experiences of RPL in various contexts. Comments from participant responses to the evaluation include the following “*I cannot think of anything that would improve the course. It is well designed, interesting and informative. Moreover, despite it being delivered online, I felt supported and enabled to work at my own pace. This was a valuable learning experience*”.

Collaboration, Partnerships & Student Participation

A critical success factor in the delivery of the RPL Digital Badge has been the participation of guest speakers which has been recognised in a consistent and positive way across the course evaluations. Guest speakers include RPL experts (MTU and MU), RPL practitioners from across the education landscape including UCC and Donegal ETB, learners (DkIT, SETU and Limerick Clare ETB) and a regulatory body perspective (QQI). All speakers share their perspectives of RPL through their own professional lens, giving participants a broad view of the RPL landscape. The learner perspective includes speakers which have engaged in education using RPL for access, advanced entry, module exemption and full award. The learner experiences of the RPL process offers insights for course participants including an understanding of the professional benefits such as career enhancement and personal benefits such as increased confidence. The practitioner perspective offers practical examples of implementing RPL processes at both programme and institutional levels, while the RPL experts share theoretical underpinnings of RPL in the Irish context. Regulatory perspectives draw on the influence of various European perspectives and RPL policy trajectory in the Irish context.

Student Engagement

Between April 2023 and September 2025, there were five iterations of the RPL Digital Badge. Over these five deliveries, 404 badges were issued alongside a further 57 Facilitator Badges. Two thirds (n=272) of badges were issued to staff working in the project's 14 partner HEIs and a further 89 badges were issued to staff working in further education. Participants also include those working in private education institutions, professional and regulatory bodies, and civil society groups.

Discipline

Teaching and Learning

Programme

The RPL Digital Badge is delivered as part of the HCI Pillar 3 “Realising the Potential of Recognition of Prior Learning and Lifelong Learning” which is more widely known as the RPL in Higher Education Project. The project has a number of objectives including enhancing staff capacity to practice RPL. As part of this objective, the delivery of the RPL Digital Badge—a National Forum for the Enhancement of Teaching and Learning Open Course (NFETL)—has been a core mechanism in developing staff capacity. The RPL Digital Badge targets staff working in higher education specifically but not exclusively.

Best Practices & Resources

Top Tips

- RPL is a valuable mechanism to enhance access to and progression through ESD initiatives and is particularly relevant in the context of programmes listed on the National Framework of Qualifications (NFQ).
- Participation in ESD initiatives such as projects, training and events can be recognised as non-formal learning as part of an RPL application for entry, advanced entry and module exemption to programmes listed on the NFQ.
- RPL is a valuable mechanism in creating learner pathways that enhance knowledge, skills and competencies for sustainable development.

Useful Resources

- For more details on the RPL Digital Badge read this paper: Staunton, C., & Walsh, C. (2025). Collaborating and sharing RPL knowledge and practice – the case of the RPL Digital Badge. PLAIO Vol 2025, No. 11 <https://www.plaio.org/index.php/home/article/view/268>
- For an example of the relationship between RPL and SDGs read this presentation: Widger, L., Power, C., Benke, M., Botelho Junior, S., & Fenton, M. (2024). Optimising the Recognition of Prior Learning to Enhance Pathways to and Integration of Marginalised and Disadvantaged Learners in Irish Higher

Education. 2024 eucen Autumn Seminar, Barcelona, Spain. https://research.setu.ie/files/40073077/EUCEN_SETU_RPL_Presentation_Friday_15_Nov_2024.pdf

- For definitions of RPL and details of the Pilot Framework see: A Pilot Framework for the Recognition of Prior Learning in Higher Education. (n.d.). National RPL in Higher Education Project. Retrieved from <https://www.priorlearning.ie/resources-tools/pilot-framework-rpl-highereducation>

Funding Details

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100. Global Goals, Local Perspectives: An India-Ireland COIL Sustainability Project

DR TIMOTHY SAVAGE; DR SANYKA BANERJEE; PROFESSOR LINDA HOGAN; AND DR P.J. WALL

Institutions

- Trinity College Dublin
- Indian Institute of Technology Jodhpur

Description

Context

This initiative outlines how we addressed the global, intercultural and interdisciplinary dimensions of sustainability by connecting students from separate, but complementary, sustainability modules in Ireland and India in a Collaborative Online Learning (COIL) experience for education for sustainable development. Students taking Digital Innovation for the SDGs (Trinity College, Dublin) and those taking Indigenous Innovation: Jugaad (Indian Institute of Technology, Jodhpur) worked together in mixed groups on a four-week, assessed, comparative sustainability exercise.

The experience was designed to extend classroom learning into a cross-cultural, international dimension and align with the

principles of Education for Sustainable Development (ESD), which emphasises equipping learners with the knowledge, skills, and values needed to address global challenges through cooperation and critical reflection (UNESCO, 2017).

Purpose

The purpose of the initiative was to deepen students' engagement with the United Nations Sustainable Development Goals (SDGs) by situating them within diverse cultural, social, and economic contexts. Rather than approaching sustainability from a single perspective, students were encouraged to draw on their distinct disciplines to interrogate how global problems manifest differently in Ireland and India, while also exploring common approaches and shared values to tackling them. This reflects O'Dowd's (2018) understanding of COIL as a pedagogy that fosters intercultural dialogue and collaborative knowledge-building.

Activities

Mixed interinstitutional student groups were allocated an SDG and were required to identify one issue, common to both countries, and related to a target within the SDG. They were required to identify a common approach or solution to the issue and consider specific implementation issues relevant to each context.

The activity began with a synchronous shared lecture (facilitated by videoconference) between the two classes where the rationale and background to the activity was presented. The group working activity was described and the students were then assigned into mixed Irish-Indian groups. The student groups then met for the first time in virtual meeting rooms where they encouraged to introduce themselves, setup communication channels (WhatsApp groups being the preferred medium), start brainstorming on their task, and plan out their working schedule.

Over the following three weeks they worked together, across the time zones and cultures, to create a collaborative presentation on their common sustainability issue. This ensured that students recognised both the global nature of sustainability challenges and the localised realities of their implementation.

At the end of the four weeks, a synchronous shared presentation session allowed the co-located groups to present their findings to both classes and take questions on their work. Debrief sessions were held in each location, allowing for guided reflection and discussion the range of experiences the students underwent in the activity.

Significance

The significance of the initiative lies in how it enriched sustainability education through intercultural collaboration by combining COIL with sustainability education. By working with peers from another cultural context, students were encouraged to reflect on their own assumptions, interrogate their underlying values, develop empathy, and respect alternative perspectives. In addition to identifying points of dissonance they also identified points of convergence, where shared challenges called for cooperative, context-sensitive solutions.

This COIL project offered students in Ireland and India a structured and transformative learning experience that combined sustainability-focused academic content with intercultural collaboration. By linking global goals to local realities, the initiative highlighted the interconnectedness of sustainability challenges and the importance of cooperative problem-solving. Beyond academic outcomes, it contributed to the broader aims of ESD by fostering global citizenship, critical thinking, and intercultural competence, equipping students with essential capacities to address sustainability challenges in an interconnected world.

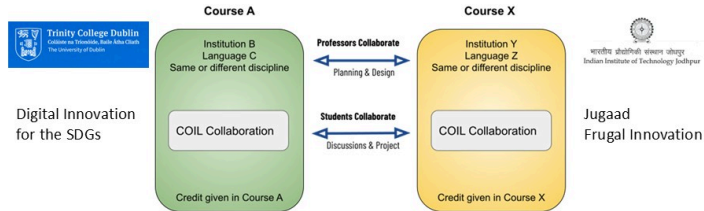
Intended Learning Outcomes

By participating in this initiative, students were expected to achieve the following outcomes:

- Identify ways in which innovation (digital and non-digital) can potentially achieve the SDGs.
- Understand and describe the challenges involved with leveraging technology and innovation to achieve the SDGs, and make informed decisions about how to overcome these challenges.
- Understand the benefits and problems associated with innovation to achieve the SDGs and learn how these are debated and resolved (or not) in specialist, multidisciplinary, and various socio-cultural environments.
- Critically examine the ethical considerations surrounding innovation in various social, cultural, and political contexts.
- Demonstrate effective presentation skills and the ability to work both individually and as part of multi-cultural and multi-disciplinary project team in a variety of learning environments.

These outcomes were assessed through the joint group presentations, which provided evidence of both content knowledge and collaborative process.

COIL



The desired learning outcomes from the experience are:

- Intercultural competences
- An understanding of the global nature of sustainability challenges
- An awareness of global citizenship

Teaching and Learning Approach

The initiative was structured around an adapted Collaborative Online International Learning (COIL) framework developed at the State University of New York (<https://coil.suny.edu/>). During the design phase, faculty agreed on student objectives, project duration, task design, and digital tools, while also considering the distinct disciplinary contexts of participating students, despite both modules focusing on sustainability. The project began with a joint online workshop where students were introduced to the initiative, placed in inter-institutional groups, and assigned their activity. Each group was allocated a Sustainable Development Goal (SDG) and tasked with identifying a challenge linked to a specific target that was relevant in both countries. They then proposed potential solutions, ideally involving a shared approach, and examined the social and cultural factors influencing implementation. Pedagogically, the project emphasised dialogue

and co-creation rather than passive knowledge transfer, drawing on constructivist and participatory learning principles. This approach fostered systems thinking by encouraging analysis of local–global interconnections.

Assessment Strategy

Each mixed Irish–Indian student group delivered a synchronous blended presentation to both classes and took questions from the student body. Assessment criteria emphasised:

- **Content knowledge** (understanding of SDG targets and local–global linkages),
- **Critical analysis** (comparison of challenges across Ireland and India),
- **Collaboration** (evidence of joint research and co-creation), and
- **Communication** (clarity, creativity, and intercultural awareness in presenting findings).

The individual reflection required students to focus on the experience of the intercultural learning experience from their own perspective. This allowed the teaching team to gain insights into the process alongside the final product.

Impact and Outcomes

The initiative had a strong impact on both students and the teaching team. Students valued the exposure to diverse global perspectives and gained an awareness of cultural, climatic, and socioeconomic differences affecting SDG implementation. The disciplinary mix had a positive impact with the interdisciplinary

collaboration encouraging problem-solving and the value of both digital and frugal innovation that connect technology with local needs.

Common challenges included communication barriers, including time zones, differing working styles, and cultural norms. Suggested improvements included a longer engagement period to provide more time for meaningful engagement, and more facilitation of the groups.

The faculty involved gained an experience of inter-institutional collaborative teaching that can be applied in other modules and contexts.

At the institutional level, the project demonstrated the value of COIL as a meaningful activity to support Education for Sustainable Development without requiring physical mobility. It strengthened ties between the participating Irish and Indian institutions, laying the groundwork for future collaborations in teaching and research.

Collaboration, Partnerships & Student Participation

The initiative was a partnership across institutions, with faculty in Ireland and India co-designing the experience, and facilitating the student interaction. This required all faculty to be interculturally competent and sensitive and demonstrate high degree of commitment and trust. Faculty collaboration yielded significant intercultural learning, enriching both conceptual framing and delivery.

Students played an active and central role in this initiative, working in mixed Irish-Indian groups to research, design, and deliver presentations on their assigned SDGs. They shaped the direction of their projects by selecting specific issues relevant to both contexts, negotiating perspectives, and co-creating solutions.

This participatory approach positioned students not only as learners but also as co-leaders of the process.

Student Engagement

40 Students

Disciplines

- Education
- Social Sciences, Journalism and Information
- Teaching and Learning

Programmes

- Digital Innovation and the SDGs – Open Module, School of Religion, Theology, and Peace Studies and School of Computer Science and Statistics, Trinity College
- Jugaad: Indigenous Innovation – School of Management and Entrepreneurship Indian Institute of Technology, Jodhpur

Best Practices & Resources

Top Tips

Intercultural and contextual sensitivity – take time to understand

the context of the students from both locations (cultural, disciplinary, etc) and promote local interpretation. Design for the learning process, not the product – design for student engagement, co-creation, and dialogue. Integrate reflection – reflection deepens understanding on intercultural learning.

Useful Resources

<https://coil.suny.edu/>

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IOI. ADT₄Blue in the
Classroom: Empowering
Postgraduate Students to

Lead Sustainable Digital Innovation

MAFALDA SANTOS; DR UMAIR UL HASSAN; AND PROFESSOR JOHN BRESLIN



Institution and Partner Organisations

University of Galway, ADT4Blue (Interreg Atlantic Area), ENEPORTS (Interreg Atlantic Area), Sense (Digital Europe Programme)

Description

ADT4Blue in the Classroom is an Education for Sustainable Development (ESD) initiative led by the University of Galway. Developed within the EU-funded ADT4Blue (Advanced Digital Technologies for the Blue Economy) project, co-financed by the Interreg Atlantic Area Programme, the initiative reimagines entrepreneurship education by integrating sustainability, digital transformation, stakeholder-driven challenges, and experiential learning. It bridges the gap between academic theory and the real-world needs of industries undergoing sustainable and digital transition.

Traditional entrepreneurship education often mirrors business training, focused on finance, marketing, and accounting, while overlooking customer discovery, iteration, sustainability, and systems thinking. Yet, today's entrepreneurs must innovate within planetary boundaries, embed values and SDGs into their ventures, and design digital business models that create, deliver, and capture value responsibly.

Through its research in entrepreneurship education and digital transformation, the University of Galway identified the need for a new pedagogical approach that:

- Equips students with the entrepreneurial competencies to navigate sustainability transitions;
- Integrates customer-focused, experiential methodologies; and
- Embeds ethics and sustainability at the core of innovation and business development.

This initiative represents a shift from teaching about entrepreneurship to practising entrepreneurship as a sustainability skillset. It empowers students to identify opportunities in

sustainability, co-create solutions with stakeholders, and build the resilience required to test, iterate, and refine ideas that meet real societal and environmental needs.

ADT4Blue in the Classroom was designed in response to:

- Research on how universities can better prepare student entrepreneurs (Morris et al., 2013; Rieckmann, 2012);
- Studies on the digitalisation needs of the Blue Economy (Tijan et al., 2021);
- A University of Galway survey exploring students' expectations from entrepreneurship education; and
- The growing call for higher education to integrate sustainability, equality, and community values into entrepreneurship teaching.

The initiative builds upon three pedagogical and research pillars:

1. MIT's Disciplined Entrepreneurship framework, a 24-step process guiding students through venture creation, starting and ending with the customer;
2. Prof. John Breslin's AgInnovate teaching models, which emphasise interdisciplinary collaboration and applied innovation; and
3. University of Galway's ADT4Blue research on university-industry collaboration, highlighting the importance of connecting learning with real-world ecosystems.

Its core aim is to develop entrepreneurial, digital, and sustainability competencies, empowering students to lead innovation in the Blue Economy and beyond. Students learn to identify opportunities for climate action, design sustainable digital solutions, and integrate environmental and social responsibility into their business models.

By embedding real-world sustainability challenges and stakeholder collaboration into the curriculum, the initiative bridges academia and entrepreneurial ecosystems. Students are

encouraged to view entrepreneurship not only as venture creation but as a mindset for transforming systems, organisations, and communities.

ADT4Blue in the Classroom is more than a course, it is a replicable framework for university transformation. It demonstrates how higher education can:

- Translate SDGs into authentic, challenge-based learning;
- Foster interdisciplinary collaboration between academia, industry, and policymakers;
- Cultivate sustainable entrepreneurship as a transferable discipline across sectors; and
- Prepare graduates to act as changemakers, whether launching start-ups, commercialising research, or driving sustainability within organisations.

The initiative aligns with the University of Galway's sustainability strategy, embedding environmental and social responsibility across teaching, research, and innovation. By developing this methodology, the University positions itself as a leader in redefining entrepreneurship education for the climate and digital age.

Now entering its second edition, the initiative will incorporate the Disciplined Entrepreneurship for Climate and Energy Ventures framework, deepening its focus on climate action, digital transformation, and sustainable innovation.

Its strength lies in its adaptability and scalability; it can be embedded into final-year projects, postgraduate programmes, PhD research commercialization, or cross-disciplinary modules. It provides the foundation for a Sustainable Entrepreneurship curriculum that enables students to innovate ethically, inclusively, and effectively within global sustainability transitions.

Intended Learning Outcomes

By participating in ADT4Blue in the Classroom, students are expected to develop the following competencies and outcomes:

- Entrepreneurial thinking: Apply the 24-step *Disciplined Entrepreneurship* methodology to identify opportunities, validate ideas, and design viable, impact-driven solutions.
- Sustainability integration: Incorporate the UN SDGs, climate, and community values into digital business models and innovation strategies.
- Customer discovery and research: Engage with stakeholders to analyse needs, gather feedback, before investing in solution development, and iterate solutions based on real-world insights.
- Digital innovation: Use technologies such as data analytics, AI, or blockchain to develop sustainable digital products or services.
- Systems thinking and ethics: Evaluate the societal, environmental, and ethical implications of innovation within planetary boundaries.
- Communication and collaboration: Produce and present a white paper, prototype, and pitch deck, demonstrating teamwork and professional engagement.

These outcomes align with Education for Sustainable Development (ESD) competencies, preparing students to become responsible innovators and sustainability-oriented leaders.

Teaching and Learning Approach

ADT4Blue in the Classroom integrates problem-based, challenge-led, and experiential learning grounded in Education for Sustainable Development (ESD) principles. Students engage directly with real-world challenges from the Blue Economy, applying systems thinking, digital innovation, design thinking and entrepreneurial methodologies to develop sustainable solutions.

Teaching is structured around the Disciplined Entrepreneurship framework (MIT), guiding students through a 24-step, iterative process where they research customers, test assumptions, and refine ideas through feedback. Each workshop blends industry-based expert talks, interactive teamwork, and guided reflection, creating a dynamic environment for applied learning.

Sustainability and SDGs are embedded throughout the process, from framing the challenge and analysing stakeholders to designing digital business models that balance profit, planet, and purpose.

This approach transforms students from passive learners into active changemakers, capable of connecting theory to practice and innovation to impact.

Assessment Strategy

Assessment in ADT4Blue in the Classroom is grounded in authentic, practice-based outputs that reflect real-world entrepreneurial processes, including:

- A white paper outlining the proposed solution to a selected challenge;

- A prototype informed by digital technologies and stakeholder feedback;
- A pitch deck delivered to peers;
- A reflective journal addressing the ethical, social, and environmental implications of the project;
- A group assessment evaluating collaboration, innovation, and individual contribution.

This framework promotes both technical proficiency and transformative learning. It incorporates mentor input, peer discussions, and iterative development, encouraging students to think critically, reflect deeply, and creatively apply their learning to sustainability challenges.

Assessment criteria are aligned with academic standards and the principles of Education for Sustainable Development (ESD), reinforcing the initiative's commitment to meaningful, real-world impact.

Impact & Outcomes

The first edition of ADT4Blue in the Classroom 25/25 engaged 80 students, leading to the development of innovative digital solutions for port energy optimisation, plastic pollution reduction, and AI-based ocean monitoring. Student feedback indicated a significant increase in confidence applying sustainability, entrepreneurship, and digital skills to real-world contexts.

The initiative strengthened collaboration between students, faculty, and Blue Economy stakeholders, deepening engagement between academia and industry. It also inspired curricular discussions within the University of Galway on embedding challenge-based learning and sustainability across programmes.

Participants reported that the workshops improved their knowledge about the Blue Economy, sustainability, problem-

solving, teamwork, and ability to translate research into actionable innovation. Several student teams expressed interest in further developing their projects through ADT4Blue's Open Calls, mentorship, or local incubators such as IdeasLab and PorterShed. The initiative's success demonstrates how universities can equip graduates to drive sustainable innovation and digital transformation in emerging industries.

Collaboration, Partnerships & Student Participation

ADT4Blue in the Classroom was co-developed by Mafalda Santos (Research Associate, University of Galway) through her research in the EU-funded ADT4Blue project, in partnership with Dr. Umair ul Hassan (Programme Director of MSc Information Systems Management at J.E. Carines School of Business and Economics, University of Galway) and Professor John Breslin (Engineering and MSc AgInnovate, University of Galway).

The initiative connects students with real-world sustainability challenges identified through interviews conducted by the ADT4Blue partners with Blue Economy stakeholders, port authorities, marine researchers, coastal entrepreneurs, and policymakers.

Students play an active role throughout: selecting challenges, conducting stakeholder-informed research, co-designing digital solutions, and presenting outcomes via white papers, prototypes, and pitch decks.

Collaboration extends beyond the classroom, with opportunities to apply for ADT4Blue Open Calls and receive support from industry mentors, incubators (IdeasLab, PorterShed), and EU networks.

This multi-actor model exemplifies ESD in practice, bringing together academia, industry, and communities to co-create

sustainable, inclusive, and digitally enabled solutions for the Blue Economy.

Student Engagement

- First Cohort (2024/2025): 80 postgraduate students participated, developing digital and sustainable solutions for real Blue Economy challenges.
- Second Cohort (2025/2026): Scheduled to begin for more than 30 postgraduate students, expanded to a year-long model integrating the new Disciplined Entrepreneurship for Climate and Energy Ventures methodology.

Disciplines

- Agriculture Forestry, Fisheries and Veterinary
- Business, Administration and Law
- Education
- Generic programmes and qualifications
- Information and Communication Technologies
- Teaching and Learning

Programme

ADT4Blue in the Classroom taught at ISM Summer School 2024/2025. ADT4Blue in the Classroom to be taught at ISM Project 2025/2026.

Best Practices & Resources

Top Tips

- Co-design challenges with real stakeholders: Engage industry, community, and policy partners early to identify authentic sustainability challenges. Co-creating challenge briefs ensures relevance, boosts student motivation, and fosters trust between academia and external stakeholders. Real-world problems enhance learning authenticity and create opportunities for measurable impact.
- Blend sustainability and entrepreneurship frameworks: Combine the Disciplined Entrepreneurship for Climate and Energy Ventures methodology with systems thinking, SDG principles, and digital business model innovation. This integrated approach helps students link opportunity recognition with environmental responsibility, encouraging them to design ventures that respect ethical and planetary boundaries.
- Structure learning around milestones and mentorship: Organise the learning journey into clear stages – research, ideation, prototyping, and pitching – centered around customer needs. Support each stage with expert mentorship and iterative feedback. This scaffolding mirrors real entrepreneurial ecosystems, building students' resilience, creativity, and capacity for adaptive learning.

Useful Resources

- Morris, M., Webb, J., Fu, J., & Singhal, S. (2013). “A Competency-Based Perspective on Entrepreneurship Education: Conceptual and Empirical Insights.” *Journal of Small Business Management*, 51(3). Defines 13 key entrepreneurial competencies distinct from managerial skills, emphasizing experiential learning and measurable skill development, core to ADT4Blue’s competency-based, hands-on model.
- Soltoff, B. (2023). *Disciplined Entrepreneurship for Climate and Energy Ventures*. MIT Press. <https://www.d-eship.com/articles/why-do-climate-and-energy-ventures-need-their-own-de-book/> A practical 24-step framework for building sustainable, customer-focused ventures addressing climate and energy challenges, the core entrepreneurial methodology used in this initiative.
- Doughnut Economics. DoughnutEconomics.org A model that integrates planetary and social boundaries to guide sustainable economic innovation – a conceptual foundation for embedding values and systems thinking into entrepreneurship.

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IO2. “Matamaitic don Inbhuanaitheacht”: Introducing a new interdisciplinary module

DR ANGELA CARNEVALE AND DR FINTAN HEGARTY

Institution

University of Galway

Description

Matamaitic don Inbhuanaitheacht (Mathematics for Sustainability) is an Irish-language module which teaches students from a wide range of backgrounds useful mathematical and computer skills for modelling and analysis, nested in a Sustainability context.

This interdisciplinary module teaches students mathematical and computer skills relevant to Sustainability, equipping them with the ability to analyze and model Sustainability initiatives, and to critically evaluate reports in the media and elsewhere, skills which are more relevant now than ever in this misinformation age.

Arising as part of a University of Galway initiative to promote the Irish language within the College of Science and Engineering, the initial aims of this module were to:

- (1) Provide an opportunity for STEM students to undertake some of their studies through Irish.
- (2) Offer something novel which wasn't simply a translation of an existing module.
- (3) Stand alone as a module—to be accessible to students with no mathematical background post-second-level, and not be a prerequisite for any later modules, as this would disadvantage students without Irish.
- (4) Be enjoyable!

STEM offerings through Irish at third-level are currently extremely limited, and it is important for a language's survival not only that it be used to discuss culture, heritage, and historical topics, but also allow for work on, and discussion of, technological advancements, medical treatments, approaches to climate change and interconnected global challenges, and other future-oriented points of interest.

This module represents one of the very few opportunities for students to study STEM through Irish, even in the University of Galway, with its commitment to its status as a bilingual university. The University's strong support of this module is a testament to its dedication both to the Irish language and to championing Sustainability, and highlights its vision for celebrating our heritage and preparing for the future.

Upon entering third-level, students who choose to study STEM are often forced to forsake the Irish language, or vice versa. This is detrimental to the Irish language, as it leads to a systemic decline, where there is a paucity of appropriately qualified STEM graduates with Irish to work as teachers in the increasing number of primary and secondary Irish-medium schools. Further, there are a great many companies in the biomedical, technological, sustainability, audiovisual, etc industries with bases in the Gaeltacht, and if graduates are not provided with the skills to work through Irish in such companies, it will be to the detriment of the Gaeltacht itself.

Taught through Irish, the module “Matamaitic don Inbhuanaitheacht” offers students of Irish the opportunity to

engage with STEM and Sustainability, and also offers STEM students the chance to continue using their Irish.

The module introduces students to new mathematical concepts, such as matrices, and also builds on second-level material such as calculus and statistics, and applies these to problems in a Sustainability framework.

Both Sustainability and Mathematics are very broad areas, and lend themselves well to devising interesting practical examples.

To account for the students' wide range of mathematical backgrounds, extensive use is made of interactive Jupyter-notebooks, where students learn to implement models and conduct analyses in Python, saving themselves computational heavy-lifting, but enabling them to analyse and discuss effects of parameter-adjustment and interventions in real-world scenarios, such as disease spread, travel network optimisation, heat distribution, population modelling.

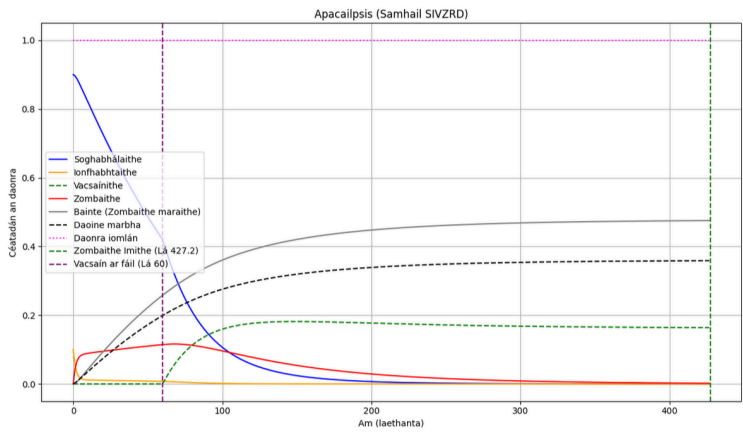
These Jupyter-notebooks allow the instructor to share notes which look like pdfs, but contain editable computer code which students can edit and execute, giving them opportunity to experiment with the models and providing a wealth of opportunities for further study for students who are so inclined.

