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# Compendium of Embedding Education for Sustainable Development in Teaching, Learning and Assessment

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Edited by Dr Noëlle O'Connor,  
Mr. Sean Connell and Ms. Nicola Ryan

# Foreword



**T**he Technological University of the Shannon (TUS) is deeply committed to embedding Education for Sustainable Development (ESD) across all facets of university life. The TUS Compendium of Education for Sustainable Development within the Curriculum exemplifies this

commitment by showcasing a range of innovative practices, pedagogical approaches, research initiatives, and extra-curricular activities that are transforming how sustainability is taught, experienced, and lived across our campuses.

Rooted in the belief that ESD is a key driver of systemic change, this compendium highlights how TUS integrates sustainability principles into programme design, teaching, and assessment, while also embracing the wider learning environment. It aligns with the ESD for 2030 Priority Action Areas, addressing policy advancement, educator capacity-building, learning transformation, youth empowerment, and local-level action.

Section 1 explores the critical role of funded research projects in accelerating ESD implementation, enabling real-world impact through interdisciplinary collaboration and evidence-based innovation. These projects help embed sustainability across curricula while enhancing community and global engagement.

Section 2 focuses on embedding ESD into programme and module design, promoting active, values-based learning that equips students with the knowledge, skills, and attitudes needed to become sustainability-minded graduates. It emphasises the importance of aligning learning outcomes, content, and methodologies with the Sustainable Development Goals (SDGs). Section 3 highlights the vibrant landscape of extra-curricular initiatives that support sustainability learning beyond the classroom.

Through student societies, events, workshops, and community-led projects, learners and staff alike are empowered to become change agents in their institutions and communities. Section 4 addresses the integration of ESD into teaching and assessment strategies, showcasing how active and problem-based learning, authentic assessments, and student-led inquiry can foster critical thinking, creativity, and action-oriented learning.

By sharing best practices, case studies, and reflections from across TUS, this compendium serves as a practical guide and an inspirational resource for educators, students, and stakeholders. It reflects TUS's ambition to create a university-wide culture of sustainability, where every student is equipped to contribute to a more just, inclusive, and sustainable future.

**Professor Vincent Cunnane**

**President, Technological University of the Shannon (TUS)**

# Foreword



**T**he second National Strategy on Education for Sustainable Development (ESD), ‘ESD to 2030’ (Government of Ireland, 2022a) sets out five priority action areas of Advancing Policy; Transforming Learning Environments; Building Capacities of Educators;

Empowering and Mobilizing Young people; Accelerating Local Level Actions framed within the UNESCO (2021) following definition of ESD:

*‘ESD empowers learners with knowledge, skills, values and attitudes to take informed decisions and make responsible actions for environmental integrity, economic viability and a just society empowering people of all genders, for present and future generations, while respecting cultural diversity. ESD is a lifelong learning process and an integral part of quality education that enhances cognitive, social and emotional and behavioural dimensions of learning. It is holistic and transformational and encompasses learning content and outcomes, pedagogy and the learning environment itself.’*

The associated ‘ESD to 2030 Implementation Plan 2022-2026’ (Government of Ireland, 2022b) calls for the promotion and support in the use of ESD pedagogies amongst educators; the embedding of ESD in curricula and programmes; the production of high-quality resources for ESD; whole institution approaches encompassing biodiversity, transport, buildings, energy conservation, and resource management; systematic and comprehensive ESD capacity development; the recognition of young people as key contributors to ESD design, delivery and monitoring; fostering and supporting engagement with local communities, NGOs, and local authorities.

The TUS ESD compendium directly responds to the priority action areas as outlined in the ‘ESD to 2030’ Strategy (Government, 2022a) and the associated targets set out in the ‘ESD to 2030 Implementation Plan 2022-2026’ (Government of Ireland, 2022b) by providing a suite of case studies (44 no.) across a diverse range of disciplines that will serve as a catalyst to move towards a holistic embedding of ESD across the curriculum. Coupled with TUS’s strategic commitment to sustainable development and the Sustainable Development Goals (SDGs) through its Strategic Plan 2023-2026 and Performance Agreement 2024-2028, this ESD practice provides clear evidence that TUS is ‘walking the talk’ on sustainability and climate action.