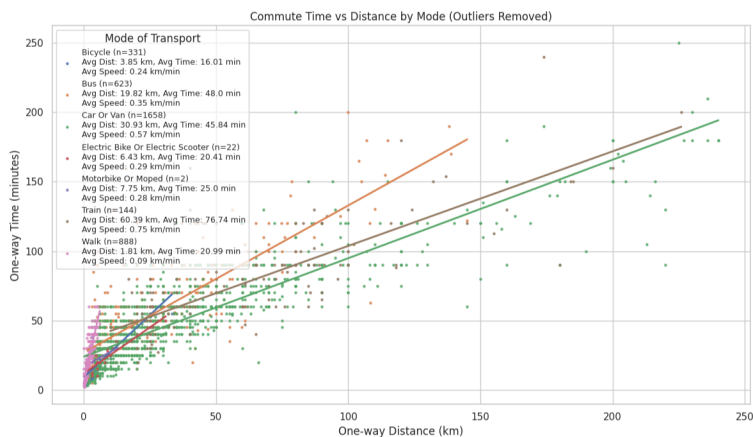
Further, students can similarly share their documents and code with the instructor for marking or discussion.

Decolonising the curriculum is an important facet of this module – it seeks to recognise and validate the Irish language within the university, it uses local and relevant data and knowledge within the learning system, and provides equality of access to education through the Irish language. This module encourages students to consider a range of issues concerning language and sustainability as well as the more obvious mathematical analysis and modelling techniques, and hopefully is of some assistance in enabling them to address interconnected global challenges by drawing on diverse knowledge systems and creating new ecologies of knowledge.

The attached figures illustrate: a simple example of a Jupyter-notebook, an example from the module of correlation analysis

based on University of Galway's Travel Survey data, an example of SIR disease spread with zombies incorporated at the students' behest.





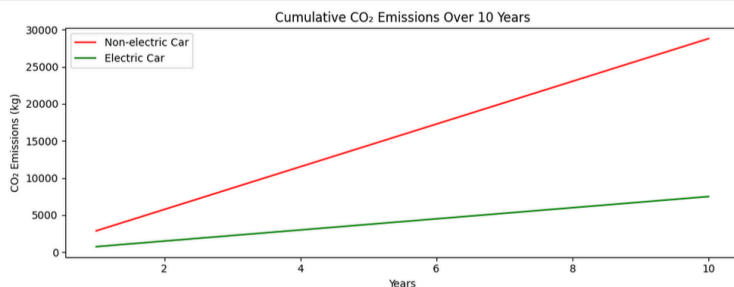
Jupyter notebook example

This is a jupyter notebook. Notes can be written in it, and edited, but so can executable code, such as Python. Instructors can share this document with students, and students can experiment with the parameters and see the effects on the model live within the document.

See the below example comparing CO₂ emissions of Electric vs Non-electric cars over a given length of time.

```
# Students can play with these parameters
gas = 0.192; ev = 0.05; km_per_year = 15000
years = range(1, 11)
gas_emissions = [gas * km_per_year * y for y in years]
ev_emissions = [ev * km_per_year * y for y in years]

# The code below just draws the graph
plt.figure(figsize=(10, 4))
plt.plot(years, gas_emissions, 'r-', label='Non-electric Car')
plt.plot(years, ev_emissions, 'g-', label='Electric Car')
plt.title('Cumulative CO2 Emissions Over 10 Years')
plt.xlabel('Years')
plt.ylabel('CO2 Emissions (kg)')
plt.legend()
plt.tight_layout()
plt.show()
```



Intended Learning Outcomes

Students gain mathematical skills (in the areas of matrix algebra,

differential calculus, graph theory, and probability and statistics) and an understanding of how to apply these in sustainability contexts; creating and analysing models for areas such as SIR infection modelling, transport network optimisation, population dynamics, and data analysis.

Students develop programming skills, and the ability to use software to perform calculations and analysis, and to visualise models and data.

They learn to critically evaluate models they are presented with, and to draw their own conclusions from data.

The module also gives STEM students the chance to use their Irish, and Irish students the chance to engage with STEM, opportunities which they would otherwise likely not be afforded.

Students gain an increased awareness of Sustainability issues in some cases, through experimentation and analysis, and consideration of potential interventions or possible scenarios.

Teaching and Learning Approach

Lectures highlighted Sustainability issues motivating whichever new material we intended to cover, introduced the basic mathematical techniques, and then applied them to the Sustainability examples.

For more complex modelling and analyses, to avoid computational difficulties, we held weekly computer labs, where students learned to implement the techniques they had learned using Jupyter-notebooks and build on this to generate more comprehensive and useful models and analyses.

(Jupyter-notebooks are an open-source web-based application that allows users to create, share, and execute interactive documents containing live code, visualisations, text, equations, and more. They are an excellent resource for teaching, documentation, or report-writing, in fields such as mathematics, computer science,

data science. They allow the editing and execution of code – Python was used for this module, but there are other options – allowing students to, for example, verify their calculations, or run calculations which are infeasible to do by hand.)

Assessment Strategy

The course was broken into three larger independent “topics” centred, broadly, on matrices, calculus, and data analysis. Each topic involved a class test and a homework lab Jupyter-notebook.

The class tests (3 x 5\%) involved simpler computations and more closely resembled the summer exam (50\%), to ensure students weren’t relying overmuch on AI etc. Homeworks (3 x 5\%) required students to utilise Python for more in-depth modelling or analysis; writing or adjusting code, or discussing effects of tweaking parameters.

There was also 5\% for participation.

For ’25/’26, very short class tests will be administered each class (~20 x 1\%) (allowing students the marks for their best ~20 tests to account for unavoidable absences etc), as attendance for ’24/’25 was poor across the College of Arts. This will ensure attendance, and avoid AI.

For this course, the small class makes marking pen and paper tests feasible, but for larger classes an online test could be administered on a closed wifi network. This is a technique we are currently investigating for efficiency, to avoid AI use, and would also be more sustainable, avoiding the use of paper tests!

Impact and Outcomes

On an individual student level, students acquired quantitative,

programming, analysis, modelling, and language skills, and awareness and knowledge of how they might in future use these for work in sustainability and other contexts. They developed critical skills to analyse information they are presented with rather than relying on others' interpretation.

The winner of the Christofides Prize is now teaching in the Gaeltacht, with this having been her only Irish-language module in the degree.

On an institutional level, the introduction of this module required developing workarounds for introducing interdisciplinary modules, serves as an example of how Irish-language modules in STEM can be a success,

and re-introduced the Christofides Prize – an important step in acknowledging the importance of Irish, within the School of Maths and within the College of Science and Engineering more generally.

The module provides students with hard skills for dealing with Sustainability issues, enabling them to perform concrete calculations, both in modelling more precisely the effect of proposed initiatives, and in analysing data, skills relevant to addressing complex and 'wicked' challenges.

Collaboration, Partnerships & Student Participation

The School of Mathematical and Statistical Sciences awards the Christofides Prize to students with the highest marks in this module, named after Tony Christofides, a lecturer from Greece who learned Irish before moving here, and then taught Maths through Irish. He also became a staunch advocate for language rights, and was a founder of Cinegaeil in the 1970s, from which grew the Gaeltacht's audio-visual industry.

For the data analysis component, the Sustainability Office

provided local-interest suggestions, and data from the university's Travel Survey for students to experiment with.

The module is taught by the School of Maths, but is also available through other Schools in the Colleges of Science and Engineering and of Arts, Social Sciences and Celtic Studies.

Students provided feedback on suitable topics and examples chosen for the course, and were offered the opportunity to highlight any particular sustainability topics they would be interested in studying the mathematics of.

Student Engagement

6 students in the cohort for the pilot year ('24/25) of this module. Challenges to overcome included issues with cross-disciplinary registration leading to some students missing out on enrolling. Module has also been added as an option for BSc in Mathematical Sciences and BSc in Marine Science for '25/26, and to be added for BSc in Agricultural Science for '26/27

Disciplines

- Arts and Humanities
- Education
- Engineering, Manufacturing and Construction
- Generic programmes and qualifications
- Health and Welfare
- Information and Communication Technologies
- Natural Sciences, Mathematics and Statistics
- Teaching and Learning

Programmes

BSc Science, BA Arts, BA Mathematics and Education

Best Practices & Resources

Top Tips

- In STEM subjects where calculations or programming are involved, Jupyter-notebooks are an excellent tool, allowing students to combine notes with editable and executable code in a convenient format. Ensure students are comfortable using Jupyter-notebook early.
- Give students the freedom to develop their own ideas, and just be on hand to help them therewith. During our discussion on SIRD (susceptible, infected, recovered, dead) disease modelling, the students proposed introducing zombies to the model, and then themselves developed the appropriate changes, which both entertained them and led to a better grasp of the concepts. Assign marks for attendance, as different departments' attendance rates differ and it can be disruptive.
- Use local data and examples where possible. Students were more invested when relatable examples were used, such as when we used the University of Galway's Travel Survey data for our data analysis topic.

Useful Resources

- <https://www.dataquest.io/blog/jupyter-notebook-tutorial/>
- <https://www.learnpython.org>

Funding Details

The development of this initiative was supported as part of a strategic fund from the University of Galway to promote the Irish language within the College of Science and Engineering, as is the reintroduced Christofides Prize.

The course, now developed and with the various frameworks in place, will be taught by the School of Mathematical and Statistical Sciences, with some support from Acadamh na hOllscolaíochta Gaeilge.

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103. Sustainable– Food/Sector–Curriculum Co- Create: Co-Designing OERs for Embedding Sustainability

DR JULIE DUNNE; DR CATHERINE BARRY-RYAN; DR CORMAC
MACMAHON; DR GRAHAM O'NEILL; DR LUCIA WALSH; DR GEMMA
KINSELLA; DR ADRIENNE FLEMING; DR CATHERINE GORMAN; AND
FINTAN MORAN

Institution and Partner Organisations

- Technological University Dublin
- Learning, Teaching & Technology Centre (LTTC)
- Convene Enterprise Academy
- Enterprise and sectoral partners including Bord Bia, Teagasc, and the Food Safety Authority of Ireland, Burren Ecotourism

Description

The Sustainable–Food/Sector–Curriculum Co-Create (SFCC/SSCC) initiative, funded through TU Dublin's SATLE Impact "Synergies" and "Accelerate" schemes, was established to embed Education for Sustainable Development (ESD) across disciplinary programmes through co-creation with students, enterprise partners, and academic staff.

It began within the School of Food Science and Environmental

Health as a pilot to address TU Dublin's Strategic Intent 2030 goal of integrating sustainability learning outcomes across all programmes. This led to the design of two pilot modules, validated and shared as open educational resources (OERs):

Level 9 CPD Module: Educating for Food Sector Sustainability (2021)

Level 8 Module: Food Sector Sustainability (2021)

These were the first ESD modules validated in TU Dublin and served as demonstration exemplars for how to build capacity to allow existing modules to be reviewed and redesigned to embed disciplinary sustainability learning outcomes and assessments.

The modules were used as practical guides within the SFCC pilot to support academic staff in a co-creation process with students and stakeholders to systematically align learning outcomes and assessment with the UN Sustainable Development Goals (SDGs). Each module included participatory workshops involving staff, students, and enterprise representatives (e.g., Bord Bia, Teagasc, Food Safety Authority of Ireland). The pedagogical model integrated design thinking, reflective learning, and SDG mapping to foster systems thinking and transformative learning.

Building on their success, similar sector-focused ESD modules were co-created for Tourism and Hospitality, Business and Finance, and Biopharmaceuticals & Life Sciences, ensuring contextual relevance across TU Dublin's disciplinary landscape.

Following the pilots, the insights and evaluation data informed the creation of a general ESD CPD module for academic staff, now embedded within TU Dublin's Postgraduate Diploma in University Teaching and Learning and the MA in Higher Education Practice. This module retains a discipline-specific sustainability learning outcome and assessment, requiring each participating lecturer to investigate sustainability within their own disciplinary context and design aligned learning and assessment strategies.

The initiative has led to tangible institutional transformation:

Capacity building among 35 lecturers across four sectors;

Embedding of sustainability outcomes in 11 of 13 Food Science

programmes;

Establishment of a cross-campus Leading Sustainability Network;

Publication and global reuse of OERs (500+ downloads).

This project demonstrates how open educational practice can serve as both a pedagogical tool and a strategic lever for curriculum reform and institutional capacity-building in ESD.

Intended Learning Outcomes

An abbreviated summary of the learning outcomes (LOs) Level 9 (CPD – Educating for Food Sector Sustainability – full LOs available in the OER resource linked below):

- Critically evaluate frameworks and policies underpinning ESD.
- Design sustainability-focused learning outcomes and assessments for disciplinary contexts.
- Apply design thinking and reflection to embed sustainability in teaching practice.
- Collaborate across disciplines and enterprise to enhance sustainability literacy.

Level 8 (Food Sector Sustainability):

- Explain the interconnections between food systems, the SDGs, and sustainable development.
- Analyse sustainability challenges in food and related sectors.
- Propose practical, SDG-aligned solutions for sustainable food systems.
- Reflect on the learner's role as a change agent in professional sustainability contexts.

The current general ESD CPD module for staff includes the

outcomes include LOs similar to the above L9 for sustainability literacy, but has a more general LO for the learners own discipline Design strategies for collaboration and co-creation with various stakeholders relevant to own discipline & sector that have potential to lead to the development of innovative solutions to complex sustainability challenges

Teaching and Learning Approach

The initiative employs transformative, experiential, and design-led pedagogies.

The Food Sector pilot modules introduced co-creation workshops, SDG mapping, and systems thinking to address “super-wicked” sustainability problems. They also functioned as demonstration modules, illustrating how existing curricula could be reviewed, mapped, and redesigned to embed ESD learning outcomes and assessment.

Learners engaged in design sprints, case-based projects, and reflective journaling to link global SDG frameworks with sectoral realities.

The Level 9 CPD module supported academic staff in redesigning curriculum elements to embed sustainability through ESD-aligned outcomes and assessment.

The approach was adapted for Tourism, Business, and Biopharmaceutical sectors and subsequently refined into the General ESD CPD module, which includes reflective peer learning and a disciplinary sustainability inquiry.

Technology-enhanced learning supported collaboration across TU Dublin’s campuses and sectors, sustaining an interdisciplinary ESD community of practice.

Assessment Strategy

Assessment was designed to measure both learning and transformation.

In the Level 9 module, participants completed a reflective portfolio documenting redesign of a module or activity to embed sustainability principles, supported by peer and enterprise feedback.

In the Level 8 module, students undertook a group sustainability challenge project, applying SDG frameworks to real-world sectoral problems, and submitted reflective essays to evidence personal and professional growth.

The General ESD CPD module adds a disciplinary sustainability inquiry, requiring staff to analyse sustainability teaching within their own subject area and propose actionable curriculum changes.

Across all modules, reflection, feedback, and real-world problem solving underpin assessment for transformative learning and curriculum reform.

Impact and Outcomes

The initiative achieved measurable and replicable impact:

- 8 validated sustainability modules across four sectors;
- 35+ staff trained in ESD pedagogy
- Sustainability embedded in 11 of 13 food programmes;
- Sustainability focused programmes validated;
- 500+ students completed sustainability-integrated modules
- OERs downloaded over 500 times internationally, extending TU Dublin's open education reach;

- Several publications and conference papers disseminating the initiative (Irish Journal of Academic Practice, International Journal of Sustainability in Higher Education, Royal Irish Academy Case Study report, INTED 2023, EdTech2021, PS2021;
- €800,000 Springboard+ funding for sustainability leadership programmes;
- Leading Sustainability Network across 12 Schools and 3 campuses;
- Development of a General ESD CPD;
- Numerous follow on initiatives, e.g. Erasmus+ NEMOS project, MyGreenLabs, Green Dragon Hackathon, EU GreenComp Scaffold workshop, Climate Fresk;

The project exemplifies how open educational practice can drive systemic integration of ESD into curriculum, teaching, and professional learning within higher education.

Collaboration, Partnerships & Student Participation

Students were central collaborators in curriculum co-design, contributing ideas for content, assessment, and module evaluation. Enterprise partners such as Bord Bia, Burren Ecotourism Network, Teagasc, Alexion, and the Food Safety Authority of Ireland co-shaped authentic sustainability challenges, ensuring sectoral relevance. Collaboration through the Convene Enterprise Academy linked enterprise and academia, while the LTTC supported pedagogical innovation.

This cross-sectoral and multi-campus collaboration, spanning Food, Business, Tourism, and Biopharma, embodied the principle of knowledge co-production, empowering students, educators, and industry partners to co-create sustainability learning outcomes and disciplinary ESD frameworks.

Further information:

Dunne, J., et al (2021). 'Sustainable-[sector]-curriculum co-create' Case study #45 in 'Better together: knowledge co-production for a sustainable society' Bolger, P., Brereton, P., Grant, O., Torney, D. and Gallagher, T., Royal Irish Academy

Dunne, Julie L.; Barry-Ryan, Catherine; and MacMahon, Cormac H. (2024) "Embedding sustainability in food degrees: A Case-study of service-learning as a signature pedagogy for developing food sustainability competencies," Irish Journal of Academic Practice: Vol. 11: Iss. 2, Article 8. doi:<https://doi.org/10.21427/vj65-ad03>
Available at: <https://arrow.tudublin.ie/ijap/vol11/iss2/8>

Student Engagement

Over 100 students participated in the pilot modules, while more than 500 students have since engaged with sustainability-embedded programmes. Students were active co-creators in the design, evaluation, and review of curricula, directly shaping sustainability learning outcomes and assessment approaches.

Disciplines

- Agriculture Forestry, Fisheries and Veterinary
- Arts and Humanities
- Business, Administration and Law
- Education
- Health and Welfare
- Natural Sciences, Mathematics and Statistics
- Services

Programmes

- Level 9 CPD Module: Educating for Food Sector Sustainability (2021)
- Level 8 Module: Food Sector Sustainability (2021)
- Follow-on modules developed for Tourism, Business, and Biopharmaceutical sectors (2022–2023)
- General ESD CPD module for staff (2024), embedded within TU Dublin's Postgraduate Diploma in University Teaching & Learning and MA in Higher Education Practice (current)

Best Practices & Resources

Top Tips

- Use formal ESD training and professional development assessment strategies as a lever to drive embedding sustainability within the curriculum.
- Co-create with students and enterprise partners to ensure authenticity and sectoral relevance.
- Include disciplinary sustainability inquiries in staff CPD to link sustainability directly to academic practice

Useful Resources

- Level 9 CPD Module – Educating for Food Sector Sustainability (2021) <https://arrow.tudublin.ie/totalarcresreu/3>

- Level 8 Module – Food Sector Sustainability
(2021) <https://arrow.tudublin.ie/totalarcresreu/2>
- Food Analysis Module Descriptor with SDGs Embedded
(2021) <https://arrow.tudublin.ie/totalarcresreu/1>

Funding Details

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104. Sustainability Paradoxes: Research-Teaching Nexus

DR SUSANN POWER; PROFESSOR GRAHAM MILLER; AND
PROFESSOR MARIA LAURA DI DOMENICO

Institutions

- Ulster University
- Nova School of Business and Economics
- University of Surrey

Description

This initiative is based on an original piece of research by Power et al. (2024) entitled “A longitudinal analysis of judgment approaches to sustainability paradoxes” (<https://doi.org/10.1016/j.tourman.2023.104877>). The article examines how tourism executives heuristically evaluate paradoxes in sustainable tourism. The research investigates three core sustainability paradoxes: 1) The Flying Dilemma – Can tourism ever really be sustainable if people continue to fly? (SDG13), 2) The Experience Dilemma – Is sustainability in tourism compromised by the need to provide ‘good’ customer experiences? (SDG12), and 3) The Growth Dilemma – If perpetual tourism growth is not sustainable, how can we meet everyone’s right to travel? (SDG8).

This original research article builds the foundation for a novel

classroom activity – namely the investigation of these sustainability paradoxes by a cohort of tourism and hospitality students at Ulster University. Students are required to read the original article. They are then presented a brief research presentation by the lead author. Students are then provided with anonymised excerpts from the original research interviews and in small groups discuss each paradox over a three-week sequence. Students are then required to prepare a short position statement in their small groups for each paradox and present this to the class, which then opens up a wider classroom debate.

The ESD initiative is designed alongside Ulster University's Integrated Curriculum Design Framework: Knowing, Doing and Being. The Integrated Curriculum Design Framework (ICDF) is an overarching framework that consists of a three-phased approach to curriculum design, guiding programme teams to pro-actively design, develop and deliver a holistic and innovative curriculum for our learners, industry and economy. It has been developed from a sound pedagogical evidence-base and encompasses the three dimensions of curriculum design of Knowing, Doing and Being (Barnett and Coate, 2005), and the purpose of this initiative is aligned to this framework:

Knowing / Head: what does the student need to know?

>> Sustainability competence: students acquire knowledge about fundamental sustainability issues in the area of tourism and hospitality as relevant to their degree programme

>> Research competence: students engage with original research that has authored by their module leader / lecturer and to have the opportunity to evaluate original research data

Doing / Hand: what does the student need to be able to do?

>> Critical thinking competence: students engage in a heuristically challenging decision-making process structured around specific sustainability paradoxes

>> Public speaking competence: students practice the art of concise and precise argumentation

Being / Heart: what does the student need to be?

>> Reflective competences: students reflect on their own biases and heuristic shortcuts in relation to paradox thinking as they progress through these three sustainability dilemmas

>> Interpersonal competences: students develop integrity, self-awareness and normative understanding as they deliberate these three sustainability paradoxes.

In developing this ESD initiative, key competencies for the ESD have been embedded. The UNESCO Key Competencies for Sustainability which this initiative develops are: Knowing: system thinking, anticipatory and future thinking, critical thinking; Doing: collaboration and integrated problem-solving; Being: self-awareness and normative understanding. The initiative further develops Ulster University Graduate Attributes as follows: Knowing: critical thinker; Doing: creative problem-solver, enterprising innovator; Being: citizen with integrity, sustainable citizen and inclusive citizen.

The initiative embeds Healy et al's (2010) research-teaching nexus typology as it includes research-led (listening) activities, research-tutored (exploring), research-based (doing) and research-teaching (teaching) activities.



Intended Learning Outcomes

Students participating in this sustainability paradoxes: research-teaching nexus will be able to:

Knowing / Head: what does the student need to know?

1. Critically discuss fundamental sustainability issues in tourism and hospitality
2. Develop research competence by analysing original research data
3. Evaluate creative and innovative solutions to sustainability paradoxes
4. Reflect on their own biases and heuristic shortcuts using sustainability paradoxes
5. Demonstrate precise and concise debating skills in a public forum

Teaching and Learning Approach

The teaching and learning activities span over the course of three weeks and is scaffolded on Healy et al.'s (2010) Research-Teaching Nexus.

- Session 1: Sustainable Hospitality Business (Lecture) >>>
Seminar: Discuss in pairs or small groups the following sustainability paradoxes; and prepare as a group a 3min position statement. Choose one student to present the pitch.
 - “Is sustainability in hospitality compromised by the need to provide good customer experiences?”

- Session 2: Hospitality and Net-Zero (Lecture) >>> Seminar: repeat.
 - “Can hospitality ever really be sustainable if travellers continue flying to holiday destinations?”
- Session 3: Hospitality and Post-Growth (Lecture) >>> Seminar: repeat.
 - “If perpetual growth is not sustainable, how can we meet everyone’s right to travel?”

Lectures are research-led with students listening to original research. Seminar activities are research-tutored with students exploring sustainability paradoxes in small groups, research-based by developing a position statement and research-taught by peer-to-peer teaching through position pitches.

Assessment Strategy

The assessment task forms part one of two pieces of qualitative assessment – namely to Prepare a 3min position-statement about a contemporary issue in hospitality of your choice and pitch this to an audience.

The teaching-learning activity gives students the opportunity to critically explore a sustainability paradox. They are able to choose any of these three paradoxes for their assessment task, though they can also choose another topic. They are then able to practice during these three seminars preparing a concise position statement and pitch in front of an audience with peer and tutor feedback in a non-assessed, supportive environment.

The assessment strategy thus embeds principles of being research-tutored by exploring original research data, research-based by analysing data and developing their own interpretation and findings, and research-taught by through peer-to-peer teaching.

Impact and Outcomes

A recent revalidation of the programme has resulted the following feedback from the panel:

“Well-articulated alignment in terms of: the UU strategy of People, Place and Partnership; regional contribution and relevance; and more generally to the SDGs/Sustainability principles.” Dr Maeve Marmion, *Associate Dean Education and Student Success, University of Chester*

“The staff’s research activity will buttress the whole and ensure a strong delivery on content.” Dr Brian Dixon, *Head of School, Belfast School of Art, Ulster University*

Students have benefitted from this initiative by developing critical thinking skills, paradox thinking, compassion and empathy. The initiative was introduced in AY2024/25, which then saw an increase in student results for this particular piece of coursework. The learning activity has proven to be successful and has now been adopted in a post-graduate course at Ulster University.

Collaboration, Partnerships & Student Participation

Students are active learning partners in this initiative as they first review and then heuristically examine an original piece of work, developing their own judgement and creative problem-solving competencies in relation to sustainable development. The initiative is a class-room based initiative and does not require external partners. It is based on a published piece of research by the module lecturer and is thus, replicable in other teaching settings in related subject areas.

Student Engagement

20 Students

Disciplines

- Business, Administration and Law
- Services
- Social Sciences, Journalism and Information

Programme

BSc International Hospitality Management

Best Practices & Resources

Top Tips

- Allow space and time to develop paradox thinking
- Know your research as this activity requires in-depth expert knowledge
- Provide gentle guidance on public speaking in a safe environment

Useful Resources

- <https://www.sciencedirect.com/science/article/pii/S026151723001590?via%3Dihub>
- https://pure.ulster.ac.uk/files/100680232/Research_Teaching_Nexus_RTN_Toolkit_Updated_2_2_.pdf
- <https://www.unsdglearn.org/unesco-cross-cutting-and-specialized-sdg-competencies/>

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Professor Graham Miller

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Professor Maria Laura Di Domenico

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105. Developing Ocean Literacy in Early Childhood

DR RITA MELIA; DR NOIRIN BURKE; CAITRIONA RYAN; GERALDINE DORAN; CAROLINE FAHY; JD WHITMAN; AND MARY SKILLINGTON



Institutions and Partner Organisations

- Atlantic Technological University Galway
- Marine Institute
- Galway Childcare Committee
- Galway Atlantaquarium
- The Arts Council

Description

Context

Sustainable Development Goal 4 (SDG 4): Quality Education specifically SDG 4.7 has set a target that by 2030 all learners will

have the knowledge and skills including education for sustainable development and sustainable life skills.