This ESD Compendium also demonstrates real value in terms of utilizing the Strategic Alignment of Teaching and Learning (SATLE) funding as it clearly supports the future enhancement of teaching and learning not only in TUS, but across the higher education sector.

I would like to congratulate all involved in the design and development of the TUS ESD Compendium, especially Dr. Noëlle O’Connor, Mr. Sean Connell, and Ms. Nicola Ryan, as it will be an invaluable resource for all higher education staff, not only in Ireland but also internationally.

**Dr. Mark Kelly**

**Higher Education Authority (HEA) National Policy Advisor on Education for Sustainable Development (ESD) and Head of the Atlantic Technological University (ATU) Centre for Sustainability.**

# Foreword



**H**igher Education Institutions (HEIs) globally are evolving their responses to the urgent challenges of sustainability. Increasingly, there is a clear shift from providing education about sustainability to embedding Education for Sustainable Development (ESD) at

the core of institutional missions. At the Technological University of the Shannon (TUS), this transformation is well underway. We are committed to mainstreaming sustainable development across all dimensions of our institution, guided by the UN Sustainable Development Goals (SDGs) and underpinned by our values, strategic objectives, and national policy frameworks.

Sustainability is not an isolated theme at TUS, it is an overarching ambition embedded within our Strategic Plan and aligned with our Systems Performance Framework with the Higher Education Authority. Tangible progress has been made in implementation planning, research alignment, and securing funding for the integration of the SDGs. Structural enablers have been established, including the University Sustainability Committee (USC), chaired by the President, and its dedicated sub-committee for Education and Research for Sustainable Development, which is advancing the National ESD strategy at the institutional level.

The ESD agenda is being shaped and driven by both top-down leadership and bottom-up innovation. Academic staff across disciplines are embedding sustainability into curricula, assessments, and research. From lecture theatres to laboratories, students are being encouraged to engage critically with sustainability issues, consider interdisciplinary perspectives, and contribute to real-world solutions. The adoption of tools such as the Sustainability Leadership Score (SLS) is helping us to measure progress and prioritise further action.

Capturing this dynamic and diverse academic activity is vital. This compendium offers a first step toward documenting and showcasing best practices in ESD across our academic community. It highlights innovative teaching practices, curriculum development efforts, and programme alignment with the three pillars of sustainability: environmental, economic, and social. We are also providing opportunities for our staff to upskill through our Certificate in Embedding ESD in the Curriculum and provision of other bespoke training on sustainability topics. This work complements wider institutional initiatives, including programme mapping, living labs, and campus-based sustainability actions in procurement, operations, and engagement.

We acknowledge that sustainability can feel complex or diffuse. Yet, the very breadth of the concept provides rich opportunities for all academic disciplines to connect and contribute. This compendium illustrates how our colleagues are doing just that, creatively and meaningfully.

TUS aspires to a truly whole-of-institution, holistic approach to sustainable development, one that nurtures interdisciplinary collaboration and ensures our graduates leave with the knowledge, skills, and mindsets required to thrive and lead in a sustainable future. As part of the national and global higher education landscape, we have both a responsibility and an opportunity to shape that future, together.

**Mr. Seamus Hoyne**

**Dean Flexible and Work Based Learning, Head of Centre,  
Thurles Campus, Technological University of the Shannon  
(TUS)**





# Acknowledgements

**W**e would like to extend our sincere thanks to Professor Vincent Cunnane, President Technological University of the Shannon (TUS); Ms. Frances O'Connell, Vice-President, Student Education and Experience and Dr. Nuala Harding, Head of the Centre for Pedagogical Innovation and Development (CPID) for their invaluable support in making this initiative possible.