The BA in Early Childhood Education and Care (ECEC) programme at Atlantic Technological University (ATU) Galway offers a direct entry programme for early years educators to upskill to degree level. Most of the students are currently working in ECEC settings. With 40% of the Irish population 1,9 million (BIM) living within 5 km from the sea, as educators we see the shore as a rich natural environment for learning. This project aims to raise BA ECEC students' awareness of ocean literacy and support the implementation of their learning with children in ECEC settings in line with SDG 14 life below water. Equally, The inter governmental Oceanographic Commission (IOC) of UNESCO (2020) states that "we need to join forces and integrate social sciences and civil society as well as change humanity's relationship with the ocean"(Eriksen et al, p.,4, 2024).

Description

Developing Ocean literacy in early childhood was initiated by Galway Childcare Committee and Galway Atlanaquaria in 2018/2019. In 2020, due to the COVID-19 pandemic, an eLearning programme—Exploring the Shores and accompanying resource guide were developed. In 2023-2024 funding from NTUTORR supported BA ECEC students to engage with the Beach School eLearning programme and accompanying lecture content. Nine ECEC students brought the seashore into their early year's settings using an inquiry-based learning approach. They shared and applied their knowledge through play-based experiences, scaffolding children's learning as they explored their wonderings and inquiries about the ocean and shore life. A total of 30 students, children, and families visited Galway Atlantaquarium, followed by a beach play day. The aim of the programme was to ignite BA students' interest in ocean literacy and to explore how this interest could be shared in ECEC where they worked or were on placement.

In 2024 - 2025, digital cameras and microscopes for children

were purchased. Sixteen students engaged with the eLearning programme and brought their learning into the preschool settings. Dr Noirin Burke Galway Atlantaquaria collaborated with three ECEC settings, reaching 66 children. Twenty students visited the Atlantaquaria and there were 150 children and families at the exploring the shores clean up and play day.

Academic year 2025 – 2026. A new pilot, funded by the Marine Institute, twenty ATU students are undertaking the Explorers Education teachers training programme, with classes taking place on Ballyloughane beach. Students are also working with JD Whitman educator, artist and ocean advocate, the ATU Arts Council artist in residence. The students will explore socially engaged art as a medium to raise awareness of plastic pollution, macro, micro and nano.

The aims of the project

- To ignite BA Early Childhood Education and Care students' interest in ocean literacy.
- Explore how this interest can be shared in Early Childhood Education and Care settings.

Significance

Total, 70 Early Childhood Education and Care students engaged.

Approximately 300 early years settings, children, families, communities engaged in one of four beach play days.

20 students engaged in the Marine Institute: Explorers Education teacher training programme.

48 ECEC students from Galway, Mayo engage with Artist in Residence programme

Collaboration, Partnerships & Student Participation

Students

This project is embedded in students learning with a focus on the outdoor education module. Students connect theory to practice bringing the shores to the children in ECEC settings, advocating and highlighting how the ocean influences us and how we influence the ocean.

Most students are staff in ECEC settings, their learning and knowledge is further enhanced when the marine biologist works in their setting, empowering them to support children's learning and answer their questions about ocean its plants and creatures.

Following student feedback for more specific knowledge, the students are the first group of ECEC students undertaking the Marine Institute Explorers Education teacher training programme, which is only offered to primary teachers and children age 8-11 years.

External partners

The external partners include ECEC settings where students work.

Galway Childcare Committee, through the organisation, promotion and running of the beach clean up / play day events.

Galway Atlantaquarium support the beach playdays, visits to the aquarium and promotion.

Marine Institute are funding the Explorers Education teacher training programme 20 hrs training with a marine biologist.

Parents , children and extended family members who attend the beach play day.

The Arts council are funding an Artist in residence to support this programme.

Intended Learning Outcomes

Students;

A pre and post ocean literacy

A separate questionnaire baseline survey on the pollution crisis has been completed with 20 students. A post evaluation will follow.

Students assessment for the module includes planning a beach play day activity where they will be evaluated on, planning, engagement, reflection and learning of the ocean literacy principles and the outdoor curriculum.

Students have to take their learning from the Explorers Education programme and engage the children in the ECEC setting on a project and complete a learning story on the experience.

Engagement with the artist on the socially engaged large scale installation which will be exhibited in June 2026 will provide further evaluation together with the findings of the questionnaires and focus groups of student feedback.

Each week during the project students reflect on their learning and two focus groups discuss challenges and opportunities.

Feedback from parents at the beach playdays and clean up days. There are two days planned for 2025/2026.

Evaluation will also come from children's art work, voice, photos using the digital cameras available to the students to take into their ECEC settings.

Feedback from the Marine Scientist, Artist, lecturers, external partners will support evaluation. Feedback from previous iterations have supported the format in 2025 / 2026

Teaching and Learning Approach

Provision of an autonomy supportive learning environment.

Recognition of students prior knowledge & experience.

Rich learning environment on the beach with access to classroom space.

Students learn through independent and peer learning.

The project is embedded in two modules, outdoor education and research with children

Assessment is embedded, this is not extra work.

Student directed assessment

Student empowered to plan for the play day

Students take the lead on the play day, taking specific responsibilities.

Students engage and collaborate in partnership with parents and external agencies.

Students voice is heard through focus group and reflection after each session on the beach and in the art studio.

Students are empowered

A playful pedagogy

Assessment Strategy

Both groups are assessed on the Ocean Literacy project.

Both set of students year 2 and 3 are required to bring their learning from the on the shores Explorers Education programme into their practice in the ECEC setting where they work or are on student placement.

Year 3 students undertake a learning story, year 2 undertake a piece of pedagogical documentation.

The learning from this element of the assessment will then be used by students to plan and undertake the beach play day.

Student Engagement

- 2023 -2024 30 students
- 2024-2025 20 Students
- 2025-2026 20 Students
- Overall reach 70 students to date

Impact and Outcomes

Feedback from students to date, highlighted the need for more concrete knowledge.

- **Feedback from parents at the beach play day**
 - This is fantastic bringing families together.
 - To day shows you can go to the shores in any weather and have fun.
 - There is so much to do here, and there is no problem with the children, they love being outside.
 - We should be doing more of this, we need to be outside with the children and the beach is close.
- **Feedback from children on the beach**
 - “ I saw a closed shell, a crab came out of it, it might be a pearl”
 - “ I learnt about eels and I stood on one”
 - “ Do not litter”
 - “ I learnt about whales, crabs and rock pooling”
 - We picked up rubbish, the fish will get stuck in it.

- There is water under the sand.

Students understand how the ocean impacts us and we impact the ocean. Learning has impacted their practice.

ATU BA ECEC programme are the first University to focus on ocean literacy in early years.

The Explorers Education programme is a programme for children age 8-11 years. This is too late to raise awareness.

Vision; specific Explorers Education teacher training programme for children age 0-8 years resourced

Discipline

Education

Programme

BA Early Childhood Education and Care Programme ATU Galway

Best Practices & Resources

Top Tips

Persevere, many students do not want to get outside of their comfort zone out on the beach regardless of the weather. There is no such thing as bad weather just bad clothing. Document as you go.

Useful Resources

<https://www.marine.ie/site-area/areas-activity/education-outreach/explorers-education-programme> <https://www.galwaychildcare.com/childcare/elearning/Ocean-Connections/index.html#/> Ocean Literacy for all: a toolkit – All Atlantic Ocean Research and Innovation Alliance

Funding Details

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Arts Council Artist in Residence 2025

Marine Institute Explorers Education teachers training programme 2025

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Io6. IADT N-TUTORR
Climate Action and
Communications: Student-
Led Sustainability
Engagement

DR SIVAKUMAR RAMACHANDRAN



Institutions and Partner Organisations

- Institute of Art, Design + Technology (IADT)
- N-TUTORR Programme
- Atlantic Technological University (ATU)
- South East Technological University (SETU)
- Technological University Dublin (TU Dublin)
- Climate Fresk (Ireland)
- NatureExperts (Wicklow)
- Department of Further and Higher Education, Research, Innovation and Science (DFHERIS)
- IADT Students' Union Environmental Society

Description

The N-TUTORR Climate Action initiative, led by Dr. Sivakumar Ramachandran (Ganesh) at IADT Dun Laoghaire, aimed to empower students as change agents for sustainability through practical, hands-on campus events. Within a six-week timeframe in late 2024, he co-organised the recruitment of student champions who developed and managed climate-focused initiatives, culminating in the Climate Christmas Bazar—a student-led arts, crafts, and sustainability fair.

The project integrated United Nations Sustainable Development Goals, the AREA Student Competency Framework, and aligned with themes including Digital Transformation, Equity, Diversity and Inclusion, and Employability. Students were scaffolded through research resources, workshops, and masterclasses, including prior Climate Fresk training and sessions with a team of warzone environmental scientists.

Prior to the start of student champion involvement, Ganesh devised a framework and methodology to proceed with seeking disciplinary areas at IADT where students would be most likely to apply for the posts, including the Students' Union Environmental Society. He developed the job specification and applied a selection process for the champions. Ganesh also identified at an early stage, an overall leader.

Prior to the initial meeting, Ganesh provided extensive online material to enthuse and galvanise students into action. At the first meeting he fielded the broad global concerns and fears of students, and how the development of a large-scale event at IADT would be a positive step to engage students and staff with the mitigation of the climate emergency, as well as two other prior events.

Ganesh then allocated the students to several teams of varying sizes, as follows:

- Red: Final event content creation
- Orange: Final event management
- Yellow: Publicity for all events
- Green: Prior event management

To provide the students with pilot opportunities in event management, he facilitated a Climate Fresk workshop at IADT delivered by Susan Doyle at the end of November. All student champions, and others from IADT attended. The event deepened attendees understanding of the scale of the climate emergency challenge as well as giving them opportunities for collaborative problem solving.

To provide students and staff with further global understanding of the situation, Ganesh organised, with help from the champions, a seminar from Nature Experts, a United Nations allied group who conduct environmental damage assessments in Ukraine, Palestine and other warzones, to help maintain heritage and conservation commitments under extreme circumstances.

Both events helped galvanised students' actions and developed their management skills.

For the final event, the overall leader decided to move the event from the room booked by Ganesh to the Student Union hub and reorganised the teams according to the events envisaged for the final event, which was named as the Climate Christmas Bazar. The students also recruited a further 50% of students as volunteers that they needed for specific aspects of the event.

The event included a sustainable crafts stall and recyclable present wrapping workshop, garment mending station, an environmentally vegan winter bird food stall, vegan food platters, and live social media coverage of demonstrations, with environmentally conscious disposal practices, followed finally by a ceremonial planting in the IADT garden. The event was a great success and a nice way to end the semester on Friday 13th December.

So, in summary, having shadowed Ganesh to gain event management and publicity skills, students gained many skills in self-organising in teams, digital and non-digital content design, event management, different forms of publicity, and mutual support. They applied digital communication tools, social media, and creative design for event promotion. The initiative fostered leadership, teamwork, project management, and sustainability literacy. By the end, students independently managed all aspects of the event, demonstrating enhanced confidence, collaboration, and advocacy skills, while raising campus awareness of climate action.



Intended Learning Outcomes

Students developed leadership and project management skills by planning and executing the campus events, fulfilling AREA's *Leadership & Empowerment* competency as they took ownership of timelines, task allocation, and coordination. They applied sustainability knowledge in real-world contexts, putting theory into practice in event design and operations, thereby

engaging AREA's *Responsibility & Active Citizenship* competency. Through digital communication and publicity tasks—designing posters, managing social media outreach—they met the *Digital Content & Information Literacy* competency. By working in teams, peer mentoring, and collaborating across disciplines, they exercised the *Communication & Collaboration* competency. Their iterative planning, troubleshooting, and adaptive responses cultivated *Problem-Solving & Innovation*. Finally, by aligning their work with the United Nations Sustainable Development Goals and recognized competency frameworks, they strengthened their *Global & Systems Literacy* as well as *Employability & Contextual Awareness*.

Teaching and Learning Approach

Students developed *Leadership and Empowerment* competencies by planning and executing climate-focused campus events, managing timelines, delegating tasks, and leading peer teams. They applied sustainability knowledge in authentic contexts, fulfilling the *Responsibility and Active Citizenship* competency through environmentally conscious event design and delivery. By creating digital posters, managing social media, and documenting activities, students enhanced *Digital Content and Information Literacy*. Collaboration across disciplines and peer mentoring supported *Communication and Collaboration*, fostering inclusion and mutual learning. Iterative event planning, creative problem-solving, and adaptive responses to challenges strengthened the *Problem-Solving and Innovation* competency. Finally, by embedding the United Nations Sustainable Development Goals and frameworks throughout the project, students advanced *Global and Systems Literacy* while enhancing *Employability and Contextual Awareness*. Collectively, these outcomes ensured students translated sustainability theory into practice, developing

transferable competencies essential for leadership, innovation, and civic responsibility.



Assessment Strategy

Assessment was **formative and reflective**, aligned with the AREA Student Competency Framework competencies such as *Self-Awareness & Self-Regulation*, *Communication & Collaboration*, *Digital Content & Information Literacy*, *Problem-Solving & Innovation*, and *Responsibility & Active Citizenship*. Students' engagement and leadership, was observed through active participation in workshops, team meetings, and event delivery; demonstrating *Empowerment*, *Leadership Practices*, and *Communication & Collaboration*. Skills in digital communications, design, management, and sustainability literacy were evidenced through execution of the Climate Christmas Bazar, indicating *Digital Proficiency & Productivity* and *Sustainability Competences*. Peer and mentor feedback, self-reflection, and demonstration of independence in managing tasks provided qualitative measures of learning. Students reflected on successes and adaptation needs; fulfilling *Problem-Solving & Innovation*. Through responsibility for tasks and ethical event practices (e.g. sustainable disposal), they exercised *Active Citizenship*. Overall, assessment was designed to illuminate growth toward competencies rather than solely measuring outcomes.

Impact & Outcomes

The initiative enhanced *Leadership and Empowerment* as students exercised independent control over planning and executing a large-scale campus event, increasing confidence and teamwork abilities. Through their leadership of teams, coordination of stalls, and event management, they met AREA's *Communication &*

Collaboration and Responsibility & Active Citizenship competencies. Engaging in sustainability-themed tasks aligned with the UN SDGs, they developed Sustainability Competence through practical application. The project advanced **SDG 4 (Quality Education)** by building sustainability and leadership skills; **SDG 12 (Responsible Consumption)** through sustainable crafts and waste-conscious event design; **SDG 13 (Climate Action)** by promoting awareness and climate-positive behaviour; and **SDG 17 (Partnerships for the Goals)** through collaboration across institutions and networks. Digital communication and design work fulfilled AREA's *Digital Content and Information Literacy* competencies, extending *employability* and *global awareness*. Feedback showed high engagement and motivation, while long-term impact includes a cadre of student sustainability champions equipped to lead future initiatives.

Collaboration, Partnerships & Student Participation

Students were central to shaping, leading, and implementing the initiative, directly fulfilling competencies from the AREA Student Competency Framework—*Communication & Collaboration, Digital Content & Information Literacy, Problem-Solving & Innovation, Responsibility & Active Citizenship, and Empowerment*. Collaborating with Climate Fresk, Alliance Brave Earth, ATU, TU Dublin, and the Students' Union Environmental Society, students worked in diverse teams managing event content, publicity, and logistics. They applied digital tools to design posters and conduct social media outreach, meeting the *Digital Content & Information Literacy* competency. Workshops with sustainability leaders and Carbon Literacy training strengthened *Problem-Solving & Innovation* skills. By recruiting peers, coordinating stalls, and driving event publicity, they

demonstrated *Empowerment* and *Active Citizenship* through initiative and leadership in organising a sustainable campus event. This interdisciplinary, cross-institutional, and student-led model exemplified the AREA framework's goal—transforming awareness into collaborative, action-oriented impact within a real-world learning context.

Student Engagement

Approximately 16 students were directly engaged, including 14 recruited student champions, 2 existing N-TUTORR champions, and an additional 6 recruited by student leaders, as volunteers.

Disciplines

- Arts and Humanities
- Education
- Information and Communication Technologies
- Social Sciences, Journalism and Information
- Teaching and Learning

Programmes

IADT undergraduate programmes across the disciplines of film, art, design, technologies, entrepreneurship and humanities.

Best Practices & Resources

Top Tips

- Scaffold student engagement through structured resources and workshops while gradually increasing autonomy.
- Align initiatives with recognised sustainability frameworks and competency standards to ensure measurable learning outcomes.
- Encourage peer-led recruitment and team formation to foster ownership, motivation, and creativity.

Useful Resources

- <https://www.transforminglearning.ie/about/>
- <https://www.transforminglearning.ie/resources-publications/n-tutorr-area-student-competency-framework/>
AREA Student Competency Framework – N-TUTORR AREA Student Competency Framework – N-TUTORR – Skills mapping and development tool.
- <https://climatefresk.org/> Climate Fresk – Climate literacy workshops.
- Natureexperts.org – Expert seminars on environmental action.
- <https://sdgs.un.org/goals> THE 17 GOALS | Sustainable Development – United Nations framework for addressing sustainability

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107. Empowering Global Citizens: Learning Through the ‘Good Clothes, Fair Pay’ Campaign

ALACOQUE MCALPINE; DR OLIVIA FREEMAN; AND DR LUCIA
WALSH

Institution and Partner Organisations

- TU Dublin
- Good Clothes Fair Pay Campaign – European Citizen Initiative
https://citizens-initiative.europa.eu/initiatives/details/2022/000004_en
- Fashion Revolution <https://www.fashionrevolution.org/>

Description

Higher education institutions have a vital role in advancing global citizenship mindsets and well-articulated student voices as a lever for social and economic change. Not only does student activism represent a meaningful contribution to society, research (Winston, 2013) suggests that it helps a student to look at life globally and not myopically. Furthermore, it can underpin the development of critical skills such as emotional intelligence, enhanced interpersonal effectiveness, the ability to collaborate with others across diverse perspectives, and a greater sense of self-efficacy with respect to having a positive impact on individuals, organisations and communities (Bernacki and Jaeger, 2008).

The initiative aimed to develop sustainability and global citizenship competences in undergraduate business students using *authentic assessment* (Farrell, 2020) which involves the development of 'real world' tasks in meaningful contexts. The initiative and associated assignments were aimed at developing a range of competences set out in the EU GreenComp framework.

Three lecturers worked together to design three separate assignments drawing on one real-world campaign. Good Clothes Fair Pay (Fashion Revolution, 2024) was a grassroots campaign led by garment industry NGOs and activists, including the Clean Clothes Campaign and Fashion Revolution. Using the European Citizens' Initiative (ECI), it called on the European Commission to propose legislation requiring brands and retailers in the garment sector to conduct due diligence to ensure payment of living wages to garment workers across their supply chains. Some students were taking more than one of the electives so they engaged with the same campaign in two different modules. The assignment briefs were co-designed but each was distinct in its aims and

objectives in line with the specific learning outcomes associated with each module.

The initiative was scaffolded through a number of mechanisms including; publication of a [RTÉ Brainstorm article](#) (McAlpine et al., 2022) which served to introduce the campaign and hosting an expert panel discussion to familiarise students with the context. A previous online [faculty seminar](#) with Nasreen Sheikh, a former child labourer in the fashion industry, was also shared to scaffold learning.

- The Sustainable Supply Chain Management assignment required students to take an investigative role by choosing a piece of their own clothing, taking note of information on the garments label and plotting that piece of clothing's supply chain. After identifying the country of manufacture, students investigated the labour conditions of that garment production region. Following this, students made a video documenting the results of their investigation. The video included the QR code for the GCFP campaign which they shared on TikTok, IG, LinkedIn. This assignment developed the GreenComp competences: supporting fairness, exploratory thinking, individual initiative.
- The Business Sustainability assignment required students to choose a business sustainability issue that related to the GCFP campaign (e.g. consequences of ultra-fast fashion) and to create social media content outlining the issue with a clear call to action (behavioural changes, signing the petition). This assignment developed the GreenComp competences: supporting fairness, political agency, political action.
- The Consumer Behaviour assignment required students to envision the future of clothing consumption in the year 2050. They completed a futures literacy template and created an infographic depicting their response to the task with an accompanying voiceover and bibliography. This assignment

developed the GreenComp competences: Futures Literacy, adaptability and Self-awareness.

Business Sustainability module

Assignment brief:

- Choose 1 GCFP campaign related issues
- Create a short social media piece (e.g TikTok, IG, LinkedIn):
 - Highlighting the chosen business sustainability issue(e.g. consequences of ultra fast fashion, working conditions of garment workers)
- Clear call to action (e.g. behavior change) & promoting petition signing



Example of students' Instagram post



Key GreenComp competences addressed:
Supporting fairness, political agency and political action

Consumer Behaviour module

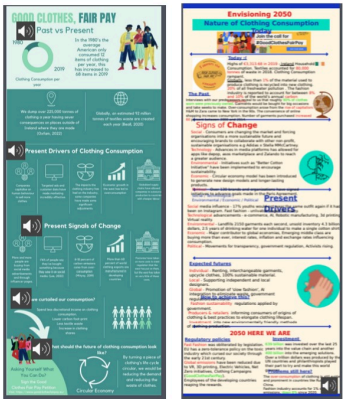
Task: Envisioning the Future of Clothing Consumption in the year 2050.

This assignment requires you to work in groups to **envision** what consumer behaviour, specifically consumption of clothes might look like in a **sustainable future**. This entails building on your competencies around envisioning a sustainable future.

- Part 1:** Complete the 'Envisioning Sustainable Futures' Template.
- Part 2:** Produce an infographic using PPT or Canva with a narrated voiceover to explain what is depicted.



Key GreenComp competences addressed:
Futures Literacy, Adaptability, Exploratory Thinking



Examples of students' work

Collaboration, Partnerships & Student Participation

The students were at the heart of this assignment, which aimed to

enhance their sustainability and global citizenship competences. They actively engaged in critically investigating and evaluating key issues related to the campaign, while creating digital artefacts designed to inspire greater awareness and action among others. Through these activities, the students strengthened their sense of agency and developed their capacity for informed activism.

Several external collaborations further strengthened the assessment design and successful delivery of the assignment, for example:

- Collaboration with Fashion Revolution: This organisation led the ‘Good Clothes, Fair Pay’ campaign. Maeve Galvin contributed to an online panel discussion on fast fashion and supply chains, co-authored an article for RTÉ Brainstorm, and Mairi Lowe from Fashion Revolution Scotland co-presented at the Communicating Sustainability conference at the University of Glasgow.
- Collaboration with industry experts: To support the assignment’s learning scaffolding, students also engaged with Kellie Dalton, sustainability strategist and responsible fashion advisor, and Malú Colorín, founding member of Fibreshed Ireland, who shared insights into working conditions and pay within the fashion industry.

Intended Learning Outcomes

Sustainable Supply Chain module

The learner will be able to demonstrate an understanding of how to mitigate the social and environmental impact of logistics activities as well as end of life management.

Consumer Behaviour module

The learner will be able to reflect on personal and societal

consumption practices in relation to the requirements of moving to a Net-Zero emissions world by 2050.

Business Sustainability module

The learner will be able to demonstrate transformation in sustainability literacy – knowledge, skills and mindsets to become committed to building a more sustainable future – and its application to the business sector.

The learner will make evidence-based recommendations that will influence future of business education and practice that will contribute to and accelerate achievement of the UN's Sustainable Development Goals.

Teaching and Learning Approach

The initiative was underpinned by the GreenComp Framework and Authentic Assessment (real-world) design. A four-step methodology to enhance sustainability literacy among students and to embed sustainability education into teaching, learning and assessment practices underpinned the overall approach.

1. Students complete Sulitest, the UN supported sustainability literacy self-awareness test.
2. Students are required to write a reflection on the experience of completing the test.
3. Students engage in a real-world assignment linked to the UN Sustainable Development Goals and create shareable digital artefacts, for example, videos, infographics, podcasts which can be shared with the wider academic and business and societal community through social media platforms including LinkedIn and Instagram.
4. Students develop a call to action which they use to promote engagement with their digital artefact.

Assessment Strategy

Deliverables across all three assignments comprised a range of elements including; written reports, completed templates, bibliographies, voiced infographics, social media content (visuals and videos) and reflections.

Detailed evaluative rubrics were shared with students at the outset of the initiative. Rubrics were designed to closely align with the GreenComp framework. Students needed to demonstrate *knowledge* (written submissions substantiated by academic citations), *skills* (demonstrated ability to contextualise learning and apply it to the case at hand to develop digital artefacts) and *attitudes* (display of action through sharing artefacts online and articulating calls for action and/ or behaviour change). Marks were spread across the rubric to ensure all elements of the various assignments were accounted for in the marking scheme.

Impact and Outcomes

- Students' online artefacts received thousands of likes and shares for the 'Good Clothes, Fair Pay' campaign call to action
- [RTE Brainstorm article](#) -opinion piece 'Can a new campaign help garment makers to be paid fairly?' written by McAlpine, A., Dalton, K. and Galvin, M. at the launch of the GCFP in September 2022
- 'Good Clothes, Fair Pay' campaign and proposed authentic assessment approach was co-presented with Fashion Revolution Scotland member Mairi Lowe at 'Communicating Sustainability' Conference in University of Glasgow in September 2022 (50 attendees)

- TU Dublin ConnectED Seminar Series online event
‘Sustainability across the supply chain: The EU Citizen initiative on Living Wages with Maeve Galvin (Global Policy and Campaigns Director at Fashion Revolution), Kellie Dalton (sustainability strategist and responsible fashion advisor) and Malú Colorín (founding member of Fibreshed Ireland) moderated by Alacoque McAlpine (TU Dublin) 200 participants
- Presentation of the initiative at TU Dublin Faculty Research Day June 2023 (80 attendees)
- Workshop delivered to 52 class primary school children on impact of fast fashion on workers & the environment

Student Engagement

200 undergraduate students in the Faculty of Business, TU Dublin

Discipline

Business, Administration and Law

Programmes

- Sustainable Supply Chain Management module – BSc in Business and Management (Year 4), BSc in Logistics & Supply Chain Management (Year 4)
- Business Sustainability module – BSc in Business and Management (Year 4) and BSc in Marketing (Year 3)
- Consumer Behaviour module – BSc in Business and Management (Year 4)

Best Practices & Resources

Top Tips

- Real-world engagement – engage students in real-world campaigns to help them experience the power of individual and collective action. This approach enables learners to gain and practise sustainability and global citizenship competences, see the impact of their voices, and express their ideas creatively through platforms that resonate with them (e.g. TikTok, Instagram, LinkedIn)
- Scaffolding – authentic assessment works best when students are supported through well-designed learning scaffolds that help deepen and broaden knowledge and mindset. This can include guest lectures, curated online resources (such as sustainability literacy awareness like Sulitest) and reference materials like podcasts, academic papers, and documentaries that bring theory to life.
- Formative feedback – integrate structured feedback opportunities at key milestones so students can reflect, refine, and stay on track. Ongoing dialogue with the lecturer throughout the process fosters deeper learning and stronger outcomes in high-stakes, authentic assessments.