We also wish to acknowledge the National Forum for the Enhancement of Teaching and Learning, whose support through the Strategic Alignment of Teaching and Learning Enhancement (SATLE) funding made this publication possible.

A sincere thank you to our Submission Review Panel; Dr. Matthew Cannon, Dr Geraldine McDermott, Dr. Catherine-Anne O'Connell, Dr. Anthony Johnston and Dr. Trevor Prendergast for their time, expertise, and valuable contributions.

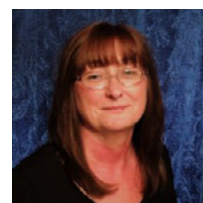
A special thank you to Ms. Eimear Kelly and to Dr. Miriam Croke for their contribution and invaluable guidance.

We would also like to acknowledge the professional services of our Graphic Designer, Mr. Jules Hackett, for his guidance and professional services.

Thank you to Ms. Lory Russo and Ms. Ruth Benson for their support throughout.

Finally, we extend our deepest appreciation to all members of the TUS community who generously contributed their work, insights, and expertise to this publication, which have made this compendium a truly collaborative and impactful resource.

**Dr. Noëlle O'Connor, Mr. Sean Connell and Ms. Nicola Ryan**



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## Introduction

**T**he Technological University of the Shannon (TUS) *Compendium of Embedding Education for Sustainable Development in Teaching, Learning and Assessment* exemplifies the university's commitment to embedding Education for Sustainable Development (ESD) across teaching and learning. It showcases how TUS integrates research-informed practices into programme design, teaching, and assessment, equipping students to tackle global sustainability challenges. Specifically, the compendium highlights innovative approaches aligned with the ESD for 2030 Priority Action Areas, focusing on policy advancement, learning environment transformation, educator capacity building, youth empowerment, and local-level action.

This compendium serves as a practical guide for educators, students, and stakeholders, presenting best practices, case studies, and insights into how ESD can be meaningfully embedded within higher education. By sharing these approaches, TUS aims to inspire and support a university-wide culture of sustainability, ensuring that all students are equipped to contribute to a more sustainable world.



*Education for Sustainable Development empowers people with the knowledge, skills, values, attitudes and behaviors to live in a way that is good for the environment, economy, and society. It encourages people to make smart, responsible choices that help create a better future for everyone<sup>1</sup>*



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<sup>1</sup> UNESCO (2025). Education for sustainable development. United Nations Educational, Scientific and Cultural Organization. Retrieved March 14, 2025, from <https://www.unesco.org/en/sustainable-development/education>