Useful Resources

- GreenComp – EU Green Competency Framework <https://joint-research->

centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

- ‘Sustainable Fashion: Insights from Industry’ talk with Nasreen Sheikh, former child labourer in fashion industry <https://www.youtube.com/watch?app=desktop&v=FdBJfKthmFM>
- McAlpine, A., Dalton, K. and Galvin, M. (2022) Can a new campaign help garment makers to be paid fairly?, RTE Brainstorm <https://www.rte.ie/brainstorm/2022/0718/1310895-good-clothes-fair-pay-campaign-garment-workers/>

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IO8. Interactive Learning in Global Media: Gamifying Political Economy for Students

DR NOHA ATEF

Institution

University of Galway

Description

This case study reflects a creative and student-centered approach to teaching the *Global Political Economy of Mass Media*; a new fourth-year module at the University of Galway, delivered for the first time in 2024 to students from Journalism and Global Media programmes. As a new lecturer and researcher in the field, I was determined to bring energy and engagement to a subject that is often perceived as abstract and “dry.” My goal was to help students connect theory to lived realities, using methods that appeal to their media literacy and learning preferences.

Recognizing the challenge of teaching a complex and theory-heavy subject to a visual and digitally native generation, I

embedded a range of strategies to activate critical thinking, deepen understanding, and spark discussion. These included multimedia content, gamification, and active classroom experiments that mimicked real-world dynamics of media influence and power.

Multimedia played a central role. I curated short TikTok videos and clips from popular platforms to introduce students to key ideas through familiar formats. For example, videos demonstrating news framing, corporate media bias, or platform algorithms were used to visually unpack concepts that are otherwise difficult to grasp from texts alone.

Gamification was another core tactic. In one session, students played a charades-style game involving historical European political events and figures—many of which they couldn't identify. This prompted reflection on how mass media prioritizes certain histories and narratives over others, aligning with the interests of dominant groups. In another class, we played "Guess the Place," where students were shown ambiguous or stereotypical images and asked to guess their location. Most guesses were incorrect, revealing how visual cues and media stereotypes shape global perceptions. Role-play exercises were also used to simulate media ownership negotiations or policy debates, helping students embody different perspectives and power dynamics.

A particularly impactful moment came during a lecture on propaganda. I presented a theory in a formal, convincing academic tone only to reveal later that it was fabricated. The theory was a mash up of concepts borrowed from psychology and marketing, but doesn't make a real nuance. This experiment illustrated how easily audiences can accept information when it is delivered from a position of perceived authority. It opened up a broader discussion about epistemic trust, institutional power, and critical media literacy.

This approach, though still evolving, demonstrates how even the most abstract topics can be transformed into dynamic learning experiences through creativity, play, and media-savvy pedagogy. By embedding elements of critical thinking, media analysis, and

reflective engagement, the module not only conveyed knowledge but also built competencies aligned with the goals of Education for Sustainable Development—such as critical inquiry, systems thinking, and cultural awareness.

The case shows that sustainability in education is not only about environmental issues, but also about sustaining curiosity, agency, and a sense of relevance in the classroom.

Intended Learning Outcomes

By engaging with this initiative, students were expected to:

- **Develop critical thinking skills** through interactive methods that challenge assumptions and encourage reflection on media power, representation, and authority.
- **Identify and critically discuss** key concepts in the field of political economy, including media ownership, commodification, audience labour, and global media inequalities.
- **Apply political economy analysis** to real-world media events and issues, using case studies, visual material, and role play to link theory with lived experience and current affairs.

Teaching and Learning Approach

To embed Education for Sustainable Development (ESD) within the module, I employed interactive and student-centered pedagogies that promote critical awareness, systems thinking, and reflective learning. Gamification was used to make abstract concepts tangible—students engaged in simulations, role plays, and classroom games that exposed power dynamics, media stereotypes, and knowledge

production.

Multimedia content drawn from platforms like TikTok helped bridge theoretical ideas with contemporary media cultures, making the material more relatable.

A key strategy involved disrupting epistemic assumptions, such as presenting a fabricated theory to spark discussion about authority and truth in media. These approaches created space for students to critically examine the structures that shape media systems, while encouraging dialogue, curiosity, and a deeper understanding of global interdependence—core values of ESD.

Assessment Strategy

Student learning and engagement were assessed both informally and formally. Informally, I observed student reactions in class and gathered feedback through oral conversations and reflective journals. Many students described the lectures as “entertaining” and “eye-opening,” indicating that the creative pedagogical methods made a strong impression.

Formal assessment included two core assignments. The first was a written critical reflection on three lectures, encouraging students to engage deeply with theoretical concepts while evaluating their own learning journey. The second assignment required students to produce a short video overview of a key text in the political economy of communication. This multimodal task assessed their ability to synthesise complex ideas and communicate them clearly. Additionally, students were encouraged to apply political economy analysis to media systems in both their home countries and global contexts, enhancing cross-cultural understanding and systems thinking central goals of ESD.

Impact and Outcomes

The initiative had a notable impact on student engagement and critical thinking. Feedback from students—both informal and through reflective journals—highlighted that the lectures felt “engaging,” “eye-opening,” and “memorable.” Many appreciated the use of games, media, and surprise elements as effective ways to understand complex theoretical ideas. Several students expressed that the course changed how they view news and media structures in their everyday lives. Although still in its first iteration, the module has sparked interest among colleagues in the Discipline of Journalism and Media, opening conversations about playful pedagogy and critical media literacy. The experience also helped me build confidence as a new staff member and set a foundation for longer-term integration of ESD-focused methods in future modules. The blend of critical theory with interactive learning is proving to be a sustainable and impactful model for teaching global media systems

Collaboration, Partnerships & Student Participation

While the initiative did not involve external partnerships, it was supported by an open and encouraging culture within the Discipline of Journalism and Media at the University of Galway. This institutional support gave me the freedom to experiment with creative pedagogical methods in the classroom.

Students played an active and central role, not only as learners but as participants in shaping the dynamic of the module through their engagement in games, discussions, and critical reflections.

Their responses, feedback, and curiosity directly influenced the pace and development of the teaching approach.

Student Engagement

- 90 students

Disciplines

- Arts and Humanities
- Social Sciences, Journalism and Information

Programmes

- Global Media and Journalism (Undergraduate Program)
- Fourth-Year Journalism Students

Best Practices & Resources

Top Tips

- Teach with the mentality of a disengaged student Design your sessions by asking, “What would make this interesting for someone who doesn’t want to be here?” Using humour, curiosity, and play can transform a dry subject into an engaging experience that meets students where they are.

- Blend theory with interaction Complex concepts in political economy or other heavy subjects become more digestible when paired with participatory methods

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109. SETU Sustainability in the Arts Festival

DR HAZEL FARRELL; NOELEEN DOOLEY; JACKIE RAFTERY; SUSAN CONNOLLY; SUSAN FLYNN; MICHAEL QUINN; DENISE MCALLISTER WYLIE; NIDHI PIPLANI KAPUR; AND AILISH O'BRIEN



*Photograph:
Patrick
Browne*

Institution(s) and Partner Organisations

- South East Technological University
- Georgia Southern University
- La Rochelle University
- Zadar University, Croatia
- Sustainable Development Solutions Network (SDSN)
- Waterford Lions Club
- EU-Conexus

Description

The Sustainability in the Arts Festival is a multidisciplinary initiative focused on embedding sustainability in the curriculum and contributing towards the creation of a culture of sustainability in the university and wider community. It is largely student-led with learners exploring how the SDGs relate to them in their own discipline areas and producing outputs that reflects this. A wide variety of innovative approaches to showcase teaching and learning are evident in the festival including visual art and graphic design exhibitions, music performances, cooking demonstrations, language posters, research posters and presentations. The strength of the project lies in the collaborative approach and peer learning inherent in this both from a student and educator's perspective. The level of learner engagement is notable as they take responsibility for their own contributions and engage in meaningful assessments with tangible outputs that are showcased and celebrated beyond the confines of the classroom.

The festival was established in 2023 in alignment with the

university strategy to address the challenges of embedding sustainability in the curriculum and university community. This initiative was underpinned by the broader goal of raising awareness of the global SDGs in the context of Higher Education and an ongoing desire to enhance student engagement, create meaningful learning experiences, and positively influence the practices of peers. Funded by SATLE, the Sustainability in the Arts Festival was piloted in 2023 as a 1-day event on one SETU campus with the intention of learning from the experience and building on this the following year.

This expanded into a 3-day event in 2024 encompassing the Waterford, Carlow and Wexford campuses, additional subject areas, and local and international partners with funding from both SATLE and N-TUTORR. Further growth resulted from this, and the 2025 festival ran for a full week with new local, national and international collaborations. This exponential growth clearly exemplifies the impact of the initiative on learners, peers, and the wider community.

The festival platform was chosen as an ideal mechanism to promote inclusivity and collaboration, while encouraging student-led initiatives and ensuring broad impact. This approach also stimulated investment in their own learning and served to empower the students to lead specific aspects of the festival. The integration of creative disciplines including undergraduate programmes in visual art, graphic design, culinary arts, languages, and postgraduate studies in internationalisation formed the basis for a rich and diverse learning environment where students and staff could benefit from the knowledge and skills of others.

This also resulted in the identification of specific modules where the principles of sustainability could be integrated and the development of projects that could be incorporated into the festival. For instance, art and design colleagues decided to focus on artefacts made from recycled materials or sustainable printing for student assessment portfolios, while culinary colleagues focused on sustainable foods in cooking

practical exams, and music research students undertook projects exploring the connection between music and the SDGs. This innovative platform showcased learning to a broad audience far beyond the classroom, thereby leading to increased investment by learners and arguably a higher standard of work.

The integration of international partners added further depth to the festival by bringing perspectives from other cultures and providing peers with an opportunity to experience different teaching approaches and explore possibilities for future collaborations. This has been realised as initially Georgia Southern University was the only international partner, and now further connections have been developed with European universities including La Rochelle in France and Zadar in Croatia.

The theme of “Land, People, Culture” was selected for the 2025 festival, and initiatives exploring cultural sustainability, indigenous knowledge, respect for the land, identity, and legacy were suggested by students. They examined the impact of people and culture on the land, and developed projects together with others, which led to reflective discussions and positive actions towards better use of resources, energy conservation and sustainability of the planet.



*Photograph:
Patrick
Browne*

Intended Learning Outcomes

A key priority action is to provide opportunities to transform the learning environment by providing learners with the opportunities to acquire the knowledge, skills, values and dispositions needed to promote sustainable development, and to experience sustainable development in action through a cross-faculty approach to ESD.

By including students in decision making processes, we build lively and engaging synergies across disciplines and highlight the value of interconnectedness between students, lecturers, their area of study and the wider world.

The festival sets out to empower and mobilise students to be agents of change for sustainable development, however, it has also helped to accelerate local level actions leading to enhanced collaboration with schools and organisations such as the Waterford Lions Club.

Teaching and Learning Approach

An innovative shared teaching approach has been adopted to facilitate the multi-disciplinary collaboration inherent in the festival. This involves colleagues from different disciplines bringing their students together for classes on specific weeks during the semester, e.g. music and visual art. The learning process is highlighted in the classes with peer feedback as an integral feature and discussions around expectations and indicators of high-quality work. Colleagues commented on how this 'invigorated' their module delivery and how much they enjoyed working collaboratively. Increased engagement by their learners in these modules was also highlighted.

Targeted feedback events were held in venues espousing the values of sustainability in their practices, for instance in Grow HQ in Waterford where the focus is on zero food waste, and in Cooney's Yard sheep farm in the Comeragh Mountains. These environments served to stimulate thinking about sustainability in action, creative interpretations, and potential collaborative projects.

Assessment Strategy

Students expressed a desire to focus on achievable things they could do to make a difference in relation to the SDGs and for their activities to align with the assessed learning outcomes of their modules. This has been facilitated in the student-led approach and variety of assessments to capture the festival contributions including e-portfolios, reflective journals, creative installations, original compositions, live performances, cookery demonstrations, and research presentations. This innovative approach to facilitating a broad range of assessment types provides learners with the opportunity to take ownership of their learning and empower them to find their own creative voices.

Impact and Outcomes

Student engagement

Qualitative feedback has demonstrated a positive impact on students' learning, including growth in confidence, ability to drive change, and the value of innovation and creativity to create awareness and solutions.

Community engagement

Feedback from local schools' engagement with festival outreach

programme; positioning SETU as a welcoming university which promotes sustainability and SDGs while embracing real-world challenges in novel and inspiring ways.

Student Skills development

Through interdisciplinary projects students developed collaborative, problem solving and creative skills; e.g. culinary, language, design and art students worked together to create recipe posters for sustainable foods.

Teaching and Assessment

The festival has enhanced awareness of how students can demonstrate their learning through trans-disciplinary projects, thereby creating assessments that are both meaningful and relevant to students' lives and futures.



*Photograph:
Patrick
Browne*

Collaboration, Partnerships & Student Participation

The Sustainability in the Arts Festival was the first of its kind in Ireland, and as such it attracted the attention of representatives from the SDSN. This led to members of the festival team being invited to highlight the festival as an example of good practice at

Reach '24 in Queen's University Belfast. Music and visual arts students installed and performed an immersive experience they created at Reach '24. Schools outreach projects are integral to the festival, where music and visual art students engage with second level students to create performance pieces based on themes arising from discussion about the SDGs. Multidisciplinary collaborations have included graphic design students working with language students to design recipe cards in different languages for a recipe created by culinary arts students. A new collaboration with the Waterford Lions Club and SETU students took place in the 2025 festival where 60 years of the organisation sustaining the community was celebrated through spoken word, visuals, music, and research.

Student Engagement

c. 250 students directly involved

Overall reach – several thousand throughout the different university campuses, visiting students from local schools, and visiting international cohorts.

Disciplines

- Arts and Humanities
- Education
- Teaching and Learning

Programmes

- BA (Hons) Music
- BA (Hons) Visual Art
- BA (Hons) Graphic Design and Visual Communications
- BA (Hons) Arts – Languages, Dance
- PhD Research
- BA (Hons) Culinary Arts

Best Practices & Resources

Top Tips

- Student-led initiatives lead to better engagement and meaningful outcomes
- Multidisciplinary and collaborative approaches can reinvigorate your T & L environment
- Outward facing platforms can elevate the standard of student work

Funding Details

- HEA SATLE Impact Award funding
- N-TUTORR Funding
- Growth Hub Bursary

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110. Sustainable Entrepreneurship: Commerce Students as Change-Makers

DR JOHANNA CLANCY AND MICHAEL CAMPION



Institutions and Partner Organisations

- University of Galway
- PwC
- SCCUL Enterprises CLG
- Galway City Partnership
- Venture Out
- Udaras na Gaeltachta

Description

This initiative centres on a module in sustainable entrepreneurship: *Innovation, Creativity and Enterprise (ICE)*, delivered to final-year undergraduate Commerce students at

J.E. Cairnes School of Business & Economics, University of Galway. It is designed to foster critical understanding of, and action for, the UN Sustainable Development Goals (SDGs). It encourages students to design innovative, values-driven responses to pressing social and environmental challenges, as well as nurture the social consciousness of our students.

The module blends theory and practice. Students self-form into multi-disciplinary teams to ultimately develop a viable business plan for a social business that addresses one or more SDGs. Throughout the semester, they are introduced to core themes and frameworks in social innovation, entrepreneurial ecosystems, and ethical business models, focussing mainly on design thinking for sustainability and the social business model (BMC) canvas. Students engage in practical experiential activities including stakeholder mapping, needs analysis, ecosystem exploration, strategic planning and SDG alignment.

As well as large lecture-style classes, each week a select group of postgraduate students and external industry mentors interact with the students in an effort to guide them in refining their social business ideas. This is in addition to guest speakers from the social enterprise sector, who provide hands-on insights to the challenges specific to the social entrepreneur. Students present the groups' ideas to their respective mentors towards the end of the module, where the most promising ideas are funnelled into a final round of pitches. The module culminates in a Dragon's Den-style event, where students pitch their ideas to external judges who come from the social enterprise arena, as well as our University's Director of Sustainability. Students' families and friends are invited to this event, which makes it a fun and engaging "wrap-up" of their final day of studies as a Commerce student. All finalists are awarded generous prize money by our module sponsor PwC.

What makes this initiative distinctive is the integration of structured reflective practice as both a learning and assessment tool. Over the course of the module, students engage in phased reflective exercises, scaffolded around Kolb's Experiential Learning

Cycle, Mezirow's Transformative Learning Theory and Gibbs' Reflective Cycle. Reflection is embedded in weekly activities and culminates in an individual reflective journal, to be submitted at the end of term.

Students are encouraged to examine their values, social identities, assumptions, and positionality in relation to the social issues they aim to address. They also reflect on their group dynamics, entrepreneurial challenges, and the ethical dimensions of their business design process. This creates space for deeper self-awareness and a more critical understanding of sustainable development beyond the classroom. Rubrics for the journal assess depth of reflection, integration of theory, and evidence of personal and professional growth

The initiative supports Education for Sustainable Development (ESD) by:

- Linking classroom learning with real-world action.
- Promoting systems thinking, collaboration, and problem-solving.
- Encouraging personal and civic responsibility through reflective inquiry.
- Grounding innovation in the lived experience of communities.

Over 480 students have completed the module to date. Analysis of their reflections reveals evidence of transformative learning, with students reporting heightened awareness of social issues, changes in mindset, and a commitment to advancing social impact. The initiative has become a cornerstone of our University's and School's commitment to embedding sustainability and civic engagement within the undergraduate curriculum.



One or more interactive elements has been excluded from this version of the text. You can view them online

here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=480>

ICE Final (2025) video

Intended Learning Outcomes

Upon completion of the module, students will be able to:

1. Critically evaluate the relationship between entrepreneurship and sustainable development.
2. Apply entrepreneurial principles to design a socially innovative solution aligned with one or more SDGs.
3. Conduct stakeholder analysis and understand entrepreneurial ecosystems including public policy addressing the social enterprise sector.
4. Demonstrate reflective and critical thinking through structured reflection.
5. Collaborate effectively in a team setting and communicate their ideas persuasively.
6. Articulate ethical considerations and personal learning in relation to social impact.

Teaching and Learning Approach

The module combines experiential, reflective, and transformative learning methodologies. Teaching includes a blend of lectures, peer-to-peer learning, guest talks, design thinking workshops, and case-based discussions. Students engage with problem-based learning to develop solutions to real-world challenges. Reflection is

scaffolded using Gibbs, Kolb and Mezirow's frameworks, embedded throughout the module. Learning is iterative, encouraging students to critically examine and adapt their assumptions, behaviours, and strategies based on real-world feedback and self-inquiry.

Assessment Strategy

Assessment is both formative and summative. Formative assessment includes weekly presentations to update mentors on progress. Summative assessment consists of the following:

- A group social business plan (including social BMC) for a social venture (worth 35%)
- A group presentation (worth 15%)
- An individual reflective journal (worth 44%)
- Weekly workshop participation (worth 6%)

Impact and Outcomes

Student feedback consistently highlights the module as one of the most transformative learning experiences of their degree programme. Many report increased confidence, empathy, and a desire to work in impact-driven sectors. Several venture ideas have gone on to external competitions or pre-incubation hubs. The module has also influenced broader curriculum design, with elements of reflective practice and SDG integration adopted across other business modules. A qualitative study of over 480 reflective journals has provided valuable insights into student learning and will inform institutional strategies for embedding sustainability and civic engagement into undergraduate education more broadly.



Discipline

Business, Administration and Law

Programmes

Bachelor of Commerce; Bachelor of Commerce Global Experience;
Bachelor of Commerce International; Bachelor of Commerce le
Gaeilge

Collaboration, Partnerships & Student Participation

Students co-create their social ventures by engaging with real-

world stakeholders, including non-profits, SMEs, community groups and ultimately the potential beneficiaries of their social business offering. These external partners provide feedback on business concepts and help contextualise local and global sustainability issues. Guest speakers from social enterprises and the wider impact sector also enrich the learning experience. Mentors from the commercial and social enterprise sector also provide weekly guidance to students, supporting them to refine and pivot, where appropriate. Student teams drive the design of their projects, conduct user interviews, and reflect on their learning through collaborative and individual reflective tasks. Our module sponsor PwC also provides mentorship and generous prize money (as already highlighted)

Student Engagement

485 per cohort, annually

Best Practices & Resources

Top Tips

- Start with structured reflection: Scaffolding reflection using established models (e.g. Kolb, Mezirow, Gibbs) provides students with a clear framework and deepens learning outcomes.
- Embed real-world relevance: Collaborate with local social enterprises and / or community stakeholders to ground student work in lived issues.

- Prioritise values and identity work: Encourage students to reflect on their personal motivations and ethical positions early and often. This fosters authentic engagement and transformation

Funding Details

PwC kindly sponsor the ICE module and our wider BComm programme Skills suite of initiatives and modules.

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III. XHIBIT: Co-Evolving Through Sustainability Education

DR ANNEMARIE BENNETT; NANDINI GUPTA; SILVIA GALLAGHER;
DR JAKE BYRNE; AND JENNY KIRKWOOD



Institutions and Partner Organisations

- Trinity College Dublin
- Utrecht University
- Eötvös Loránd University
- University of Montpellier
- University of Barcelona

Description

CHARM-EU (Challenge-driven, Accessible, Research-based, Mobile European University) represents a transformative model for higher education in Europe. As an alliance of nine leading European universities, it aims to reimagine how education can address the

urgent, complex challenges of our time, particularly in the realm of sustainability. At its core, CHARM-EU embraces a challenge-driven, transdisciplinary, and student-centred learning approach that fosters collaboration across cultures and disciplines..

In this context, the Cross-disciplinary Hybrid Intensive Blended Interprofessional Transdisciplinary (XHIBIT) programme was developed as a flagship learning experience within CHARM-EU's Master's in Global Challenges for Sustainability. XHIBIT was an intensive, hands-on two week blended mobility designed to bridge academic learning with real-world impact. It brought together 40 CHARM-EU students, located across five CHARM-EU universities, to Trinity College Dublin, Ireland, to work directly with local organisations and stakeholders on ten sustainability-related challenges. These challenges were grounded in the real needs of the five partnering organisations, spanning sectors such as environmental protection, higher education, medicine, community engagement, and sustainable innovation.

The purpose of XHIBIT was to immerse students in applied challenge-based learning, allowing them to co-create solutions that are not only theoretically sound but practically viable. By tackling real briefs provided by the stakeholders to address local sustainability challenges, student groups engaged in problem-solving requiring creativity, systems thinking, and transdisciplinary collaboration. One such challenge involved reducing the use of plastic water bottles on the Trinity College campus. Through this collaborative process, students and stakeholders co-created research-based, impactful, and creative solutions, including awareness videos, aimed at driving strategic change and fostering long-term sustainability on campus.

XHIBIT also featured a series of expert-led workshops and cultural activities hosted at Trinity College Dublin, providing students with valuable tools, diverse perspectives, and a deeper understanding of the local context. For example, the students visited FoodCloud, where they learned about its mission and operations to reduce food waste, and engaged in a workshop on

creating a Sustainable and Healthy Food Plan for Trinity College Dublin, led by the Healthy Campus Manager.

XHIBIT brought CHARM-EU's educational principles to life by showing how academic knowledge can be mobilised to tackle global sustainability challenges through meaningful local action. Short-term blended mobility programmes like XHIBIT offer a powerful model for future-focused, impact-driven education that empowers students, benefits communities, and strengthens collaboration between universities and society.

Students and stakeholders were at the heart of the XHIBIT initiative, actively shaping, leading, and engaging with real-world sustainability challenges through collaboration with local organisations. Working in transdisciplinary, cross-institutional teams, they partnered with external stakeholders to co-develop practical solutions rooted in both academic research and community needs. Their contributions included conducting stakeholder interviews, performing literature reviews, developing and implementing surveys, analysing problems, and presenting evidence-based proposals tailored to each organisation. These partnerships not only deepened students' learning but also fostered meaningful connections between universities, industries, and communities, advancing shared sustainability goals through transdisciplinary collaboration.

Students addressed diverse sustainability topics such as food waste, water use, sustainable agriculture, and inclusive urban design directly aligning their work with SDGs including SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production). The initiative cultivated global citizenship and supported lifelong learning which are the core pillars of ESD.

It also connected to the next phase of the MSc where students worked in a Capstone with organizations on a longer term challenge.

Intended Learning Outcomes

XHIBIT was closely aligned with the MSc Programme Learning Outcomes (PLOs), which define the core competencies students are expected to develop. These PLOs, collaboratively developed by Knowledge Creation Teams of teaching staff and stakeholders from five CHARM-EU universities, shaped the structure of the programme and the assessment process:

Critically evaluate a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.

Use creativity and experimentation with novel ideas or methods to develop sustainable solutions within a transdisciplinary context

Make decisions related to sustainability challenges that incorporate an evidence-based evaluation of uncertainty, ambiguity, and risk

Engage with industry and academic experts to inform a wider understanding of transdisciplinarity

At the culmination of XHIBIT, students were evaluated by a jury based on their final presentations and outputs, using criteria grounded in the PLO framework.

Teaching and Learning Approach

XHIBIT embodied the principles of ESD by placing students in real-world, challenge-based learning environments that promote critical thinking, collaboration, and social responsibility. The approach was experiential and hands-on. Prior to the in-person mobility, students engaged with preparatory lectures, stakeholders, and supervisors remotely. This structure empowered students to

take ownership of their learning, connect theory with practice, and develop ethical, adaptable responses to complex societal problems.

XHIBIT supported key ESD goals by fostering transdisciplinary collaboration and promoting action-oriented learning through experiential opportunities. One example of this was the field trip to sustainability-focused organisations such as the FoodCloud Hub, where students gained firsthand insights into real-world sustainability practices and community impact.



Assessment Strategy

XHIBIT followed a holistic, student-centred programmatic assessment approach. Instead of relying on traditional, one-time grading methods, students were evaluated through continuous, feedback-driven assessment, self assessment, and peer assessment. A key feature was the involvement of a panel who assessed students' final project outputs and presentations using rubrics aligned with key sustainability competencies. Students worked closely with academic supervisors to develop their project

frameworks and received formative feedback throughout the process. This supported self-directed learning, critical reflection, and iterative improvement which are the hallmarks of ESD. The assessment emphasised real-world application of knowledge, collaboration with stakeholders, and development of ethical, practical solutions to sustainability challenges.

Impact & Outcomes

Student feedback via a post-survey commended XHIBIT as a means for interacting with a diverse transdisciplinary body of students, stakeholders and supervisors. It provided a space for students to connect in person, gain experience of working on sustainability challenges with stakeholders, and problem solving in a group. Guest lectures and field trips were positively received as inspiring, insightful, and connected with the aims of the MSc. CHARM-EU educational principles most addressed included challenge based learning, sustainability, and student centeredness.

Informal stakeholder feedback suggests that stakeholders had a positive experience working with students, and a well organized programme. Student outputs have been widely disseminated, are leading to actionable changes, and have been used for business cases within organizations.

Students demonstrated growth across knowledge acquisition, collaboration, communication, and professional development, reflecting the program's commitment to holistic, challenge-driven education.



Collaboration, Partnerships & Student Participation

Collaboration extended across sectors such as industry, healthcare, education, agriculture, and cultural institutions. Projects included a food waste marketing strategy for Teagasc, plant-based menu strategies and bottled water reduction plans for Trinity campuses, and waste-reduction initiatives at St James's Hospital. Throughout this process, students and stakeholders co-created solutions by engaging meaningfully with local contexts and developing outputs such as digital infographics, policy briefs and strategies that stakeholders can continue to use beyond the project's completion to advance sustainability awareness.

Students who may have met remotely previously, connected in person for the first time. Students gained insights into the challenges and benefits in working in teams, and compromises when working with others under pressure.

Student Engagement

One cohort of 40 post graduate MSc students

Disciplines

- Arts and Humanities
- Education
- Health and Welfare
- Teaching and Learning

Programme

CHARM European University MSc in Global Challenges for Sustainability

Best Practices & Resources

Top Tips

- Effective ESD encourages students to engage directly with real-world challenges. Providing opportunities for project-based collaboration with external partners, as seen in initiatives like XHIBIT, helps learners connect theory with practice and develop meaningful solutions.

- Sustainability problems span social, environmental, and economic dimensions. Integrating diverse disciplinary perspectives and encouraging systems thinking equips students to understand complex interdependencies and co-create innovative solutions.
- Assessment should support ongoing growth in key sustainability skills such as collaboration, communication, and transdisciplinarity. Combining formative feedback, peer review, and real-world project evaluation encourages self-directed learning and prepares students to be responsible global citizens.

Useful Resources

- <https://charm-eu.eu/resource/charm-eu-educational-principles-practical-tips-for-knowledge-creating-teams/>
- <https://charm-eu.eu/resource/activity-plan-challenge-based-learning/>
- <https://charm-eu.eu/resource/cross-thematicblended-intensive-programme-organisation-guidebook/>

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II2. How to Embed Sustainability Initiatives into Food and Beverage Module Design

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Kelsius Systems

Our Commitment

We are committed to improving global sustainability by focusing on four principles.

Remove
Paper



Reduce
Waste



Protect
Stock



Save
Energy



By prioritising these principles, we aim to reduce global paper and stock waste through digitised and automated solutions.

Institution and Partner Organisations

- University of Galway
- Kelsius
- Positive Carbon

Description

At Shannon College of Hotel Management, we are committed to embedding sustainability within our food and beverage curriculum across our two undergraduate programmes. By integrating innovative initiatives, we aim to equip our students with the

knowledge and skills necessary to become responsible leaders in the hospitality industry.

A key initiative in F&B is **Positive Carbon**, which has introduced a state-of-the-art food waste tracking system in our practical production kitchens. This technology allows students to monitor food waste, analyse data, it challenges them to create and implement solutions to reduce waste effectively. By engaging with this hands-on tool, students learn the importance of resource management and sustainable practices in culinary operations.

Another key initiative is **Kelsius**. Kelsius is a wireless temperature monitoring system which ensures compliance, simplifies audits, and drives operational efficiencies and sustainability while removing all paper from your business.

CERTIFICATE OF AUTHENTICITY



Kelsius is proud to retain its EcoVadis Silver Medal, ranking in the top 11% globally for sustainability. This achievement reflects our commitment to ethical sourcing, reducing environmental impact, and helping customers meet their sustainability goals.



Goal 13: Climate Action

Our partnership with Positive Carbon to track and manage food waste directly contributes to climate action by minimizing greenhouse gas emissions associated with waste. Additionally, our in-house Too Good to Go initiative encourages students to redistribute the surplus food produced from our practical kitchen class in order to minimizing waste while promoting a culture of resourcefulness. This initiative not only provides

practical experience in managing food resources but also instils a sense of social responsibility among students.

The average food business must have 1 tree worth of paper (10,000 sheets) available to conduct their annual temperature monitoring manually, and it takes 6-9 years for one sheet of paper to decompose. We are leaving the days of pen and paper temperature monitoring as digital systems take over, and Kelsius will help us eliminate paper usage by automating our temperature checks and greatly reducing paper waste from Shannon College of Hotel Mgmt.

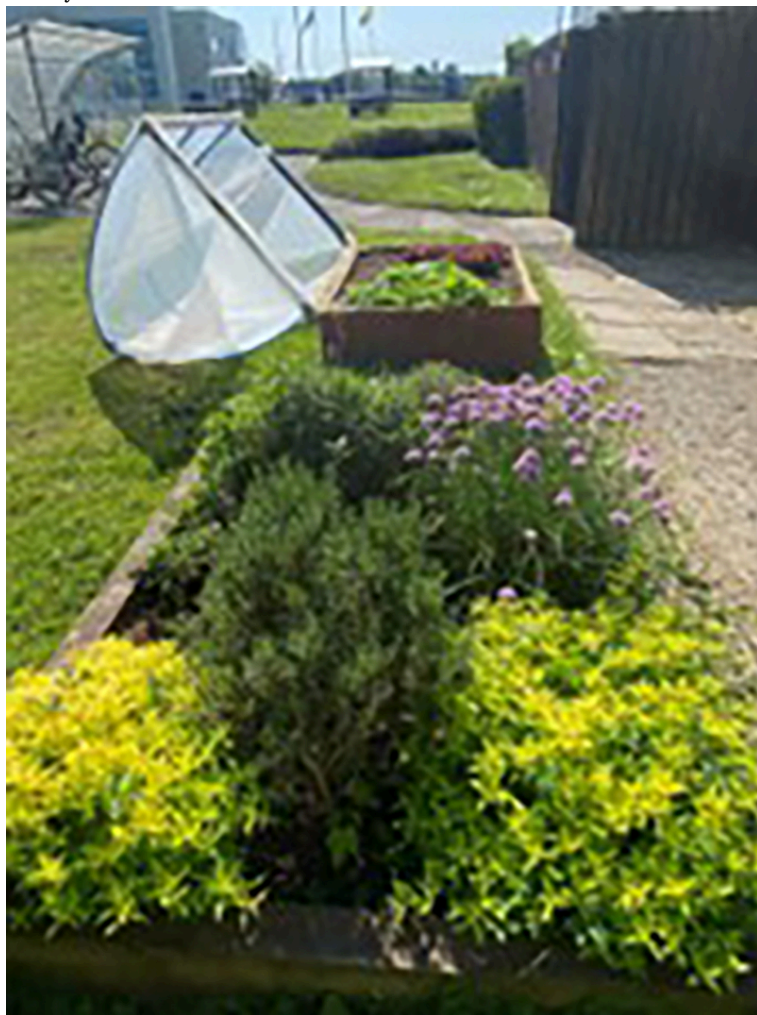
Goal 12: Responsible Consumption and Production

By promoting initiatives like the Too Good to Go programme and composting, we encourage students to adopt sustainable practices that reduce waste and enhance resource efficiency in the hospitality sector. To further enhance our sustainability efforts, we have established a vegetable and herb garden on campus, utilising compost created from our kitchen food waste and our coffee grinds waste. Students are encouraged to collect coffee grounds from their daily coffee consumption to contribute to our composting efforts. This practice creates awareness about the repurposing of ingredients which reinforces the value of reducing waste in food operations. By engaging with the garden, our students gain firsthand experience in cultivating and utilising fresh ingredients, highlighting the significance of sustainability in food preparation.

In the restaurant service module, our reusable coffee cup initiative promotes responsible consumption and reduces single-use plastic waste within the college. By encouraging students to adopt sustainable practices in their daily routines, we foster an environmentally conscious mindset that extends beyond the classroom.

Through these initiatives, we create a comprehensive learning environment that emphasises the significance of sustainability in the food and beverage sector. Embedding these practices into the module design, ensures that our students are not only well-

prepared for their future careers but also empowers to seek out opportunities to drive positive change within the hospitality industry.



Intended Learning Outcomes

1. Understand key sustainability principles and practices relevant to the hospitality industry, including waste reduction and responsible sourcing.
2. Effectively utilise food waste tracking technologies, such as Positive Carbon, and engage in composting efforts to minimise environmental impact.
3. Work effectively in teams to design and implement sustainability-focused projects, such as the Too Good to Go initiative along with the deposit return scheme, fostering a culture of resourcefulness and social responsibility.
4. Evaluate and reflect on their personal practices and decisions related to sustainability, identifying areas for improvement and growth.
5. Contribute positively to local sustainability efforts, such as the vegetable and herb garden, fostering a connection to locally sources foods.

Teaching and Learning Approach

Our team teaching and learning approach focuses on the integration of sustainability into the food and beverage curriculum through experiential and collaborative methods.

Assessment Strategy

Our assessment strategy is designed to evaluate student learning

effectively while emphasising sustainability within the food and beverage curriculum.

Collaboration, Partnerships & Student Participation

The students' sustainability and charity committees have come together to take advantage of the National Deposit Return Scheme. They have implemented a collection system for plastic bottles which can be redeemed at the till against store purchases or as a cash refund. Cash refunds go to the funds raised for the college's chosen charity. Students are using this climate action sustainability initiative with the added benefit of building an inclusive sustainable society.

Impact and Outcomes

The sustainability initiatives at Shannon align closely with both national and international sustainability goals, particularly the United Nations Sustainable Development Goals (UN SDGs). By promoting initiatives like the Too Good to Go programme, reusable coffee cup initiative, and composting, we encourage students to adopt sustainable practices that reduce waste and enhance resource efficiency in the hospitality sector. Our partnership with Kelsius helps us completely cut out the use of paper for our daily/weekly/monthly HACCP checks, and it also aids in reducing stock waste. Our partnership with Positive Carbon contributes to lowering greenhouse gas emissions associated with deforestation and paper production. The curriculum integrates sustainability principles, ensuring that students receive quality education that

prepares them to address pressing global challenges in the hospitality industry

Student Engagement

100 per cohort

Disciplines

- Business, Administration and Law
- Education
- Teaching and Learning

Programme

Bachelor of Business Studies degree in International Hotel Management

Best Practices & Resources

Top Tips

Involve students in sustainability initiatives from the beginning of their academic journey. This fosters a sense of ownership and commitment, encouraging them to actively participate and contribute innovative ideas. Ensure that sustainability concepts are

not just theoretical but are applied in practical settings. Use case studies, partnerships, and hands-on projects to illustrate the tangible impact of sustainable practices in the hospitality industry. Encourage collaboration between students, staff, and external partners in the form of guest speakers. Multi-disciplinary teamwork can return creative solutions and broaden perspectives on sustainability challenges, enhancing the learning experience for everyone involved. These actionable recommendations can help other institutions implement effective sustainability initiatives and foster a culture of environmental consciousness among students.

Useful Resources



One or more interactive elements has been excluded from this version of the text. You can view them online here: <https://pressbooks.oer.ie/hea-esd-spotlight-series-case-studies-compendium/?p=489>

Funding Details

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II3. The Bioeconomy Elective

DR MÁIRE NIC AN BHAIRD; THOMAS P CURRAN; DR LAOISE NÍ
CHLÉIRIGH; JAMIE MURRAY; AND SAKSHI ANAND



Institutions and Partner Organisations

Maynooth University, University College Dublin, BiOrbic, European
Commission

Description

The Bioeconomy Elective 2024/2025 is a unique Education for
Sustainable Development (ESD) initiative within the Froebel
Department of Primary and Early Childhood Education at

Maynooth University (MU). It equips future teachers with the knowledge, skills, and values needed to integrate sustainability into classroom practice. Framed through a Froebelian Ecofeminist philosophy, the elective connects scientific knowledge, indigenous ways of knowing, and traditional crafts to foster a holistic approach to climate, care, and culture in education.

This initiative responds to the UN Sustainable Development Goals (SDGs), BioBeo bioeconomy themes, and the Ethics of Care. A key aim is to show how language, storytelling, and everyday actions can inspire environmentally responsible behaviour. The elective aligns with the 1999 SESE curriculum by fostering inquiry, environmental awareness, and citizenship. It also supports the 2023 Primary Curriculum Framework by emphasising sustainability, integrated learning, and values-based education. Rooted in Froebelian Ecofeminism, it reflects curricular aims to develop informed, empathetic, critically engaged learners and active citizens.

Initiative Description

The elective introduces the bioeconomy as a hopeful and practical response to the climate crisis, emphasising nature-based pedagogy. Through craftwork and ecological awareness, students explore circularity, waste valorisation, and sustainability in ways directly applicable to the classroom.

In 2025, the elective partnered with the Horizon Europe-funded BioBeo project and BiOrbic, the SFI Bioeconomy Research Centre. A defining feature was participation in the BioBeo–BiOrbic Education Workshop co-hosted by Maynooth University and UCD,

where teaching students engaged with researchers, educators, and practitioners in a creative, transdisciplinary space.

Alongside this, UCD engineering students designed and constructed a puppet theatre frame entirely from recycled materials. This became the stage for the final group project: a puppet show on interconnectedness, crafted with techniques such as crochet and hand-sewing.

The puppet theatre was both a product of circular design and a

metaphor for the bioeconomy in action. It bridged technical innovation and educational practice, making abstract concepts accessible and engaging for children.

For final-year teaching students, the collaboration was transformative. It showed how integrating STEM disciplines can enrich bioeconomy education and how recycled resources can become low-cost, accessible teaching tools.

This project was showcased:

- At the European Commission (March 2025) as part of BioBeo dissemination
- At the UCD Festival (June 2025) highlighting sustainability in higher education

Throughout the elective, students also developed skills in traditional crafts, exploring how these can teach sustainability, creativity, and care in ways that respect heritage and foster stewardship.

Student Engagement and Learning Impact

The elective is experiential and student-centred, integrating craft, storytelling, cultural reflection, and ecological inquiry. Student teachers reported enhanced confidence in:

- Explaining sustainability in child-friendly terms
- Integrating environmental themes across subjects
- Leading low-waste, craft-based activities
- Applying Froebelian and ecofeminist principles in daily practice

The use of Irish language, folklore, and oral storytelling reinforced cultural identity as integral to sustainability.

Institutional Significance and Next Steps

This elective represents a scalable model for embedding sustainability into initial teacher education (ITE). Its strength lies in its transdisciplinary, values-based approach, uniting science, heritage, ethics, pedagogy, and the arts. It shows how collaboration between education and STEM can lead to deeper engagement and systemic change.

Next steps include:

- Embedding elements into core BEd and PMEd modules
- Building partnerships with craft experts and sustainability educators
- Expanding collaboration with BioBeo, BiOrbic, and engineering departments
- Gathering feedback from graduates implementing ESD in schools

Conclusion

The Bioeconomy Elective 2025 is a powerful example of embedding ESD in teacher education in ways that are meaningful, creative, and transformative. Grounded in culture, craft, care, and collaboration, it prepares future educators not only to teach sustainability but to live and lead it.

Intended Learning Outcomes

By the end of this elective, students will be able to: explain the bioeconomy and its relevance to climate action and sustainable development in education; action BioBeo themes, BiOrbic pillars, UN SDGs, and curricula; explore key competencies in the Draft Curriculum Framework—Being an active citizen, well, learner, and creative—through hands-on relational experiences; integrate

STEM, Wellbeing, Arts, and Social/Environmental Education interdisciplinarily; apply traditional crafting skills (crochet, sewing, knitting) to promote sustainability, creativity, and heritage; collaborate with biosystems engineering students; critically reflect on language, storytelling, and indigenous knowledge; co-create educational resources (puppet show, *An Talamh Bhláfar*); and engage in nature-based learning, deepening ecological literacy and interconnectedness.



Teaching and Learning Approach

This module employed a Froebelian ecofeminist framework to embed ESD, highlighting interconnectedness, care, creativity, cultural relevance, and traditional ecological knowledge (TEK). Experiential, interdisciplinary, student-centred teaching enabled deep engagement with the bioeconomy through craft-based learning, nature pedagogy, and storytelling rooted in Irish folklore. Traditional skills—crochet, sewing, knitting, and nature-based paint creation—were nurtured. Relational pedagogy supported students and staff in fostering ecological literacy and creative expression, emphasizing dialogue, reflection, and community-based learning.

Through transdisciplinary collaboration with UCD and BiOrbic—including workshops, co-creation of the puppet show, and the

Irish-language song *An Talamh Bhláfar*—students internalised ESD principles personally and professionally. Final-year student teachers reported confidence using this relational, empathetic approach in their future teaching.



Assessment Strategy

As a non-graded module, the Bioeconomy module adopts an engaged, process-oriented approach to assessment, prioritising collaborative, reflective, and experiential learning over summative evaluation. This fosters a low-stakes, high-impact environment where students explore complex sustainability concepts with creativity and criticality. Assessment focused on co-construction of knowledge, exemplified by the collaborative development of a puppet show integrating indigenous crafts, ecological themes, and cultural storytelling. Students also co-authored the Irish-language bioeconomy-themed song *An Talamh Bhláfar* and participated in the transdisciplinary ESD workshop ‘Ceardlann Oideachais: BioBeo and BiOrbic Bioeconomy Education Workshop’, co-developed by MU, UCD, and BiOrbic partners. The absence of grading enabled deeper cognitive and emotional engagement, promoting reflection, interdisciplinary thinking, and the dispositions necessary for future educators to teach sustainability meaningfully in primary schools.

Impact and Outcomes

The initiative demonstrated a significant positive impact on participants. Post-module feedback indicated that all participants reported enhanced connectedness with nature, increased well-being, and a heightened awareness of ecosystem interdependence. Participants also demonstrated an improved understanding of the bioeconomy and its relevance to sustainable practices. Creative workshops were particularly valued for facilitating reflective, therapeutic engagement with the natural environment. Quantitative evaluation using a 10-point “harmony with nature”

scale revealed a substantial increase in mean scores from 5.08 (pre-session, indoor) to 9.38 (post-session, outdoor), indicating marked gains in environmental connectedness. Overall, these findings suggest the initiative effectively fosters environmentally responsible attitudes and practices, equipping participants to integrate principles of sustainability and the bioeconomy into future educational contexts.

Collaboration, Partnerships & Student Participation

This elective thrived through student engagement and cross-sector partnerships within the BioBeo Horizon Europe project and BiOrbic. A highlight was the BioBeo-BiOrbic Bioeconomy Education Workshop (20 Feb 2025, UCD), where students worked with international experts—including keynote John Bell (European Commission)—through interactive activities such as a bioeconomy board game, comic launch, and VR/AR experiences. Collaboration spanned Maynooth University, UCD, Rotterdam University of Applied Sciences, and Odisee University. Students joined the BioBeo Blended Intensive Programme and co-created *Finding the Curlew*, a puppet show using recycled biomaterials. They led content design, reflected critically on ethics and heritage, and demonstrated authentic agency throughout the initiative.

Student Engagement

50 students

Disciplines

- Arts and Humanities
- Education
- Engineering, Manufacturing and Construction

Programmes

Bachelor of Education (Primary) and Professional Master of Education (Primary)

Best Practices & Resources

Top Tips

- Integrate Sensory, Creative, and Nature-Based Activities: Hands-on, calming experiences like sewing with natural materials, plant-based paints, and reading outdoors foster emotional connection, well-being, and deep ecological awareness, which is key for embedding sustainability meaningfully into education.
- Embed a Pedagogy of Love/Relational Pedagogy and Cultural Relevance: Linking nature with language and cultural identity (e.g., Irish-language storytelling) enhances engagement and belonging, especially when grounded in values like care, empathy, and interconnectedness with a shared sense of stewardship in the absence of linking nature with language and

cultural identity (e.g., Irish-language storytelling) enhances engagement and belonging, especially when grounded in values like care, empathy, and interconnectedness with a shared sense of stewardship in the absence of ecoanxiety, which is vital for students and staff.

- Use Reflective Tools to Measure Impact: Pre- and post-activity reflections (e.g., harmony with nature scores) offer valuable insights into emotional and cognitive shifts, supporting evidence-based advocacy for outdoor, values-driven, and research-informed teacher education.

Useful Resources

- Beo's Bioeconomy Sing-Along – Child-friendly video and guidance notes (English & Irish) introducing bioeconomy concepts through music.
- <https://youtu.be/GAuu3bJ3DGI> An Talamh Bhláfar – Connecting Communities to the Bioeconomy – A song co-created by MU and UCD that bridges heritage, culture, and sustainability.
- <https://www.youtube.com/watch?v=k6i6wsYFEF4> BioBeo Comic Books – Engaging comics that introduce children and teachers to Beo and the world of the bioeconomy.
- <https://www.biobeo.eu/meet-beo/> Note: There are additional resources freely available here to support all ages and abilities. <https://www.biobeo.eu/>

Funding Details

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II4. Ubuntu Network: Advancing Global Citizenship & Sustainable Development in Initial Teacher Education

DR JOANNE O'FLAHERTY AND DEIRDRE HOGAN



Institutions and Partner Organisations

- University of Limerick (UL)
- University College Dublin (UCD)
- Maynooth University (MU)
- University College Cork (UCC)
- Trinity College Dublin (TCD)
- Dublin City University (DCU)
- Atlantic Technological University St. Angela's (ATU-SAC)
- National College of Art and Design (NCAD)
- University of Galway (UoG)
- Hibernia College
- Atlantic Technological University Connemara (ATU-C)
- Mary Immaculate College Thurles
- Technological University of the Shannon (TUS) Limerick
- Technological University of the Shannon (TUS) Athlone

- Munster Technological University (MTU)
- World Wise Global Schools (WWGS)
- Development and Intercultural Education (DICE)
- Trócaire
- Self Help Africa
- 80:20
- ARD Youth Project
- Irish Refugee Council Youth Members
- Eco-UNESCO
- Irish Development Education Association (IDEA)
- Concern
- Galway One World Centre
- Financial Justice Ireland
- Rialto Youth Project
- ARD Family Resource Centre

Description

Context

The imperative to address global challenges such as climate change, sustainability, and wealth inequality reinforces the urgent need for ESD and GCE in formal education. If education is to motivate and empower learners to become informed, active citizens who take action for a more sustainable future, ESD must be a core element of education

Since its establishment in 2005, the Ubuntu Network has become a national Centre of Excellence focused on embedding Global Citizenship Education (GCE) and Education for Sustainable Development (ESD) into post-primary Initial Teacher Education (ITE) programmes in Ireland. Funded by Irish Aid (Department of Foreign Affairs and Trade) and located in the School of Education, University of Limerick, it is guided by three underlying principles

- **Community** – it fosters a supportive and collegial community of educators from Higher Education Institutions (HEIs) and non-governmental organisations (NGOs), working together to integrate GCE/ESD into ITE in a practical and interdisciplinary manner.
- **Care for people and planet** – members stand in solidarity with victims of inequality and injustice, while also being driven by the fragility of ecological systems and the urgency of environmental conservation.
- **Striving for excellence** – it uses experience and evidence to shape transformative practice, while continually adapting and critically reflecting to enhance GCE/ESD.

The Ubuntu Network's goal is to enhance the provision of high-quality, evidence-based GCE/ESD into ITE curriculum, pedagogy, and assessment. It targets teacher educators in the 15 HEIs nationwide involved in post-primary ITE (67 programmes in total), supporting them to embed a living understanding of, and commitment to, global citizenship, sustainable development, and social justice in their work. This results in graduates entering the profession as active global citizens who integrate into their teaching and the schools where they work, perspectives that foster engagement in building a more just and sustainable world.

Relevant policy developments include Ireland's *ESD to 2030 Strategy* which outlines measures to transform learning environments for ESD; the *Irish Aid GCE Strategy 2021-2025* which seeks to increase the public's understanding of global issues in formal and non-formal education; and the Teaching Council's *Céim: Standards for ITE* (2020) which moved GCE and ESD from the margins to the mainstream of teacher education.

Purpose

The Network promotes education that:

- reimagines knowledge, content, and curriculum to include global justice, sustainability, and human rights.
- nurtures skills, attitudes, and ethical values that student teachers need to engage critically with complex global issues.
- supports ongoing professional development and reflective practice among teacher educators.
- fosters institutional cultural change that embeds GCE/ESD at a systemic level.

To achieve this, the Network has four interconnected core areas of work:

- **Curriculum:** It embeds GCE/ESD in ITE teaching, learning, and assessment by funding and supporting multi-annual partnerships and annual projects.
- **Educators:** It builds the capacity of teacher educators to embed GCE/ESD in their teaching through Ubuntu-facilitated professional learning events, Communities of Practice (CoPs), research projects, and working groups.
- **Research:** It ensures that GCE/ESD provision in ITE is informed by and contributes to the evidence base.
- **Outreach:** It disseminates learning and advocates for GCE/ESD with relevant stakeholders to ensure a more just and sustainable vision for Irish education.

Significance

The Ubuntu Network plays a vital role in advancing GCE/ESD in Ireland through a holistic, collaborative model. It provides a collegial, supportive space for higher education educators to share, research, and explore how justice and sustainability can be meaningfully embedded in ITE curricula. Drawing on diverse expertise and disciplinary perspectives, the Network ensures GCE/ESD is embedded through interdisciplinary, transformative

approaches that foster meaningful dialogue and innovative practice in teacher education.



Intended Learning Outcomes

Engagement with the Ubuntu Network initiative is designed to deliver clear and measurable learning outcomes for teacher educators and student teachers. Participants will:

- develop critical global citizenship competences (knowledge of global issues, empathy, and critical inquiry);
- understand and apply sustainable development and global justice concepts within educational contexts;
- cultivate reflective, ethical, and action-oriented teaching practices that empower learners to address complex social and ecological challenges;
- embed GCE/ESD meaningfully within both subject-specific and cross-curricular teaching;
- strengthen self-awareness and the capacity to navigate controversial issues, fostering inclusive and brave learning spaces;

- apply interdisciplinary and student-centered pedagogies that link theory with classroom-ready strategies;
- evidence impact through contributions such as research outputs, AoLs, and EoPs Practice; and
- engage collaboratively in CoPs and professional learning.

Teaching and Learning Approach

Ubuntu's pedagogical approaches actively embody transformative education principles, promoting active and critical pedagogies, for example

- **Arts-based methods** that involve the creation and exhibition of art installations inspired by critical reflection on socio-ecological issues, e.g., [the NCAD Change Lab](#).
- **Dialogic teaching** – using strategies such as debate, Socratic questioning, and storytelling to foster critical thinking e.g., UCD critical questioning.
- **Place-based and experiential learning**, which feature in community-oriented projects that promote engagement beyond the classroom, e.g., ATU St. Angela's and ATU Connemara's community-based sustainability projects.
- **Collaborative learning models** that encourage peer-led initiatives such as interdisciplinary workshops, e.g., the MU Shared Learning Days on innovative approaches to ESD/GCE.
- **Creative Media**: projects use diverse media to showcase students'/educators' learning journeys, e.g., animations, podcasts, and graphic harvests.

Assessment Strategy

Each Ubuntu supported partnership and project is initially assessed by the project lead using qualitative and quantitative methods that are appropriate to their context.

Impact measures include Artefact of Learning (AoL)*, Exemplar of Practice (EoP) *, reflective journals, project-based assignments, peer-to-peer evaluations, action research projects, case studies, and critical self-assessment tools measuring student engagement with sustainability and social justice themes.

* An AoL is a sample of work created by a student teacher (e.g., digital media presentations, creative exhibitions, critical essays) that demonstrates their engagement with a GCE/ESD intervention and an accompanying narrative on how GCE/ESD was situated within that module.

* An EoP is a document/output that showcases a teacher educator's approach to integrating GCE/ESD in post-primary ITE. It provides a structured narrative of the curricular approach and student teacher engagement.