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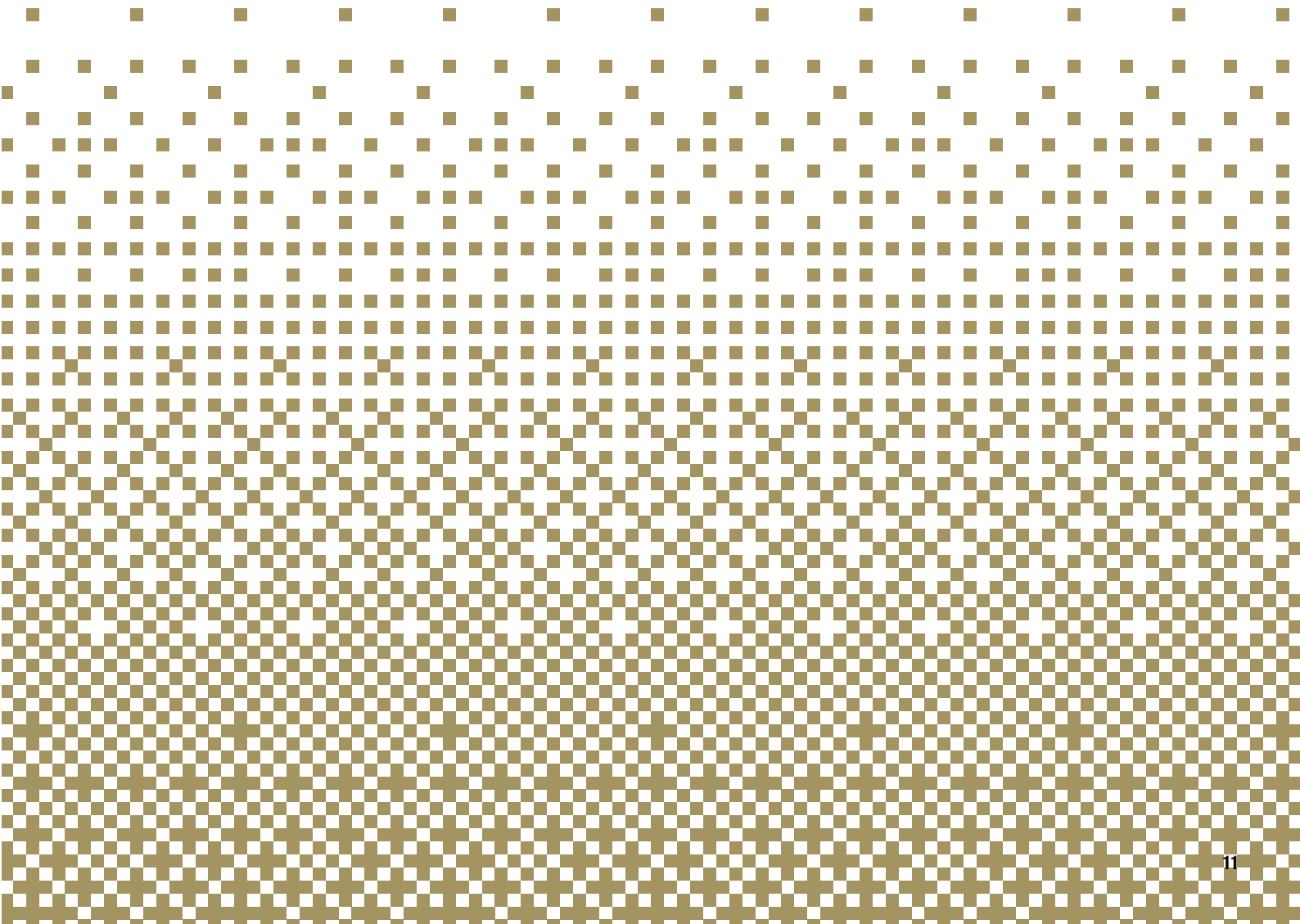
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All responsibility for the content, originality, and scholarly validity of the work remains with the author(s).









# Education for Sustainable Development through Funded Research Projects



*"To be a catalyst for sustainable change through education and research that transforms lives, our region and the world beyond"<sup>2</sup>*

Education for Sustainable Development (ESD) is a key driver of systemic change, equipping individuals and institutions with the knowledge, skills, and values needed to address global sustainability challenges. Funded research projects play a critical role in accelerating ESD implementation, fostering innovation, collaboration, and real-world impact within education systems.

This section explores how funded research supports policy advancement, educator capacity-building, learning environment transformation, youth empowerment, and local-level sustainability actions. Through secured funding, universities can develop evidence-based solutions, integrate ESD principles into curricula, and enhance international, national and community engagement. These projects not only shape higher education strategies but also contribute to the broader sustainability agenda, ensuring that ESD remains at the forefront of teaching, research, and educational development.

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<sup>2</sup> Technological University of the Shannon (2023). TUS strategic plan 2023–2026. [https://tus.ie/strategicplan/assets/TUS-Strategic-Plan-23-26\\_Eng.pdf](https://tus.ie/strategicplan/assets/TUS-Strategic-Plan-23-26_Eng.pdf)



# Transforming Learning Environments

## Department of Information Technology

## SDG 4 (4.7)



- Project Lead – Ita Kavanagh (TUS)
- Partners – Séamus O’Ciardhuáinm and Michael Dugan (TUS)

This project aims to develop a tool to support the use of Challenge-Based Learning (CBL) in teaching skills and competencies for sustainable development in higher education. The tool provides a framework for lecturers to design, implement, and evaluate CBL activities. It also offers access to a library of resources, including case studies, assessment rubrics, etc.