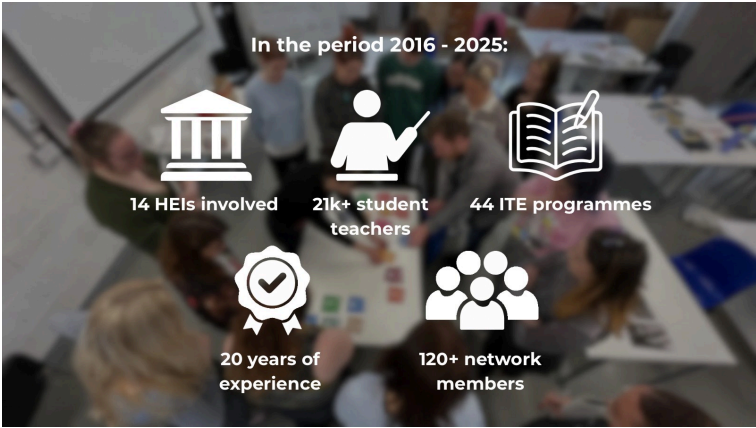
Impact and Outcomes

The Ubuntu Network significantly advances the integration of GCE/ESD in post-primary ITE. Since 2021, **student teacher engagement** with GCE/ESD has risen from 2,071 to 3,595 (73%), and **teacher educator participation** from 42 to 77 (83%). Member HEIs report **deeper, more critical engagement**, with AoLs and EoPs reflecting stronger philosophical and pedagogical grounding.

Teacher educator capacity is evident in AY2024/25 outputs: 17 conference presentations, 5 journal articles, 6 MEd theses, 4 Final

Year Projects, 1 book chapter, and 3 PhDs (in progress). Professional learning was further supported through 4 Ubuntu-led events, 4 CoPs, and 12 member-hosted CPD sessions, collectively reaching over 3,000 participants.

External evaluations affirm Ubuntu's role in cultivating educators who recognise their agency in creating socially just learning environments. As the Teaching Council (2024) stated: *"The significant contribution of the Ubuntu Network ... is noteworthy in embedding Global Citizenship Education within programmes of ITE."*



Collaboration, Partnerships & Student Participation

The Ubuntu Network exemplifies robust collaboration across institutions, disciplines, and sectors, engaging students, educators, policy makers, NGOs, and community partners to advance GCE/ESD. Student teachers play an active role, with many leading GCE/ESD committees in their HEIs to plan activities and projects. Interdisciplinary events and CoPs promote student-led research and peer learning. In AY2024/25, over 3,000 participants attended

member-hosted capacity-building events, many co-designed by student teachers.

Impact assessments show student teachers engaging positively with GCE/ESD content and methods. Their reflections consistently highlight shifts in worldview, stronger ethical commitments, and greater pedagogical confidence in addressing global issues. One student noted: “Without having learned to view these interactions (controversial conversations) through a social justice lens, I would have perpetuated the issue I was first exposed to when I was a student: silencing difficult conversations” (MU PME student teacher).

Student Engagement

With 20 years of experience, the Ubuntu Network has built a robust network of educators for global citizenship and sustainability across post-primary Initial Teacher Education (ITE). In the period from 2016 to 2025, it engaged over 21,000 student teachers across 14 Higher Education Institutions (HEIs), spanning 37 Initial Teacher Education (ITE) programmes and 45 distinct modules. With the active contribution of 120+ academic and professional members, the Ubuntu Network continues to foster and support sustained, high-quality engagement among educators and student teachers, advancing the integration of Education for Sustainable Development (ESD) and Global Citizenship Education (GCE) across the post-primary ITE sector.

Disciplines

- Arts and Humanities
- Education

- Teaching and Learning

Programmes

- Professional Master of Education (UCD)
- Professional Master of Education (UCC)
- Professional Master of Education (UL)
- Professional Master of Education (NCAD)
- Professional Master of Education (MU)
- Professional Master of Education (Hibernia College)
- Professional Master of Education (ATU-SAC)
- Professional Master of Education (DCU)
- Professional Master of Education (UoG)
- Professional Master of Education (TCD)
- Bachelor of Science Education (MU)
- BSc in Education (Design, Graphics and Construction) (ATU Connemara)
- BEd in Art, Design & Communication Graphics (ATU Connemara)
- BEd in Home Economics and Biology (ATU-SAC)
- BEd in Home Economics and Religious Education (ATU-SAC)
- BEd in Home Economics and Irish (ATU-SAC)
- BEd in Home Economics (ATU-SAC)
- Bachelor of Education in Sports Studies and Physical Education (UCC)
- Maistir Gairmiuil san Oideachas (MGO) (UoG)
- BA Mathematics and Education (BME) (UoG)
- BA Education Computer Science and Mathematical Studies (CSM) (UoG)
- MSc Education, Maths and Science (UCD)
- BEd Languages (UCD)
- Bachelor of Education in Languages (UL)

- Bachelor of Science (Education) in Biology with Physics or Chemistry or Agricultural Science (UL)
- Bachelor of Science (Education) in Mathematics and Computer Science (UL)
- Bachelor of Science (Education) in Physical Science with Chemistry & Physics (UL)
- Bachelor of Science in Physical Education (UL)
- Bachelor of Technology (Education) in Materials & Architectural Tech (UL)
- Bachelor of Technology (Education) in Materials & Engineering Tech (UL)
- BA in Education, Business Studies and Accounting (MIC-Thurles)
- BA in Education, Business Studies and Religious Studies (MIC-Thurles)
- BA in Education, Gaelge and Religious Studies (MIC-Thurles)
- BA in Education, Gaelge and Business Studies (MIC-Thurles)
- BA in Education, Maths and Gaelge (MIC-Thurles)
- BA in Education, Maths and Business Studies (MIC-Thurles)
- BA in Education, Home Economics and Business Studies (MIC-Thurles)

Best Practices & Resources

Top Tips

- Co-Designed and Cross-Disciplinary Approaches to ESD/GCE: Engage students, NGOs, and faculty early to ensure initiatives are context-relevant and dynamic. Co-designed processes, such as UCC's student-led exhibitions and peer learning groups, demonstrate how authentic collaboration strengthens

outcomes. Embedding GCE/ESD creatively across disciplines, beyond foundation modules into subject-specific pedagogies like English, Business, and Home Economics, further enhances relevance and impact. For example, NCAD's use of gallery installations deepens experiential learning, while the University of Galway integrates GCE/ESD seamlessly across Professional Practice, Research, and Methodology courses. UCD's use of Special Interest Groups (SIGs) deepens thematic engagement and promotes cross-disciplinary GCE/ESD.

- **Build Sustainable Communities of Practice and Partnerships:** Formalising relationships at senior leadership level secures systemic, long-term integration of GCE/ESD within and across institutions. Equally, supporting educator capacity through dialogue and Community of Practice (CoP) models sustains professional engagement and innovation. These professional communities, grounded in themes such as self-awareness, equity, and sustainability, extend impact beyond one-off interventions, ensuring GCE/ESD remains embedded across curricula and practice. Leveraging digital dissemination (e.g., research repositories, podcasts, newsletters) extends reach beyond immediate participants.
- **Prioritise Creative, Reflective, and Evidenced Approaches:** Using reflective and creative methodologies (e.g., storytelling, place-based learning) fosters deeper engagement with complex global issues. Artefacts of Learning (AoLs) provide a powerful means of evidencing such engagement: capturing multimedia student outputs, whether artworks, digital portfolios, or research reflections, not only supports assessment but also enhances visibility and transformative potential. Examples include NCAD and UCC portfolios, which serve both as pedagogical tools and as public outreach resources.

Useful Resources

- www.ubuntu.ie (Ubuntu Network Website)
- <https://ubuntu.ie/resources/> (Ubuntu Resources Page)
- <https://ubuntu.ie/news/> (Ubuntu News Page)

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Embedding Sustainability in Teaching and Learning at the University of Galway

DR ALMA CLAVIN AND DR ELIZABETH HURLEY

Institution

University of Galway

Description

In line with the [National Strategy on Education for Sustainable Development \(ESD\)](#) – ESD to 2030 and building on previous and existing work across the institution, the University of Galway aims to provide opportunities for all staff and students to develop the knowledge, competencies, values and motivation they will need to be agents of change in creating a sustainable future.

The Centre for Excellence in Learning and Teaching (CELT) supports academic colleagues across the institution in enhancing teaching and learning, encouraging innovation and scholarship, and in ensuring staff are provided with the best tools and environment to support teaching and their students' learning. To support the development of staff competencies in Education for Sustainable Development (ESD), CELT developed a new module, Embedding Sustainability in the Curriculum. The module was first offered in the 2024/2025 academic year and was available to all staff at the University of Galway as an optional module in the in the

Diploma in Academic Practice or as microcredential/module (10 ECTS).

The module was led by two Education for Sustainable Development (ESD) Lecturers in CELT and was developed with significant input from members of staff from across the University, these included: College of Science and Engineering; College of Arts, Social Sciences and Humanities; the Equality, Diversity and Inclusion (EDI) Office, the Sustainability Office and the Students Union (SU).

The module was organised as a series of stand-alone workshops, involving guest lecturers, online resources, demonstrations, practical sessions, discussion, research, and reflection. Participants were encouraged to practice their learning in their own subject area.

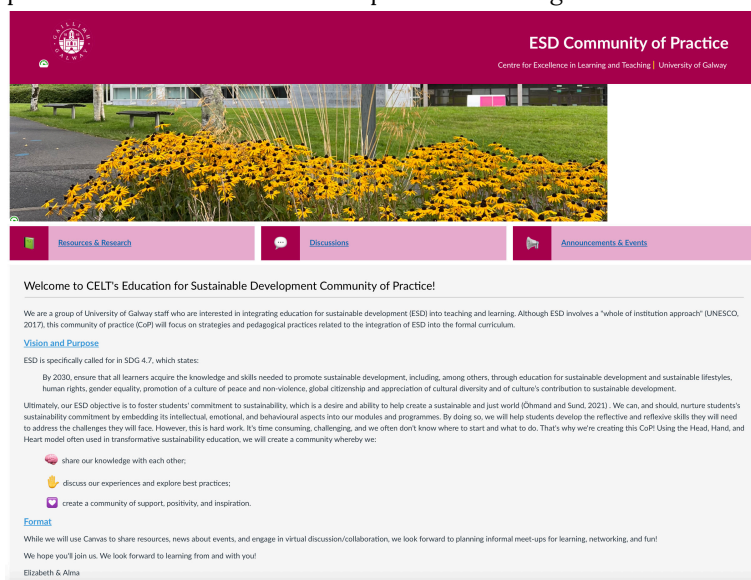
Many of the participants who enrolled in the microcredential already had a strong interest in sustainability and were part of the wider Community University Sustainability Partnership (CUSP). Others were already very prolific in sustainability research. The microcredential added to all participants' learning and teaching expertise in ESD, particularly regarding pedagogical and curriculum design strategies.

To enhance reach and appeal to those who were unfamiliar with ESD and those who do not explicitly research in the area of sustainability, we leveraged three pathways: i) the course was offered as an optional module in the Masters in Academic Practice; ii) the curriculum design aspects of ESD were integrated into the CELT Certificate in Teaching and Learning in Higher Education in the module on Course Design, Assessment and Evaluation; iii) the ESD curriculum design element was integrated into workshops across schools and disciplines in the university. In this way, staff across campus were exposed to ESD and made aware of options available in terms of training and resources.

Upon completion of the module, participants were invited to join

an ESD Community of Practice (CoP). The purpose of the CoP is to explore strategies and pedagogical practices related to the integration of ESD into the formal curriculum. Practicing the Head, Hand, and Heart model often used in transformative sustainability education, members seek to create a community whereby they share knowledge, discuss experiences and explore best practices, and create a community of support and inspiration for furthering ESD.

The module is now running again in the 2025/26 academic year and is an important vehicle for embedding sustainability across the curriculum. CEL6109 Embedding Sustainability in the Curriculum seeks to provide staff with an integrated and critical ESD experience and all staff across campus are encouraged to enrol.



ESD Community of Practice
Centre for Excellence in Learning and Teaching | University of Galway

Welcome to CEL's Education for Sustainable Development Community of Practice!

We are a group of University of Galway staff who are interested in integrating education for sustainable development (ESD) into teaching and learning. Although ESD involves a "whole of institution approach" (UNESCO, 2017), this community of practice (CoP) will focus on strategies and pedagogical practices related to the integration of ESD into the formal curriculum.

[Vision and Purpose](#)

ESD is specifically called for in SDG 4.7, which states:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Ultimately, our ESD objective is to foster students' commitment to sustainability, which is a desire and ability to help create a sustainable and just world (O'Donnell and Sund, 2021). We can, and should, nurture students' sustainability commitment by embedding its intellectual, emotional, and behavioural aspects into our modules and programmes. By doing so, we will help students develop the reflective and reflexive skills they will need to address the challenges they will face. However, this is hard work. It's time consuming, challenging, and we often don't know where to start and what to do. That's why we're creating this CoP! Using the Head, Hand, and Heart model often used in transformative sustainability education, we will create a community whereby we:

- share our knowledge with each other;
- discuss our experiences and explore best practices;
- create a community of support, positivity, and inspiration.

[Format](#)

While we will use Canvas to share resources, news about events, and engage in virtual discussion/collaboration, we look forward to planning informal meet-ups for learning, networking, and fun!

We hope you'll join us. We look forward to learning from and with you!

Elizabeth & Alma

Intended Learning Outcomes

Learning outcomes associated with the microcredential are as

follows.

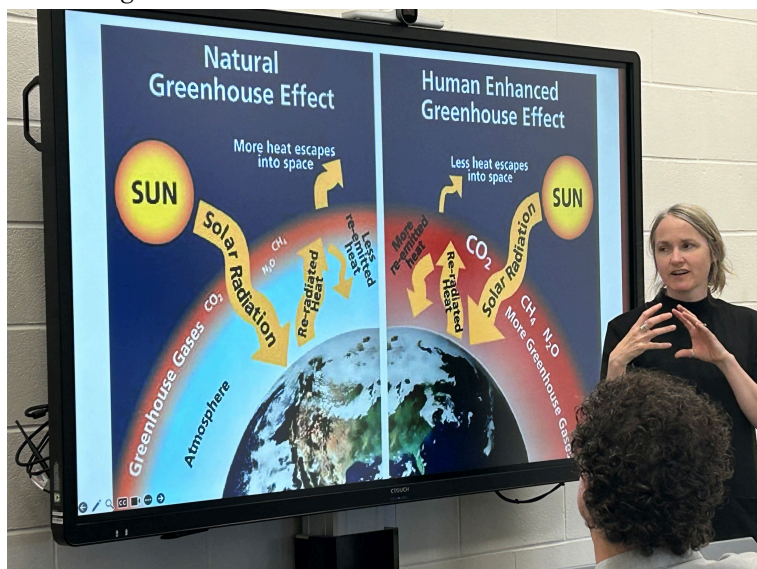
Upon successfully completing this module you will be able to:

1. Evaluate how issues sustainability and key competencies for sustainability relate to your own academic discipline and the courses and programmes on which you teach.
2. Identify and utilise a range of pedagogical approaches and strategies related to Education for Sustainable Development (ESD).
3. Design curriculum that nurtures students' sustainability commitment.
4. Contribute to communities of practice and work with colleagues and students in support of more sustainable and just futures.

Teaching and Learning Approach

Knowing about the SDGs is not, on its own Education for Sustainable Development (ESD). ESD involves cognitive, socio-emotional and behavioural elements that go beyond mapping and learning about the SDGs. ESD supports students to develop particular competencies – the knowledge, skills, values and attitudes required to make informed decisions and take responsible actions for sustainability. There are different competency frameworks associated with ESD and in 2017 UNESCO produced a set of 8 key sustainability competencies that are particularly suitable for working across university disciplines. These are systems competency; anticipatory competency; normative competency; strategic competency; collaborative competency; critical thinking competency; self-awareness competency; integrated problem-solving competency. These 8 key competencies were unpacked throughout the module using experiential and transformative strategies to model appropriate

pedagogies for ESD that participants can incorporate into their own teaching and instruction.



Assessment Strategy

There were two strands to the assessment of the module:

- Tasks based on the Workshops/Talks: these were intended to demonstrate attainment of the learning outcomes and reflect on the topics raised (Pass/Fail). Participants have two weeks to complete each task and each task should be submitted in advance of the next session.
- Final Project and Presentation/Demonstration: students were required to plan and, if possible, complete a project report in their own subject areas demonstrating how sustainability can be embedded in future modules/work. The report was to be 2000 words (excluding references) in length. Guidance was provided, and the format of the project/report was agreed on

the basis that it demonstrates achievement of the learning outcomes and application of the ideas and concepts covered. A short (5 minute) video, presenting and summarising the work was also to be uploaded to Canvas and shared with other participants.

Impact and Outcomes

The Lecturers chose to host an entirely in-person course to enhance both experiential learning and place-based pedagogical approaches e.g., walking the biodiversity trail, exploring outdoor classroom spaces for relational pedagogies. In a busy HE environment, such efforts are often siloed into specific disciplines/schools/colleges or not undertaken at all. This course offered a new transdisciplinary space for interconnected global challenges in teaching and learning to be discussed.

Offering CEL6109 via a variety of pathways (e.g., microcredential; MA Academic practice; PGCert in Teaching and Learning in HE) and adapting sessions for continuing professional development opportunities (e.g., workshops, seminars) ensures wider dissemination of the content. The Community of Practice (CoP) is growing and essential to ensuring that learning is not lost, but rather, maintained, built on, and expanded within the Schools, and within the wider learning and teaching community throughout the University.



OLLSCOIL NA GAILLIMHE
UNIVERSITY OF GALWAY

An tIonad Sársaighdeáin
Foghlama agus Teagaisc
Centre for Excellence in
Learning & Teaching



**MICROCREDENTIAL
CEL6109**

EMBEDDING SUSTAINABILITY IN THE CURRICULUM

Topics to be explored include:

- sustainability concepts, principles and practices;
- pedagogical approaches for sustainability;
- teaching techniques for embedding sustainability into the curriculum;
- digital tools for embedding the SDGs into university modules;
- spaces to sustain open conversations about climate and sustainability.

Participants will be encouraged to apply their learning in their own subject area.

10 ECTS (NFQ 9)
Semester 1

www.universityofgalway.ie/celt

Photo by Daphné Richard on Unsplash.

Collaboration, Partnerships & Student Participation

Ten academic and students union partners from across the University contribute to the course, with opportunities for co-producing content. Partners included:

- Dr. Gesche and Dr. Caitriona Carlin (Natural Science – biodiversity and nature literacy and place-based pedagogies)
- Molly Hickey (Environmental Awareness and Sustainability Office, Students Union (SU)) – student insights on ESD and the

- Dr. Nora Ward (Philosophy – environmental philosophy and relational pedagogies)
- Dr. Sinead Sheehan (Psychology – coping with eco-distress and eco-anxiety)
- Fiona Roche (Students Services – coping with eco-distress and eco-anxiety)
- Dr. Liz Coleman (Science (Physics) – climate science with storytelling)
- Dr. Alex Stingl (Sociology – GenAI, technology and sustainability)
- Dr. Una Fitzgerald (Biochemical Science – the green lab initiative)
- Dr. Tanja Kovacic (Equality, Diversity and Inclusion (EDI) office – Decolonising the Curriculum)

Student Engagement

- 2024/2025 Academic Year N=16
- 2025/2026 Academic Year N=20

Discipline

Teaching and Learning

Programme

Centre for Excellence in Learning and Teaching (CELT)
Postgraduate Diploma/microcredential/module

Best Practices & Resources

Top Tips

Provide ample opportunities for staff to access the module. By offering Embedding Sustainability in the curriculum as a stand-alone microcredential, an optional module in the postgraduate certification in academic practice, and as an optional module in the MA in academic practice, we were able to expand our reach and provide staff with varying needs an opportunity to enrol. Engage and partner with colleagues across campus. Colleagues from physics to the EDI office to student services helped design and deliver module content. Their contributions were varied, providing participants with a interdisciplinary view of ESD. Establish a Community of Practice (CoP) to provide a space for ongoing learning and conversation about ESD. The community of practice is a useful vehicle for supporting colleagues interested in further developing their ESD competencies.

Useful Resources

- <https://www.universityofgalway.ie/centre-excellence-learning-teaching/about-esd/>
- <https://www.advance-he.ac.uk/knowledge-hub/education-sustainable-development-review-literature-2015-2022>
- <https://www.unesco.org/en/articles/education-sustainable-development-goals-learning-objectives>

Funding Details

This course and the two ESD Lecturers are funded by the HEA SATLE Programme.

About the authors

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II6. Student Volunteer Ireland: Act4Change - Centring the SDGs in student volunteering

DR LORRAINE TANSEY



Institutions and Partner Organisations

HEI Partners: University of Limerick, University of Galway, University College Dublin, Technological University Dublin, University College Cork, Atlantic Technological University, Dublin City University; 1000+ Volunteer Involving Organisations (Non-profit Community Partners)

Description

The Act4Change project aimed to integrate the UN Sustainable Development Goals (SDGs) into student volunteering across Irish Higher Education Institutions (HEIs) at StudentVolunteer.ie – an online engagement platform to enable student and community

action. The project achieved significant progress through collaboration and funding from the National Volunteering Strategy. An outcome of this project is that student volunteers and Volunteer Involving Organisations (VIOs) are engaging with the SDGs framework through a new technical build that allows for identifying and mapping the SDGs to community action. Student Volunteer Ireland is a community of practice and Act4Change outcomes include growth in HEI membership to even greater number of student volunteers. Key accomplishments include technical enhancements to the StudentVolunteer.ie platform to centre the SDGs, development of educational tools, stakeholder engagement, and visibility efforts.

Intended Learning Outcomes

Overall Goal: To embed the SDGs within the StudentVolunteer.ie platform through the technical additions and online courses to enhance students' and VIOs knowledge and understanding of the SDGs with their local, national and global volunteering experiences.

1. **Goal:** To identify, design and implement a new technical solution to add the SDGs to the existing volunteer role descriptions, the selection process for new role description postings and searchability by SDGs for students seeking volunteering on StudentVolunteer.ie
2. **Goal:** To develop a SDGs element of reflection for students seeking their student volunteer award at their HEI built into the online reflection, with questions on ESD and contribution of volunteering to the SDGs.
3. **Goal:** To develop global citizenship and student volunteering online training programmes (one for VIOs, one for students) to

enable them to understand the positioning/role of the SDGs in student volunteering activity.

Teaching and Learning Approach

This initiative embeds ESD through active, reflective, and participatory learning strategies. Learners engage with real-world examples of volunteer projects mapped to the SDGs, fostering systems thinking and global-local connections. Interactive activities—such as drag-and-drop exercises, scenario mapping, and reflective prompts—encourage critical thinking and personal relevance. The module uses inquiry-based learning to explore how volunteering contributes to sustainable development, and supports transformative learning by prompting participants to reframe their understanding of impact and civic responsibility. Resources like SDG mapping templates and action planning tools promote practical application and future-oriented thinking. The pedagogy aligns with ESD principles by integrating values, sustainability competencies, and collaborative learning, empowering volunteer managers to lead change within their organisations and communities.

Assessment Strategy

Learners complete a short **reflective diary** at the end of the module, encouraging them to critically examine how their organisation's volunteer activities align with the SDGs. Prompts guide participants to explore what they've learned, how their perspective on volunteering and sustainability has evolved, and what actions they plan to take. This strategy supports **transformative learning**, fosters **personal and**

professional growth, and enables learners to connect global goals with local practice. The reflections may be shared in peer forums or used internally for strategic planning and impact reporting.

Impact and Outcomes

Sample Student Diary:

Aoife, College of Science

“My volunteering experiences are aligning with several of the United Nations Sustainable Development Goals (SDGs), such as Good Health and Well-being (SDG 3) and Reduced Inequalities (SDG 10).

By gaining skills in active listening and crisis intervention, I became better equipped to provide empathetic and non-judgmental support, helping to break down barriers and reduce stigma. At my local GAA Camogie club, I helped create a safe and supportive environment where young people could develop life skills, build confidence, and form positive relationships. This addresses the need for inclusive and healthy communities, contributing to SDGs.

Staff feedback:

“Our students have remarked at the ease by which they can view and apply for such a diverse range of volunteering opportunities through the SDGs, giving them the opportunity to try new things and build confidence.” *Dr Ann O'Brien, Community Engagement Manager, University of Galway*

Collaboration, Partnerships & Student Participation

The Act4Change project has enhanced and empowered

volunteering for the SDGs as it strengthens Education for Sustainable Development (ESD) within the five Higher Education Institutions (HEIs) members of StudentVolunteer.ie (UCD, UCC, TU Dublin, UL, University of Galway). As a direct result of Act4Change two additional HEIs ATU and DCU centre the SDGs in their student volunteering programmes and contribute to the impact of Act4Change.

Responding to national policies, the SDGs are now centred within our new technical platform at StudentVolunteer.ie, delivering an online tool for students and Volunteer Involving Organisations (VIOs). As a result, over 1,000 VIOs have been invited to design volunteer roles aligned to SDGs. Higher Education students search volunteering programmes by SDG, learn about the SDG-volunteering link and then reflect on impact of volunteering on global change when applying online for a student volunteering award.

Student Engagement

Student Volunteer Ireland mobilises students to engage with volunteering projects on and off campuses. Since 2016 over 26,000 students have registered to volunteer and logged 468,090 hours of student volunteer time.

Discipline

Teaching and Learning

Best Practices & Resources

Top Tip

Map the SDGs to volunteering projects in partnership with your community organisations.

Useful Resources

<http://www.studentvolunteer.ie/>

Funding Details

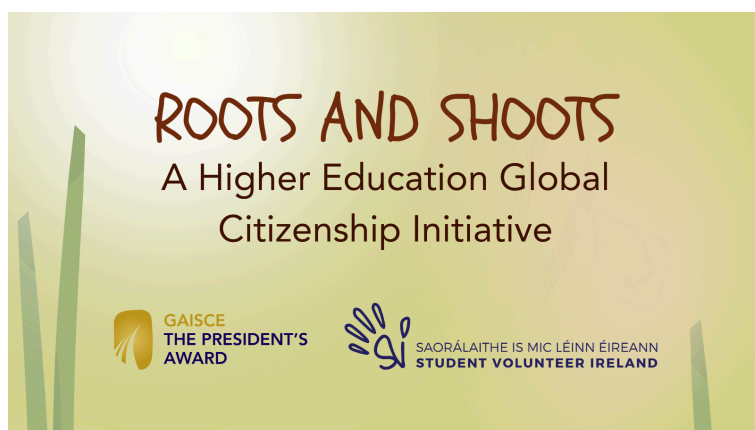
Ireland's National Volunteering Strategy 2021–2025 is a comprehensive government framework developed by the Department of Rural and Community Development and the Gaeltacht.

About the author

Dr Lorraine Tansey
STUDENT VOLUNTEER IRELAND

117. Roots and Shoots: Student Volunteer Ireland and Gaisce bring Global Citizenship Education to Higher Education Institutions

DR LORRAINE TANSEY; CLÍODHNA MALONE; AND KAROL QUINN



Institutions and Partner Organisations

Gaisce and HEI Partners: University of Limerick, University of Galway, University College Dublin, Technological University Dublin, University College Cork, Atlantic Technological University, Dublin City University.

Description

The *Roots and Shoots* Initiative is designed for third-level students to promote the connections between local actions and global impacts and foster a sense of shared responsibility in how we address systemic challenges. This initiative aims to enhance the volunteering landscape amongst third-level students to build awareness and understanding of Global Citizenship Education (GCE).

Intended Learning Outcomes

Through a series of hands-on training workshops, conferences and residential experiences, students will develop a critical understanding of interconnected global issues, recognise how local actions can have global implications, and embrace the concept of shared responsibility for the planet. Over 200 students across campuses will participate in Sustainable Development Goals (SDGs) workshops, intervarsity sessions, and two in-person residentials. Students can gain recognition of these learning experiences through the Gaisce Medal Programme. Gaisce participants will have the opportunity to be recognised for their non-formal learning and achievements while also completing the Community Involvement aspect of their Gaisce Award.

- This project is designed with students, as we seek to transform student volunteering and action into a powerful tool for global awareness and community engagement.
- It will provide students with opportunities to engage as active citizens, making meaningful contributions across their local

and global environments.

- This will involve trainings, workshops, networking opportunities and a symposium with student volunteers from the global community.

Teaching and Learning Approach

The learning strategies bridge across three dimensions to embed ESD:

Local engagement

- Promote opportunities for students to volunteer at local level in communities
- Recruit and match students to volunteering opportunities that contribute to the SDGs
- Students encourage and support others to engage in volunteering with a sense of shared understanding of GCE
- Train volunteers on the Roots and Shoots of GCE and link the global context of the SDGs.

National engagement

- Three events focussing on SDG 17 and an exploration of the ethics and values of partnerships
- A 5-day residential event for students to critically explore SDG 17 and integrate the value of local and global partnerships within a GCE Framework
- PALs and Gold Gaisce participants mentor Silver and Bronze Gaisce participants to develop a deeper understanding of GCE in both HEIs and national-level

International Engagement

- Online conference for students between 6 Gaisce equivalent organisations (3 from Global North and 3 from Global South) to explore volunteering and SDG 17 in different contexts, sharing best practice for HEI level GCE-related activities.

Assessment Strategy

In addition to students individual reflection diaries at StudentVolunteer.ie overall measurement includes:

- Pre- and Post-questionnaire for participants collected before and after the workshop. Observations of facilitators in relation to participation and workshop materials as qualitative evidence.
- Numbers in attendance and Evidence of participation in workshop events and creation of visual art outputs. Exit survey for participants.
- Qualitative semi-structured interview with 4 participants. Quantitative survey indicating knowledge gained, understanding of concepts, likelihood to act upon learning
- Participant evaluation surveys. Evidence of Terms of Ref for the conference. Evidence of discourse about the learning and links between issues faced. Creation of 6 case studies.

Impact and Outcomes

We aim to enable students to grow their awareness of interconnected global issues and the Sustainable Development Goals (SDGs), deepen their understanding of the connections between local actions and global impacts, and encourage their

sense of shared responsibility in addressing systemic challenges. This project marks a bold step forward in integrating volunteering and Global Citizenship Education into the student experience with a long term impact of empowering young people to make meaningful contributions to address global challenges.

Collaboration, Partnerships & Student Participation

‘Roots and Shoots: A Higher Education Global Citizenship Initiative’ is a joint partnership between Gaisce – The President’s Award and Student Volunteer Ireland (StudentVolunteer.ie), funded by Irish Aid.

Avril Ryan, CEO of Gaisce – The President’s Award, said:

“This launch marks an exciting new chapter for student volunteering in Ireland. We are delighted to present this invaluable opportunity to third-level students to delve into Global Citizenship Education while supporting their journey to achieve their Gaisce Award. Through this initiative, we hope to empower young people to recognise the power of their action, locally and globally, foster a sense of responsibility for the world we all share and support their achievements in non-formal learning and real-world experience. I am proud of the collaboration between Gaisce and Student Volunteer Ireland, and I look forward to seeing the impact these students will make as active global citizens. We would like to acknowledge the invaluable support of Irish Aid in supporting this important initiative.”

Student Engagement

Roots and Shoots will engage 100 students in the Global

Citizenship Education workshops, and a further 100 students in the Intervarsity, Symposium and Residential.

Disciplines

- Education
- Teaching and Learning

Programme

Roots and Shoots is available to all third level students on an extra-curricular and co-curricular basis.

Best Practices & Resources

Top Tip

Reflection with a project team across collaborative partners supports a strengths based approach.

Useful Resources

- developmenteducation.ie
- www.StudentVolunteer.ie
- www.gaisce.ie/programme-partners

Funding Details

Irish Aid, Global Citizenship Education Grant

About the authors

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II8. Education for Sustainable Development: Teaching and Learning Case Studies (University College Dublin)

SARAH BROWNE; NICOLA DERVAN; OLGA IOANNIDOU; KAREN
KEAVENEY; CELINE MURRIN; PROFESSOR EMMA O'NEILL; AND
LEIGH GRAVES WOLF

Case Studies Document

<https://hub.teachingandlearning.ie/resource/education-for-sustainable-development-teaching-and-learning-case-studies/>

Overview

The case studies presented were part of an interdisciplinary project at University College Dublin entitled: How we teach and learn: Key competencies for engaging with Education for Sustainable Development. The project was funded by the UCD Sustainability Seed Funding Scheme 2024/2025.

Authors

- Dr. Sarah Browne, School of Public Health, Physiotherapy and Sports Science
- Ms. Nicola Dervan, School of Public Health, Physiotherapy and Sports Science
- Dr. Leigh Graves Wolf, Teaching and Learning at UCD
- Dr. Olga Ioannidou, School of Education
- Assoc. Prof. Karen Keaveney, School of Agriculture and Food Science
- Assoc. Prof. Celine Murrin, School of Public Health, Physiotherapy and Sports Science
- Prof. Emma J O'Neill, School of Veterinary Medicine

Disciplines

- Agriculture Forestry, Fisheries and Veterinary
- Health and Welfare
- Social Sciences, Journalism and Information
- Education
- Teaching and Learning

Programmes

- MSc in Clinical Nutrition and Dietetics
- MA Education
- MSc Education, Children & Youth
- MSc(Agr) in Sustainable Agriculture and Rural Development
- BSc Human Nutrition

Student Engagement

The initiative reached 92 students across 5 programmes in 4 modules. There were 56 taught masters students, and of these 10 were international students. There were 36 final year undergraduate students.

Background

It is widely accepted that Higher Education institutions are well

placed to take a leadership role as ‘agents of change’ in transforming societies towards a more sustainable future by effectively championing education for sustainable development (ESD) (Berchin, 2021). UNESCO has identified the latter as key to achievement of sustainable development goal (SDG) 4, Quality Education, and in turn a key driver for the other sixteen SDGs. Additionally, there is increasing recognition that in order to tackle the ‘wicked’ global challenges we face, there is a critical need for transdisciplinary engagement with ESD, and in particular, interdisciplinary collaboration in its delivery. What there is less clarity about is how students across all disciplines can be supported in engaging with ESD within their programmes in order to meaningfully embrace sustainability challenges and gain an appreciation and understanding of the relevance of the SDGs to their careers and lives. This is particularly challenging in subject areas not traditionally linked with sustainability, or where the linkage is less intuitive.

UNESCO identified eight, content-independent core competencies considered essential for enabling ‘sustainability citizens’ and the successful achievement of the SDGs (UNESCO, 2017). They include systems thinking, anticipatory, normative, strategic, collaborative, critical thinking, self-awareness, and integrated problem-solving competencies. In an educational setting, competency has been defined as, “a complex combination of knowledge, skills, understanding, values, attitudes and desire which lead to effective, embodied human action in the world, in a particular domain” (Hoskins, 2008).

Gaining proficiency and progression in competence towards mastery of the ESD core competencies requires experiential learning opportunities, and is in turn underpinned by effective metacognitive skills.

Metacognition, or ‘thinking about thinking’ refers to the ability to assess one’s ability or approach, reflect and strategize how to improve and progress (Flavell, 1979). This overall approach is core

to effective lifelong learning and, in turn, the ultimate goal of enabling agile, adaptable 'sustainability citizens'.

Exploring strategies that support staff and students from diverse disciplines in the development of these core ESD competencies, supported by metacognitive approaches, offers huge potential benefits to students and opportunities in turn for meaningful interdisciplinary collaborations.

This initiative engaged the UCD community to explore and strengthen the knowledge and application of key competencies for ESD as a step towards the development of a shared pathway to ESD integration across disciplines.



Project team at a UCD community engagement event, March 2025. From left to right: Celine Murrin, Olga Ioannidou, Leigh Graves-Wolf, Karen Keaveney, Sarah Browne, Nicola Dervan, Emma O'Neill

Description of Approach Taken

A pre-existing case study performed by one of the authors, Emma O'Neill, had explored application of a learning design framework, the Metacognition Design Framework (O'Neill et al. 2025), to support metacognitive skill development in students

[\(Metacognitive Learning Video Case Study\)](#). This case study had used this framework and its 'I-SEE' learning strategies; Introducing, Signposting, Enabling and Evaluating, as a mechanism for supporting student-centred learning in the module, 'Veterinary Clinical Neurology'.

This module supported students in action-oriented collaborative groups, working on gradual release clinical problems learning how to critically evaluate and problem solve real-life clinical scenarios. Students were also coached to critically reflect on their learning allowing them to improve and up-skill moving forwards. The students involved had recognised that this approach helped them to become more aware of their learning, prompting them to stop and question if they understood concepts, and aiding them in seeing the 'big picture.'

Staff noted that taking this approach moved the learning focus towards more holistic approaches building deeper knowledge rather than focussing on surface approaches. The student-centred learning approaches taken in this module align clearly with those outlined by UNESCO as key to supporting ESD (UNESCO, 2017) and sustainability core competency development.

Competencies cannot be taught, but instead must be developed by learners through action, experience and critical reflection on this process. This module provided opportunities for students to develop the eight core competencies referred to by UNESCO, with metacognitive skills underpinning effective development of them all. This module design and the associated learning resources developed as part of this UCD Fellowship in Teaching and Academic Development project were used as a point of reference for the current collaborative project.

The aim of this collaborative project was to design and learn from four real-world case studies in different disciplinary contexts that placed ESD competency development and metacognitive approaches centrally within the teaching and learning activities. The case studies were designed to reflect the disciplines of the collaborative group and, through the nature of the diversity of

disciplines involved, the project showcases the potential for transferability and scalability of this approach. The case studies in the following table were designed, developed and trialled in the academic year 2024-25. More detailed descriptions of each of these four individual case studies can be accessed below in this document.

Case study #	Title	Author	Discipline	Programmes & modules	Real world problem	Number and level of students
CS1	ESD Competency Application in Clinical Nutrition Education	Nicola Dervan & Sarah Browne	Health & Welfare, Education	MSc in Clinical Nutrition and Dietetics; Dietetics Prof Practice 1 (DIET40060)	Integrating systems thinking into clinical practice	26; Taught postgraduate
CS2	Theorizing Education for Sustainable Development: Exploring Its Role in Formal Education Systems	Olga Ioannidou	Education, Teaching & Learning	MA Education, MSc Education, Children & Youth; Education for 21st Century	Integration of ESD into national curricula	10; Taught postgraduate, international students
CS3	Rural Placemaking – Critical Approaches to ‘Obvious’ Sustainability	Karen Keaveney	Agriculture, Forestry, Fisheries and Veterinary, Social Sciences, Journalism and Information	MSc(Agr) in Sustainable Agriculture and Rural Development; Rural Placemaking (RDEV40840)	Developing a sustainable placemaking strategy for a rural town	20; Taught postgraduate conversion course
CS4	Embedding ESD in Public Health Nutrition	Celine Murrin	Health & Welfare	BSc Human Nutrition Year 4; Public Health Nutrition	Embedding systems thinking into public health at a population level	36; Undergraduate final-year optional module

Collaboration, Partnerships & Student Participation

This project was a collaborative project involving multiple disciplines, with the overall aim of exploring the broad applicability of this approach. The disciplines represented included; Nutrition and Dietetics, Education, Rural Development, Human Nutrition, Veterinary Medicine, and Teaching and Learning.

The project team collaborated on the development of the case studies and reviewed them as they developed. Each of the case studies involved students as participants in the modules. Their feedback was gathered informally as part of the process in order to gain insight into their experiences of this approach to learning.

Colleagues from UCD Agile helped to facilitate a World Cafe discussion forum at a UCD community engagement workshop in March 2025, seeking to explore the experiences and views of educators around integration of ESD competencies and application of the approaches showcased in the case studies. The learning from this discussion is being used to frame recommendations for future development of ESD at the university.

Intended Learning Outcomes

This project represents a broad approach that was applied within different modules and programmes. In view of that, the intended learning outcomes were developed specifically for each of the individual case studies rather than for the project overall. The learning outcomes in each case study reflected the inclusion of competency development as a core goal.

The overall outcomes intended from this approach were;

- Firstly, to gain insight into how broadly applicable and adaptable the approaches were for use in a variety of disciplines.
- Secondly, to create example case studies in varied disciplines to offer other educators the opportunity to envisage how the approach could be adapted.
- Thirdly, to identify resources that might be required to facilitate a roll out of this approach more broadly.

Teaching and Learning Approach

The first step for the project was for the project team to examine together both the ESD competencies and the Metacognition Design Framework. The aim was to explore how new ways of learning will support adaptive capacity of graduates / professions to deal with complex problems in interdisciplinary and collaborative ways. Proposed case studies were presented and critically discussed at team meetings.

The exact strategy varied from case study to case study within this initiative; however pedagogical approaches were very similar. All prioritised a student-centred learning with a focus on action-oriented methodology with students working collaboratively on 'real world' problems or projects. A critically reflective learning style was encouraged and supported through use of methods, such as the 'I-SEE' learning strategies from the Metacognition Design Framework, to develop metacognitive skills in students.

Assessment Strategy

The assessment strategy varied for each of the individual case

studies; however a key feature of each was that the assessment had sufficient complexity to require students to engage in metacognitive strategy use to successfully complete the assessment.

For example, the module, “Embedding ESD in Public Health Nutrition” required students to create a concept map highlighting and exploring all of the interrelated factors involved in a given real-world nutritional problem.

Impact & Outcomes

The complexities and extent of current global challenges dictates a transformational shift; there is an increasing acceptance that supporting transdisciplinarity in education is key (Binagwaho, 2022). In order to achieve this type of transdisciplinarity, mechanisms are needed to create opportunities for collaboration and co-creation of knowledge that transcend the disciplines, a situation that starts with common language and shared understanding.

The case studies resulting from this initiative provide accessible examples of ESD competency integration in broad academic settings, and allow other educators insight into how the same approach could be adapted to suit their own disciplines. By demonstrating that ESD extends beyond “green” subjects to encompass critical thinking, self-awareness, and collaborative problem-solving across all disciplines, the outcomes are a step towards transformational change in how sustainability is positioned within higher education curricula.

Best Practices & Resources

Top Tips

This competency-based approach offered an adaptable and practical way to frame education for sustainable development within disciplines not typically perceived as 'green' or where sustainability may initially appear less relevant. It offers an accessible starting point to initiate the conversation, with our experiences showing that this in turn provides clear areas for future expansion.

Underpinning this approach with student-centred teaching and learning techniques designed to support critically reflective learning and metacognitive skill development helps students to progress their competencies through actively strategising, evaluating their progress, and adjusting their approaches.

Useful Resources

- An **infographic from this project** can be accessed via UCD Teaching and Learning Resources: Education for Sustainable Development
<https://www.ucd.ie/teaching/resources/resourcesa-z/>
- **Metacognitive Learning Resource (developed by Emma O'Neill)**: Open access experiential learning resource showcasing use of the Metacognitive Design Framework and 'I-SEE' Learning Approaches was developed by Emma O'Neill can be accessed via:
<https://www.ucd.ie/cshe/metacognitivelearning/>

- This webpage also contains links to video case studies and a description of the original UCD Fellowship in Teaching and Academic Development study.

Funding Details

The initiative presented received seed funding from UCD Sustainability Office Seed Funding for Sustainability Initiatives 2024.

The Veterinary Clinical Neurology case study referred to was part of a previous UCD Fellowship in Teaching and Academic Development study funded by UCD Teaching and Learning.

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Dr Leigh Graves Wolf
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II9. ESD Competency Application in Clinical Nutrition Education

NICOLA DERVAN AND SARAH BROWNE

Discipline: Health and Welfare

Programme: UCD MSc in Clinical Nutrition and Dietetics

Student Engagement: 20 students registered to the module in
Dietetics Professional Practice in Spring Trimester 2024/2025

Initiative Description

Dietitians, as the regulated nutrition experts in healthcare, can act as change agents in the transition to more sustainable food and healthcare systems and thus improving planetary health. Dietitians contribute to achieving the Sustainable Development Goals (SDGs), particularly SDG 2 Zero hunger, SDG 3 Good Health and Well Being

and SDG 12 Responsible Consumption and Production. Universities must adequately prepare dietetic students so that they are workforce ready to deliver on these outcomes.

This teaching and learning case study was conducted within a 2-year master's programme in Clinical Nutrition and Dietetics at UCD as part of a professional practice module in year 1 semester 1 of the programme. The purpose of the teaching session was for students to learn about and apply the nutrition care process. The nutrition care process is a systematic approach that dietitians use to guide nutrition assessment and care. It provides a framework for critical thinking and decision making and improved clinical nutrition outcomes have been demonstrated. This approach is used as the backbone to all clinical case studies throughout the programme and then extends into professional practice in Ireland. The aim was to recontextualise the learning outcomes and teaching strategies for this aspect of clinical education through the lens of ESD. Given the cross-cutting application of the nutrition care process, this will ultimately support the development of dietitians who can provide high quality, patient-centred sustainable healthcare in diverse scenarios.

Through the recontextualising process, opportunities to improve teaching pedagogy to support our goals in improving patient care and sustainability in healthcare became apparent. We identified opportunities to integrate a systems thinking approach and to facilitate growth in a systems thinking mindset, underpinned by the development of deeper problem solving and critical thinking competencies. Firstly, we introduced a new systems thinking introductory session with a case study application. Thereafter, we flipped the classroom to support students' learning on the nutrition care process integrating reusable resources including pre-recorded videos, case studies, a systems thinking checklist and reflective activities. Finally, we utilised our classroom to collaboratively tackle problem-based case studies which required the students to apply critical thinking, problem solving, and a systems thinking approach to provide high quality patient care. The

learning activities were underpinned by the I-SEE approach to ensure a student-centred learning experience that supported metacognitive skill development and effective learning.

Collaboration, Partnerships & Student Participation

The initial concept was presented to a cross disciplinary group of educators at UCD with feedback provided through the lens of ESD.

The learning initiative also utilised a strong student-educator co-creation approach by:

1. students providing feedback on their understanding of systems thinking and their ability to apply it in the context of nutritional care.
2. students providing feedback on the teaching and learning strategies employed to build knowledge and skills on systems thinking.
3. educator analysis of tasks allocated to the students as part of the initiative.

Intended Learning Outcomes

The case study was an exploration of the integration of the ESD competencies and the metacognition framework in dietetics clinical education. Exploratory learning outcomes were developed.

At the end of the case study the students should be able to:

- Apply a systems thinking approach in the provision of individualised nutritional care.

- Demonstrate critical thinking and collaboration in the provision of individualised nutritional care.
- Demonstrate metacognitive skill development.

Teaching and Learning Approach

To achieve the learning outcomes, the following strategies were employed:

- **Step 1:** Introduction of a teaching session on systems thinking with socio-ecological model integration and case study application.
- **Step 2:** Self-directed completion of recorded videos and activities on the early stages of nutrition care process and systems thinking integration. Students asked to complete reflective activities, resolve problems, and provided with a tool to aid the application of systems thinking.
- **Step 3:** Workshops which centred on the collaborative completion of complex case studies using the nutrition care process and systems thinking tool, reflection, critical thinking, and problem solving skills.
- **Step 4:** Leverage the virtual learning environment to develop metacognitive skills across steps 1-4 by scaffolding learning and providing clear instructions, signposting, checkpoints, and evaluation tools.

Assessment Strategy

The assessment for our case study was formative as we were using exploratory learning outcomes for this activity. The formative assessment involved reviewing students' submissions of the

completed clinical case study activity forms provided for independent study and at a group level documenting what they did competently and what they seemed to find challenging. We also captured students' responses in class to questions posed by the lecturer.

Impact & Outcomes

There was a positive impact on student learning, with students developing confidence to apply systems thinking to deliver individualised nutritional care in a clinical context.

The learning initiative is now embedded in year 1 of the dietetics programme and across case study templates in the placement modules. We plan to incorporate teaching and learning strategies on the ESD competencies of systems thinking, integrated problem-solving and anticipatory in year 2 of the programme to ensure continuity of skills and expectations.

Best Practices & Resources — Top Tips

- Reusable learning objects (e.g. videos, case studies, checklists) were essential to the implementation of the I-SEE method as part of the metacognitive design framework. They support students in transformational, active learning pedagogy, and competency development.
- Seek student feedback on the challenges they encounter in their learning. This will support the educator in planning for educational scaffolding and gradual exposure to more complex scenarios and competencies.

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I20. Theorising Education for Sustainable Development: Exploring Its Role in Formal Education Systems

OLGA IOANNIDOU

Disciplines: – Education – Teaching and Learning

Programmes: – MA Education – MSc Education, Children & Youth

Student Engagement: 10 international, postgraduate students within the UCD School of Education in 2024/2025

Initiative Description

This module aims to help learners develop the ability to understand and articulate the role of education in addressing future sustainability challenges, recognising its transformative potential at

local, national, and global levels. The case study provides a theoretical framing of Education for Sustainable Development (ESD) and the Sustainable Development Goals (SDGs) in education, equipping future educators across multiple fields and levels with the knowledge to embed sustainability in their teaching practice. Students familiarise themselves with key theoretical frameworks and assessment approaches targeting sustainability competencies, enabling them to critically analyse existing educational practices. They also reflect on the importance of 21st-century skills—such as critical thinking, creativity, collaboration, and digital literacy—and evaluate their relevance to advancing sustainability goals. By applying ESD principles, students analyse and design curricula that integrate sustainability in contextually appropriate and coherent ways, building both conceptual understanding and practical capacity for action.

Collaboration, Partnerships & Student Participation

Students actively shape the module through group discussions, independent assignments, and case analysis. Assignments encourage local-global application of concepts. While this initiative is primarily institutional, it is informed by global sustainability policy frameworks (e.g., SDGs, UNESCO, OECD).

Intended Learning Outcomes

At the end of the case study the students are able to:

- Understand and articulate the role of education in addressing future sustainability challenges.

- Familiarise with theoretical frameworks and assessment methods targeting sustainability competencies.
- Critically reflect on the role of 21st-century skills in Education and their relevance to sustainability.
- Apply ESD principles in curriculum analysis and design.

Teaching and Learning Approach

The module adopts experiential learning, inquiry-based approaches, and student-centred methods. It incorporates real-world problem analysis, metacognitive skill development, and constructivist engagement with sustainability. Given that this module included postgraduate international students, their experiences and expertise are used as a basis for critical reflections, whole class presentations and discussions, as well as debates. Their reflexivity is also highlighted in a position paper produced by students as an individual task.

Assessment Strategy

The central assessment is a reflexive position paper where students critically examine one 21st-century skill (e.g., sustainability, digital literacy) and design a plan for its integration into national curricula. Assessment criteria include critical analysis of relevant theoretical frameworks, policy alignment, feasibility of implementation, and engagement with ESD theory.

Impact & Outcomes

Student reflections reveal a transformation in their understanding of sustainability—moving from a limited, environmentally-focused perspective to a broader, systemic and critical engagement with the concept. Through the module, students develop the capacity to interrogate how national curricula define and incorporate ESD, sustainability, and related competencies.

They become adept at articulating well-informed arguments for and against the integration of sustainability competencies within specific national and cultural contexts. The assignment design—which invites students to analyse education policies from their home countries—is a unique and empowering aspect of the module. It fosters a deeper connection to their own educational systems and encourages them to reflect on both global frameworks and local realities.

This reflective, comparative, and policy-oriented approach enhances students' confidence in navigating complex educational debates. Feedback indicates that students value the space provided for critical thinking and self-reflection, and come away with a greater appreciation of how education can serve as a transformative force for sustainable development at multiple levels—individual, institutional, and societal.

Best Practices & Resources — Top Tips

- Clarify that ESD theory is complex and open to interpretation.
- Make content relevant to students' lives, practices, and national contexts. Emphasise participation and students' role in shaping the dialogue.

- Discuss critically the origins and implications of UN and EU ESD policies.

About the author

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I2I. Rural Placemaking – Critical Approaches to ‘Obvious’ Sustainability

KAREN KEAVENEY

Disciplines: – Agriculture Forestry, Fisheries and Veterinary –
Social Sciences, Journalism and Information

Programme: MSc(Agr) in Sustainable Agriculture and Rural
Development

Student Engagement: 20 students registered to the module in
Rural Placemaking 2024/2025

Keywords: Placemaking, Rural Development, Rural Sustainability,
Critical Thinking, Community Engagement

Initiative Description

The Master of Science (Agr) in Sustainable Agriculture & Rural Development at UCD School of Agriculture & Food Science focuses on current and future transformations in agriculture and rural development. This programme adopts a place-based approach to

rural change and futures, exploring how agriculture can contribute to sustainable development, and how communities and governments can address challenges and opportunities in changing rural areas. The Masters aims to foster a holistic understanding of sustainable development, moving beyond a singular focus (e.g., environmental only) to an integrated approach encompassing environmental, economic, social, and cultural aspects. It serves as a 'conversion course', accepting students from diverse academic backgrounds, including agriculture, humanities, business, music, literature, arts. It encourages peer learning and promotes a broader perspective on sustainability.

A new module within this Masters called, 'Rural Placemaking', emphasises the integration of various disciplines like urban design and planning, economic development, community development, arts, culture and activation, engineering and infrastructure, and sustainability and caring for place. This module addresses 'real-world' problems and projects, aiming to equip students with strategic, collaborative, and integrated problem-solving competencies.

The assessment for this module involves a problem-based learning project where students develop a comprehensive placemaking strategy for a rural town, applying key concepts of placemaking and sustainable development to address specific local challenges and opportunities. The initiative seeks to empower students to facilitate future change by bringing together different stakeholders and promoting a bottom-up approach to community development.

Ultimately, the module and wider programme strives to help students understand the multifaceted meaning of sustainability, ensuring that social, economic, cultural, indigenous, and local considerations are integrated with environmental goals.

Collaboration, Partnerships & Student Participation

Rural Placemaking includes Local Development Companies (agencies responsible for social inclusion and local development across Ireland), the respective Local Government where the town in question is based, and community groups through its practical, problem-based learning approach. Students are tasked with developing placemaking strategies for real or imagined rural towns, which necessitates engaging with the types of challenges and opportunities faced by these communities through active listening and research. This project assessment demands a holistic approach, requiring students to consider various elements that make a place function well, such as infrastructure, economics, and community engagement. It also requires students to lead on learning, and take responsibility for the outcome of the project.