The research context of this project is in the field of Education for Sustainable Development (ESD), which is an interdisciplinary field that focuses on teaching skills and competencies related to sustainable development. CBL is a

The contribution of this project to the field of education for sustainable development is the development of a practical tool that would support the use of CBL in teaching skills and competencies for sustainable development. The tool provides lecturers with a structured framework for designing and implementing CBL activities, as well as guidance and rubrics to assess student learning outcomes. The research should also contribute to a better understanding of the effectiveness of CBL in developing skills and competencies for sustainable development. Overall, the contribution of this research project is the development of a practical tool that would promote the use of CBL in the classroom, which could lead to the development of a more engaged and informed citizen who is better equipped to create a more sustainable future for all.

- Adapt the Challenge Learning Framework to design and implement CBL activities that can effectively teach skills and competencies for sustainable development at third level. The research is informed by the Key Competencies in Sustainability in Higher Education Framework (Brundiers et al. 2021).
- Develop a tool that lecturers can use to implement CBL activities effectively in their classrooms based on the adopted framework. This tool should include resources, guidance, and support for designing, implementing, and assessing CBL activities. The tool/environment developed should adhere to Universal Design principles.
- Test the effectiveness of the CBL framework and tool in teaching skills and competencies for sustainable development. This will be done through a combination of qualitative and quantitative research methods.
- Evaluate the usability and usefulness of the CBL framework and tool for teaching. This will be done through feedback from lecturers and students who have used the framework and tool in their classrooms.
- Disseminate the results of the research project through academic publications, conferences, and other means to contribute to the knowledge base of the field of ESD.

Availability of a tool that can be used to promote the development of critical thinking, problem-solving, collaboration, creativity and communication skills in students, which are essential for addressing the complex challenges of sustainable development.





## ESSENTIAL QUESTIONS

By design, the big idea generates essential questions that reflect personal interests and the community's needs (e.g. Why is this important to me? Where does this concept intersect with my world? etc.). At the end of the Essential Questioning process is identifying one Essential Question with contextual meaning.

Discuss the Essential Questions amongst your group with the following pointers:

- What are some prevailing issues with your school or community?
- What is the impact of these issues on the wellbeing of the members of the school or community?
- Do these issues have local and global significance?

Enter your essential question in the field below

Save

Q1: What are the water issues where we live?

Q2: How does my water consumption impact the world?

Q3: How is water wasted?



## GUIDING ACTIVITY ASSIGNMENTS



Arvy Connolly  
K00387423

- Trace Plastic Lifecycle
- Complete a personal inventory of where you use plastic in your daily life
- Explore the costs and benefits of plastic use in industries



Jack Menzies  
K00387423

- Identify the role of plastic manufacturers in protecting the environment
- Explore the use of plastic on the school campus
- Explore the costs and benefits of plastic use in industries



Sean Kennedy  
K00387423

- Identify the use of disposal of plastic at the school cafeteria
- Research the effectiveness of plastic recycling on the school premises
- Explore the costs and benefits of plastic use in industries



## PROPOSED SOLUTION

In the Act Phase, evidence-based solutions are developed and implemented with an authentic audience and the results evaluated.

After completing the investigation phase, you should have a solid foundation to develop solution concepts.

Use the feature below to add your proposed solutions. Your stakeholders will review each solution and provide some feedback. You may iterate with the feedback from your stakeholders on a proposed solutions before implementation.

+ ADD PROPOSAL

Proposal 1

Education Campaign

Proposal 2

Game

Proposal 3

Community Improvement Project

Welcome, Michael
Team Setup
Course Settings
Resources
Activities
Logout

Add Resource

Engaging with Big Ideas
Big Ideas
Engage

Sustainable Cities and Societies
Sustainable Development Goals
Sustainable Development

Energy Producing Smartwatches
Developing Solutions
Act

Investigation Matrix
Guiding Activities
Investigate

Research Tips
Guiding Resources
Investigate

Zero Sum Games
Developing Solutions
Act

How VR is Revolutionizing Education
Tech News
Misc

Being a Great Team Player
Team Dynamics
Teamwork

Integrated Problem Solving
Sustainability Competencies
Sustainable Development

Welcome, Michael
Engage
Investigate
Act
Logout



## DOCUMENT AND SHARE

Congratulations on reaching the end of your #challengebasedlearning journey!!!

Take some time to create a digital collage of your highlighting moments in your CBL process. Feel free to share the videos with your online or physical community.

+ ADD IMAGE/VIDEO

1

2

3

4

5

6

Create Collage

## 2. Epic Stays: Upskilling European Tourism Enterprises to Advance Sustainable Accommodation Development

Dr Noëlle O'Connor

Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**  
SDG 4



### Project Lead, Partners and Participants

- Project Leads – Dr Kjartan Bollason and Magnea Lára Elínardóttir (Hólar University, Iceland)
- Partners – Dr Anthony Johnston, Dr Noëlle O'Connor, Dr Catriona Murphy and Alex Yu (TUS); Dr Lucia Tomassini and Dr Radu Mihailescu (NHL Stenden University of Applied Sciences, The Netherlands); Laura Magan (Momentum Consulting, Ireland) and Tatjana Klakočar (Vocational College for Hospitality and Tourism, Slovenia)

### Key Aims of the Project

Epic Stays is developing a new Vocational Education and Training (VET) offering and upskill European tourism businesses leading to the development of new, Alternative Tourism Accommodation (ATA) in Iceland, Italy, Ireland, the Netherlands and Slovenia and thereafter across Europe. By the end of 2025, we will upskill 50+ VET educators and 500+ VET learners with knowledge, current facts and best practices regarding ATA and its potential to address the European Union (EU) accommodation crisis, climate change, changing consumer trends as well as market opportunities.

### Project Description and Methodologies

Epic Stays designs and implements an alternative tourism accommodation VET programme for first use by partners and associate partners. Key activities include researching the benefits, challenges, and drivers of ATA across Europe, developing niche VET teaching and learning materials for classroom and online use, and initiating capacity-building and sustainability actions to ensure wider European use. Other key activities include project evaluation and promotion.

### Key Outputs and Future Opportunities

Epic Stays innovates the work of the partners and our associates by introducing a new VET tourism-training offering to their work and help them become Europe's first experts in this field. The alternative tourism accommodation market is poised for growth, making Epic Stays of high value to European tourism SME's, particularly those in remote, rural regions in Europe. Ultimately, the project helps refocus European tourism VET for a more sustainable, resilient, and prosperous future.



### The Epic Stays Research Report (<https://epicstays.eu/epic-stays-research-report/>)

The Epic Stays Research Report delivers a detailed analysis of the benefits, challenges, and key drivers shaping the demand for ATA across Europe. Serving as a flagship resource of the Epic Stays project, this report provides a comprehensive

roadmap for navigating the complexities of the alternative tourism sector. It underscores the critical importance of a unified, competency-based approach for advancing ATA, highlighting the transformative impact of strategic practices rooted in policy awareness and practical skills.

With a particular focus on our partner countries of Iceland, Italy, Ireland, the Netherlands and Slovenia the report delves into a diverse set of regulatory environments, cultural approaches, and market dynamics. The geographical scope of the report offers a nuanced understanding of how different regions within Europe are adapting to and fostering the development of alternative accommodation, providing stakeholders with adaptable strategies applicable across various contexts.