The module's design, which also caters to part-time students working in government/state agencies/private practice, further strengthens this connection, as these students bring direct experience from these organisations into the learning environment. The curriculum aims to move students toward a holistic understanding of sustainable development, preparing them to work with communities and facilitate future change. The Master's emphasis on bottom-up approaches and engaging with stakeholders ensures that students are equipped to work alongside these local entities to address community decline and build positive momentum.

Intended Learning Outcomes

The learning outcomes intended for those engaging with this initiative are focused on developing a holistic understanding and practical application of sustainable rural development and placemaking. At the end of the module students will be able to:

- Apply key concepts of placemaking and sustainable development to address challenges and opportunities in rural communities.
- Develop comprehensive placemaking strategies for rural towns, demonstrating a holistic approach while integrating their individual expertise.
- Utilise critical thinking to understand how different elements of sustainable development (environmental, economic, social, cultural) work together.
- Engage in strategic, collaborative, and integrated problem-solving approaches to address 'messy problems' in rural areas.
- Recognise and integrate social, economic, cultural, indigenous, and local considerations as key components alongside environmental goals in sustainable development initiatives.

Teaching and Learning Approach

A key pedagogical strategy is problem-based learning (PBL), exemplified by the 'Revitalising a Rural Town' assessment where students develop a comprehensive placemaking strategy for a rural town. The approach emphasises developing:

- **Ways of thinking**, in particular critical thinking, and the ability to analyse and evaluate information objectively, identify biases, and form reasoned judgments. Students are encouraged to question assumptions, scrutinise various perspectives on sustainability, and assess the effectiveness of different interventions.
- **Ways of practising**, such as strategic, collaborative, and integrated problem-solving. The module requires students to think strategically how to address specific challenges and opportunities within a locality, considering long-term goals for sustainable development. During the module, they identify priorities, allocate resources, and envision the steps needed to revitalise a community. Collaboration is key to this and emphasises working effectively with others to achieve shared goals. This approach recognises that sustainable development and placemaking are not solitary endeavours, but complex ones necessitating meaningful involvement of and collaboration between diverse stakeholders. The placemaking framework itself integrates and builds on the expertise of a range of disciplines, highlighting the collaborative nature of the work.

Assessment Strategy

The assessment strategy Rural Placemaking module is centred around a Problem-Based Learning (PBL) project. The core assessment involves students developing a comprehensive placemaking strategy for a real or imagined rural town. This project requires them to apply the key concepts of placemaking and sustainable development to address the unique challenges and opportunities faced by such communities.

Key assessment methods include:

- Groupwork – final report is produced by the group
- Reflective practice – individual student reflection on their experience of the project that emphasises how they developed their ‘ways of thinking’ and ‘ways of practising’
- Presentation – group presentations with stakeholders.

Impact & Outcomes

Competency Development: Students develop key competencies for sustainable development, directly connecting ESD to employability. They gain practical skills in strategic planning, collaboration, and integrated problem-solving, essential for careers in rural development, planning, and community work.

Holistic Understanding of Sustainability: Students move beyond singular disciplinary perspectives (e.g., environmental only) to embrace a holistic understanding of sustainable development, integrating economic, social, cultural, and indigenous considerations. This broadens their capacity to contribute effectively to diverse sustainability challenges.

Confidence and Action-Orientation: By engaging in ‘real world’ problems, students gain experience in applying their knowledge, which can increase their confidence in facilitating change and taking action. They learn to initiate a change by identifying opportunities for small wins with communities and building momentum.

Interdisciplinary Collaboration: Working on complex placemaking projects encourages students from diverse academic backgrounds (agriculture, arts, humanities, business) to collaborate, fostering peer learning and the ability to work effectively in interdisciplinary teams.

Best Practices & Resources — Top Tips

- Apply a 'place-based' lens to studying sustainability. This can support a holistic understanding of sustainable development and facilitate student learning to appreciate the complex dynamics involved in terms of agencies, organisations and individuals involved.
- Openly challenge student understanding of sustainability. If students come from different academic and professional backgrounds, they may have a singular or narrow perspective on what it is. Through class discussions and debate, assist students to gain perspectives from other disciplines and experiences by asking them to role play and 'put themselves in other people's shoes'.

About the author

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I22. Embedding ESD in Public Health Nutrition

CELINE MURRIN

Discipline: Health and Welfare

Programme: BSc Human Nutrition

Student Engagement: 36 students registered to the module in Public Health Nutrition Autumn Trimester 2024/2025

Keywords: Problem-based learning, systems thinking, concept map, public health

Initiative Description

Public Health Nutrition is defined as ‘The art and science of promoting population status via sustainable improvements in the food and nutrition system. Based on public health principles, it is a set of comprehensive and collaborative activities, ecological in perspective and intersectoral in scope, including environmental, educational, economic, technical and legislative measures’.

In this final year module, students build on their learning from the first three stages of their degree which provides a scientific understanding of how nutrients are derived from food and utilised by the body to maintain human function. They learn how nutritional imbalance can cause or lead to disease or ill health and the diets that can contribute to good health outcomes.

Public Health Nutrition provides a wider perspective for students to understand what leads to nutrition imbalances in a population. The subject applies core public health skills such as epidemiology to explore the ‘causes of the causes’ of nutrition-related health. Through the learning and assessment, students begin to recognise the complexity of nutrition problems in the population which are rarely straightforward and require multilevel, multicomponent interventions and policy solutions. It is designed to foster a systems thinking approach to understanding complex problems and working within the system to identify potential solutions.

Collaboration, Partnerships & Student Participation

This case study was developed with the support of colleagues within the UCD Education for Sustainable Development project. Students registered to the module were invited to reflect on whether they recognised the ESD competencies.

Intended Learning Outcomes

The learning outcome associated with this case study was for students to demonstrate the ability to critically analyse current findings from nutritional epidemiological studies on the determinants of nutritional health problems.

Teaching and Learning Approach

The module uses a problem based learning approach to learning for students. Students are introduced to key concepts in epidemiology and learn to apply them in a practical setting by solving a real world problem through critical review of health research evidence. Whilst the module was not specifically designed with an ESD focus, the core competencies were implicitly embedded in the module. The aim was to explore how this approach could be used as a base to create a meaningful linkage ESD that could be further developed.

Assessment Strategy

Students are divided into groups of 4 and assigned a real world public health problem in a particular region, such as Vitamin A deficiency in India. They then use a collaborative approach to look for evidence to describe the problem and to critically identify the determinants of the problem with evidence from peer reviewed literature. The evidence must be presented in the form of a concept map with linkages identified to illustrate the complexity of the problem, the ‘causes of the causes’ and to introduce the concept of systems thinking.

Impact & Outcomes

A sample of n=36 students completed a Google Form survey. The following proportions of students agreed that the assessment helped them to understand the respective competency:

Competency	Agreed
Systems thinking	89%
Collaboration	92%
Critical thinking	81%
Integrated problem solving	67%
Self-awareness	58%
Strategic	58%
Normative	53%
Anticipatory	75%

The students also provided comments which overall reflect a

different way of thinking as an impact of their learning including 'thinking upstream' and 'outside the box'.

Student feedback demonstrated an awareness of the core competencies, albeit without explicitly framing them as ESD competencies. Subsequent iterations of the module will articulate the learning objectives more explicitly, ensuring their alignment with these core competencies.

Best Practices & Resources — Top Tips

- Consider how one or more of the sustainable development goals aligns with the content of your module.
- Use current and past 'real world' problems as a way of developing the competencies.
- Encourage students to view the problem with the perspective of the 'real world' decision maker or stakeholder e.g. a government minister, a company manager.

About the author

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PART XXIII

SUBMITTED OPEN
EDUCATIONAL
RESOURCES

I23. Frugal Filmmaking

DR SARAH DURCAN; CLIONA HARMEY; AND CLAIRE NIDECKER



Description

An experimental 'eco-film' workshop for staff and students to acquire skills and deeper knowledge of analogue photochemical film processes in a post-digital era.

Benefit of this resource and how to make the best use of it

The publication serves as both a record of the workshop and a how-to manual for staff, students and artists in keeping with the DIY photochemical film culture pioneered by Esther Urlus, our visiting artist.

Resource Type

Educational Materials

Discipline

Arts and Humanities

Link

<https://hub.teachingandlearning.ie/resource/frugal-filmmaking/>

About the authors

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124. Toolkit for Teacher Educators to Embrace Social Justice Pedagogies

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SCANLON; DR JENNIFER WALTON-FISETTE; AND PROFESSOR
ELAINE MURTAGH



Description

The Toolkit for Teacher Educators to Embrace Social Justice Pedagogies offers a comprehensive resource for fostering equity-driven approaches in teacher education for teacher educators. The resource is tailored to embed social justice approaches within physical education teacher education programmes.

Benefit of this resource and how to make the best use of it

The toolkit includes testimonials from teacher educators and preservice teachers, case studies, visual prompts, readings, practical activities, a pedagogical framework, and opportunities for active engagement. The resource is tailored to embed social justice approaches within physical education teacher education programs.

Resource Type

- Multimedia Resource
- Open Pedagogy Resource
- Professional Development and Training Resource

Discipline

- Education
- Teaching and Learning

Link

<https://hub.teachingandlearning.ie/resource/toolkit-for-teacher-educators-to-embrace-social-justice-pedagogies/>

Funding Details

Education for global justice, solidarity and interconnectedness:
Developing and disseminating social justice approaches across
physical education teacher education programmes

Irish Research Council

DOI

<https://doi.org/10.34961/researchrepository-ul.27931542>

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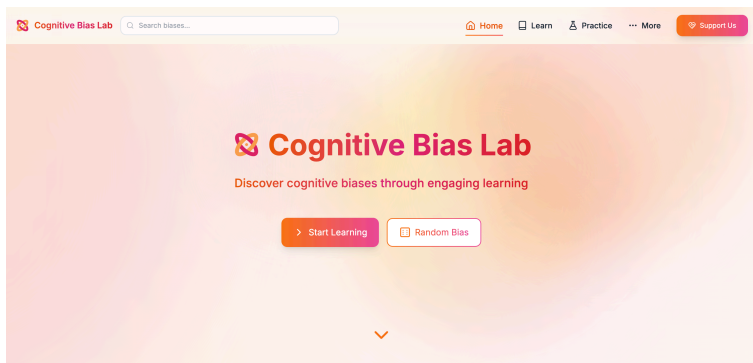
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125. Cognitive Bias Lab: An Interactive Platform for Exploring and Practicing Cognitive Biases Through Simulations and Learning Tools

VLADIMIR LOGINOV



Description

Cognitive Bias Lab is an interactive platform designed to help learners explore and practice recognizing cognitive biases.

Through simulations, quizzes, and role-play scenarios, it supports critical thinking, decision-making skills, and classroom discussions in psychology, education, and media literacy.

Benefit of this resource and how to make the best use of it

Cognitive Bias Lab offers an engaging, research-informed approach to teaching cognitive biases through interactive tools such as simulations, quizzes, and chatbot role-play. It enhances critical thinking and metacognitive skills by helping learners identify how biases shape judgment and decision-making in real-world scenarios.

Educators can use the platform as:

- A flipped classroom activity, where students explore simulations before group discussion
- An in-class exercise to provoke critical debate on reasoning and bias
- A formative assessment tool, allowing learners to test and reflect on their understanding
- A module supplement in psychology, behavioral economics, media literacy, or teacher training courses
- A design thinking warm-up for product or UX design students to identify user-side bias risks

The platform is modular and adaptable, allowing instructors to embed individual exercises into LMSs, customize discussion prompts, or pair activities with academic readings. It supports accessibility through intuitive navigation and is freely available to promote equitable access to high-quality learning resources.

Resource Type

- Multimedia Resource
- Assessments and Feedback Resource
- Open Software and Technology Resource

Discipline

- Information and Communication Technologies
- Social Sciences, Journalism and Information
- Teaching and Learning

Link

<https://hub.teachingandlearning.ie/resource/cognitive-bias-lab-an-interactive-platform-for-exploring-and-practicing-cognitive-biases-through-simulations-and-learning-tools/>

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I26. Embedding Sustainability Literacies in Postdigital

Learning Design

KATE MOLLOY AND CLARE THOMSON



Embedding Sustainability Literacies in Postdigital Learning Design

Kate Molloy and Clare Thomson

Description

This resource captures insights through zine making from workshop participants at the Education after the algorithm symposium hosted at DCU on 21 February 2025, facilitated by Kate Molloy and Clare Thomson.

Symposium: <https://hackthiscourse.com/symposium/?=1#/>

Slides: https://docs.google.com/presentation/d/1TpNdJxnLij-bi8bInJfxJwAeGR_JjKVv/edit?

Benefit of this resource and how to make the best use of it

Benefits

- Encourage workshop participants to examine convivial approaches to embedding sustainability literacies, such as degrowth and rewilding, rather than adopting a utopian/dystopian lens.
- Develop unique reflections on embedding sustainability, degrowth, and rewilding into ed tech and design practices.
- Model the intersections of sustainability literacies, creative futures, and learning design through open educational practices such as zine making.

How to Make Use of It

- Use the video as a discussion prompt for reflection on current sustainability and ed tech practices in staff development workshops or teaching contexts
- Adapt or re-create the workshop in your own context to compare and contrast insights, for instance, in a community of practice or in your own teaching

Resource Type

- Multimedia Resource
- Open Pedagogy Resource
- Professional Development and Training Resource

Discipline

- Education
- Teaching and Learning

Link

<https://hub.teachingandlearning.ie/resource/embedding-sustainability-literacies-in-postdigital-learning-design/>

DOI

<https://doi.org/10.6084/m9.figshare.29602364.v1>

About the authors

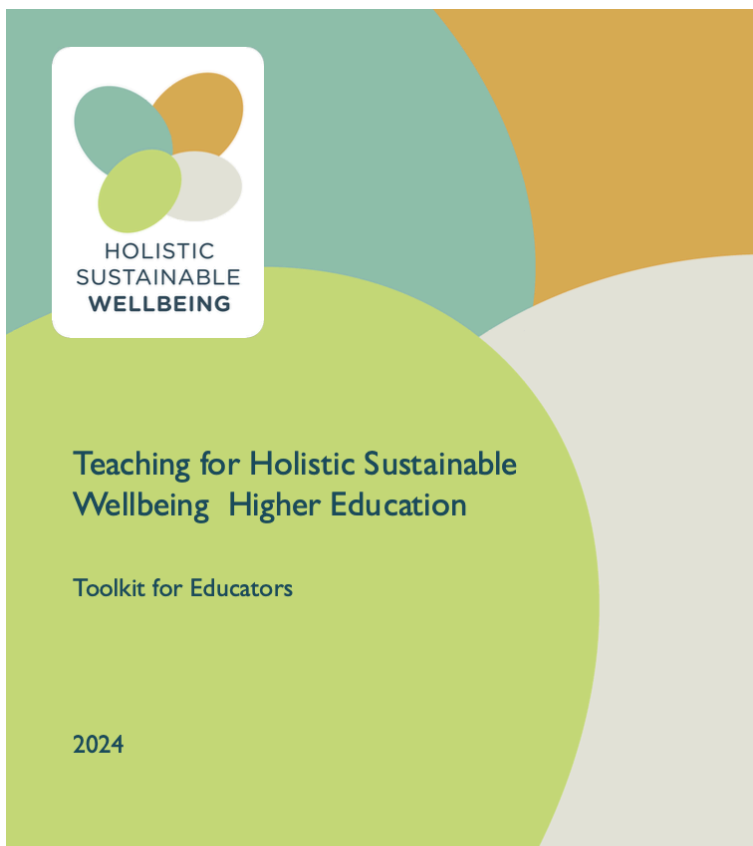
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127. Teaching for Holistic Sustainable Wellbeing in

Higher Education

DR GABRIELA MARTINEZ SAINZ; DR JESSICA SURDEY; AND DANIEL
GUIGUI



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AN tÚDARÁS um ARD-OIDEACHAS
HIGHER EDUCATION AUTHORITY



Rialtas na hÉireann
Government of Ireland



Description

This toolkit is designed to provide educators in Higher Education

with practical, adaptable tools and strategies for fostering sustainable wellbeing in their teaching through curriculum, assessment and pedagogy.

Benefit of this resource and how to make the best use of it

The framework and ideas in the toolkit recognise the importance of balancing academic achievement with the holistic development of students, focusing on their physical, mental, emotional, and social wellbeing while fostering among them a sense of planetary stewardship to prepare students for sustainable futures.

Resource Type

- Research and Policy Resource
- Professional Development and Training Resource

Discipline

- Education
- Teaching and Learning

Link

<https://hub.teachingandlearning.ie/resource/teaching-for-holistic-sustainable-wellbeing-in-higher-education/>

Funding Details

HEA Strategic Alignment of Teaching and Learning Enhancement
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128. The Fundamentals of Planning- A game of Contested Development

ELAINE EDMONDS

Contested DEVELOPMENT



Print Instructions

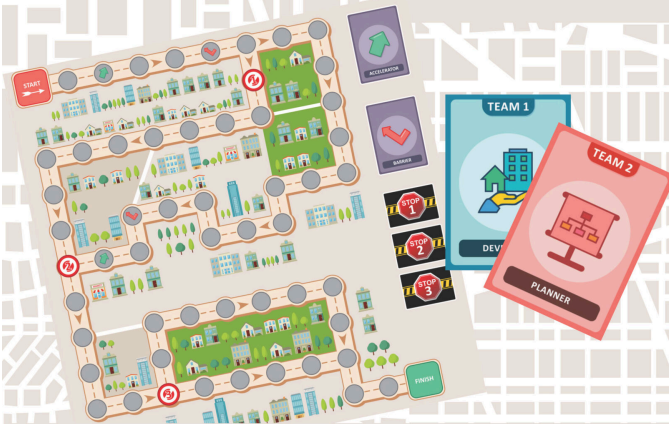
The Resource is sized at A3 and should be printed 2 sided, flipped on the short edge. In addition to the print you will need some tokens for the players. Lego Pieces are referenced but any stackable token will work.

The Game

Contested development is an educational game about urban planning and the environment. It is designed for use with college students and the public.

Play through stages of the planning process, encounter the real life challenges and solutions faced by teams and try to be first to market!

Playable at 3 levels and individuals or teams. The current Upload is for Level 1 teams play.



BEGINNER TEAM PLAY INSTRUCTIONS

- 1) EACH TABLE SPLIT INTO 2 EVEN GROUPS
- 2) GROUP MEMBERS PICK THEIR ROLE FROM THE PROFESSION CARDS AND ONE LEGO BRICK. EACH PLAYER MUST GET THEIR BRICK TO THE END AND BUILD THE TEAM TOWER
- 3) WHEN EACH TEAM IS READY, ROLL A DIE TO DECIDE WHICH TEAM GOES FIRST
- 4) TO START YOUR MOVE ROLL A DIE, MOVE THE NUMBER OF SPACES.
- 5) WHEN YOU REACH A STOP, YOU MUST DRAW A CARD. YOU CANNOT PASS A STOP EVEN IF YOU ROLLED MORE.
- 6) IF YOU LAND ON A BARRIER OR ACCELERATOR YOU MUST DRAW THE CORRESPONDING CARD AND TAKE THE ACTION.
- 6) THE FIRST TEAM TO GET ALL TEAM MEMBERS TO THE FINISH AND BUILD THEIR TOWER WINS!

Description

Contested development is an educational game about urban planning and the environment. It is designed for use with college students and the public. Play through stages of the planning process, encounter the real life challenges and solutions faced by teams and try to be first to market. This resource is for basic introduction team play.

Benefit of this resource and how to make the best use of it

The beginners team game can be used with any group seeking fundamental knowledge of sustainable development and the planning process. The learning outcomes include knowledge of:

- The Roles in the planning and development process
- The Stages of Planning
- Introduction to Planning Policy

Resource Type

- Open Pedagogy Resource

Discipline

- Arts and Humanities
- Natural Sciences, Mathematics and Statistics
- Social Sciences, Journalism and Information

Link

<https://hub.teachingandlearning.ie/resource/the-fundamentals-of-planning-a-game-of-contested-development-level-1/>

About the author

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Appendix: TUS ESD Case Study Compendium (Reference List)

Technological University of the Shannon – Compendium of Embedding Education for Sustainable Development in Teaching, Learning and Assessment

- [1. Challenge Matrix: A tool for using Challenge-Based Learning to Teach Sustainability Competencies](#)

Author(s): Ita Kavanagh, Department of Information Technology

- [2. Epic Stays: Upskilling European Tourism Enterprises to Advance Sustainable Accommodation Development](#)

Author(s): Dr Noëlle O'Connor, Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

- [3. SocialB – Social Business Educational EcoSystem for Sustainability and Growth](#)

Author(s): Dr Marie Taylor, Sustainable Development Research Institute (SDRI), TUS

- [4. Connected Minds: Building an Online Community for Postgraduate Researchers](#)
Author(s): Jenna Barry, Department of Information Technology
- [5. PPRD 08013 Innovative Technology and Future Skills](#)
Author(s): Ita Kavanagh, Department of Information Technology
- [6. Coffee Lab – Inclusive Coffee Learning Hub](#)
Author(s): June O’Byrne-Prior, Department of Hospitality, Tourism and Wellness
- [7. Exploring the Sustainable Development Goals through Coding](#)
Author(s): Pamela O’Brien, Department of Information Technology
- [8. HumanTech \(Digitalisation and Robotics Training for the Built Environment\)](#)
Author(s): Gloria Callinan, Sustainable Development Research Institute (SDRI), TUS
- [9. TUS WEWRITE! Academic Writing Generativity Project](#)
Author(s): Jennifer Moran Stritch, Department of Applied Social Sciences and Social Sciences ConneXions Research Institute
- [10. POWER-E-COM – Empowering Renewable and Citizen](#)

[Energy Communities in Ireland](#)

Author(s): Gloria Callinan, Sustainable Development Research Institute (SDRI), TUS

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[11. The Go Green Project!](#)

Author(s): Dr. Rita Scully, Department of the Built Environment

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[12. UPLIFT: Revolutionising European Film and Literary Tourism with Immersive Technology Integration in Vocational Education and Training \(VET\) and Small Medium Enterprises \(SMEs\) Development](#)

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Author(s): Dr Anthony Johnston, Faculty of Business and Hospitality

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[14. GreenHive – A European Ecosystem for Sustainability Education](#)

Author(s): Dr. Marie Taylor, Sustainable Development Research Institute (SDRI), TUS

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[15. Exploring Perceptions of Campus Sustainability at TUS](#)

Author(s): Jennifer Moran Stritch, Department of Applied

Social Sciences and Social Sciences ConneXions Research
Institute, TUS

- [16. INSPIRE: Promoting Post-Conflict Refugee Tourism Entrepreneurship](#)

Author(s): Dr Anthony Johnston, Faculty of Business and
Hospitality

- [17. TUS Talks Research](#)

Author(s): Jenna Barry, Department of Information Technology

- [18. FarmElder – Social Farming for the Elderly](#)

Author(s): Elaine Cleary, Sustainable Development Research
Institute (SDRI), TUS

- [19. REBOUND – Fostering Resilience in Rural Communities](#)

Author(s): Dr Shane O'Sullivan, Department of Social Sciences
and Sustainable Development Research Institute (SDRI), TUS

- [20. ComEnt – Fostering Innovation in Community-Led Enterprise Development](#)

Author(s): Dr Shane O'Sullivan, Department of Social Sciences
and Sustainable Development Research Institute (SDRI), TUS

- [21. WeNaTour Project: The European Alliance for Innovation and Sustainability Education in Welfare, Nature and Tourism](#)

Author(s): Dr Shane O'Sullivan, Department of Social Sciences
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[22. Certificate in Embedding Education for Sustainable Development \(ESD\) in the Curriculum](#)

Author(s): Dr Noëlle O'Connor, Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

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[23. RUN-EU Short Action Programme \(SAP\) Sustainability in the Context of Tourism along the Camino de Santiago \(Portugal\)](#)

Author(s): Dr Noëlle O'Connor, Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

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Author(s): David O'Rourke, Department of Electrical and Electronic Engineering

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[25. RUN-EU Short Advanced Programme \(SAP\) in Sustainable Marketing for Global Goals](#)

Author(s): Louise Murray and Sinéad O'Connell, Department of Business and Management

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[26. Level 9 SPA Certificate in Design for Sustainability & Circular Economies](#)

Author(s): Dr Adam deEyto, Limerick School of Art and Design (LSAD)

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Author(s): Dr Adam deEyto, Limerick School of Art and Design (LSAD)

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[28. Rathkeale Together: Pathways to Higher Education Workshops](#)

Author(s): Aileen Sheehan, Access Service

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[29. Field trips to Kingspan's IKON Innovation Centre in Kingscourt, Co. Cavan](#)

Author(s): Brendan McLarney, Department of Accounting and Business Computing

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[30. The Hidden Value of Food Waste: A Systems Thinking and Action Research Approach to Closing the Food Waste Loop at the Department of Hospitality Tourism and Leisure Studies, TUS Athlone](#)

Author(s): Kevin Ward, Department of Hospitality, Tourism and Leisure

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Author(s): Dr Aisling Keenan Gaylard, Department of Business and Management

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Author(s): Nicola Ryan, Department of Hospitality, Tourism and Leisure

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[33. Investigating the Feasibility of Agricultural Land Use Change Options Using Problem-Based Learning \(PBL\)](#)

Author(s): Elisha McGrane, Department of Applied Science

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Author(s): Elisha McGrane, Department of Applied Science

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[35. Embedding Sustainability in Education through the TUS Learning Gates Initiative](#)

Author(s): Jim Gilchrist, Department of Lifelong Learning

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[36. Using the N-TUTORR Introduction to Sustainability Digital Badge to Complement a Macroeconomics for Business Module Assignment](#)

Author(s): Karen Guest, Department of Business and Management

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[37. The Outdoor Classroom: The Addition of Outdoor Spaces and Open Educational Resources in the Department of HTL 2022-2024 3 Zones](#)

Author(s): Gayle Tarmey, Department of Flexible and Professional Learning

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Author(s): Kevin Healion, Department of Applied Science

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Author(s): Aoife Prendergast, Department of Flexible and Professional Learning

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[40. Teaching Tort Law – Trials, Tribulations and Ties – A Sustainable Strategy – Clinical Legal Education – Mock Trial Assessment](#)

Author(s): Edith O’Leary, Department of Business and Financial Services

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[41. Embedding education for sustainability into a pharmacy technician undergraduate Pharmaceutical Microbiology module at the Technological University of the Shannon: Midlands Midwest, with a focus on antimicrobial resistance](#)

Author(s): Claire Stack, Department of Pharmaceutical Sciences and Biotechnology

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[42. Safe Inhaler Disposal Campaign: 6th March 2024](#)

Author(s): Dr Gary Stack, Department of Pharmaceutical Science and Biotechnology

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[43. Optimising Digital Presence – Review of Industry Website](#)

Author(s): Dr. Emma Carroll, Department of Business and Financial Services

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