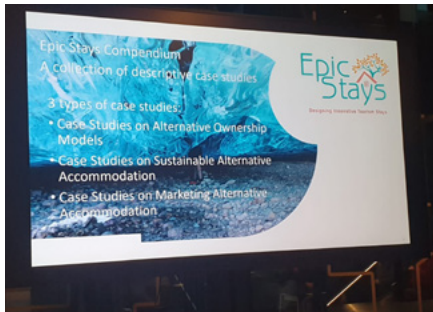


### Epic Stays EU Compendium of Good Practice in Alternative Tourism Accommodation (<https://epicstays.eu/compendium-of-good-practice/>)

The Epic Stays EU Compendium of Good Practice in Alternative Tourism Accommodation is an inspiring showcase and learning resource designed to spark new ideas and

elevate the potential within the alternative accommodation sector. This comprehensive resource serves as a guide for tourism industry professionals, policymakers, VET educators, and SMEs committed to sustainable and innovative accommodation models.





Complementing resources like the Epic Stays Research Report, the Epic Stays EU Compendium of Good Practice in Alternative Tourism Accommodation offers rich case studies and examples of alternative tourism accommodation from countries such as Iceland, Italy, Ireland, the Netherlands and Slovenia. These examples illustrate how alternative accommodations are evolving to meet the modern traveller's preference for unique, eco-friendly, and culturally enriched experiences. Each property showcased highlights the innovative ways alternative accommodations are shaping the future of hospitality through sustainability and community engagement.

#### Student Perspective – Primary Impact of the Project

The UN SDGs call for sustainable tourism via Goal 8 which aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. Other relevant SDGs are Goal 12: Ensure sustainable consumption and production patterns, which includes promoting sustainable tourism practices and Goal 13: Take urgent action to combat climate change and its impacts, which includes reducing the carbon footprint of the tourism sector.

With our eyes firmly on 2030, we have designed a project for and of the times, with a suite of VET resources designed for flexible use (classroom, hybrid and online) that has been developed by and for our target groups, taking in best practices and a transfer of innovation from countries in Europe that are excelling in the area of alternative tourism accommodation (like Italy) and transferring that to others.

Participation is at the core of our project with associate partners being actively involved in research, development, testing and promotion of our results. To ensure awareness and ultimately wider use our results will be widely shared:

- Offline via review processes, training programmes, meetings/clinics, mini and large scale local/national and at international events.
- Online via our project website, online course, partner websites, social media, online events, Erasmus+ results platform, tourism platforms like TourismfromZero.



### 3. SocialB - Social Business Educational EcoSystem for Sustainability and Growth

Dr Marie Taylor

Sustainable Development Research Institute (SDRI), TUS

#### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



#### Project Lead, Partners and Participants

- Project Leads - Dr. Marie Taylor (TUS) and Catherine Smyth (Ballyhoura Development)
- Partners – Dr Catherine Sotiropoulou and Prof. Dimitra Papadimitriou (University of Patras, Greece), Teresa Papagiannopoulou (Olympic Training and Consulting Ltd, Greece); Valentina Fabbri (Programma Integra S.C.S. Italy), Dr Arianna Manti and Tor Vergata (University of Rome, Italy); Dr Irma Potocnik Slavič (University of Ljubljana, Slovenia); Rajko Antlej (Development Agency Kozjansko, Slovenia)
- Participants - Students from each country participated in the piloting of the new modules

#### Key Aims of the Project

- Enhance sustainability and employability within the social economy sector by empowering existing and future social entrepreneurs with critical competencies and skills, promoting and imparting entrepreneurial and transversal skills to Higher Education Institutions (HEIs)/Vocational Education and Training (VET) students, and enhancing the practical and operational knowledge base and learning of HEIs/VET staff.
- Design, develop and pilot an accessible suite of educational resources to support individual and organisational learning and network development in Social Enterprises (SEs). The resulting Learning Units aim to stimulate significant changes in HEIs' curricula and VET programmes by integrating a learner-centred approach oriented to real, problem-based learning and skills acquisition in social entrepreneurship.
- To build the social entrepreneurial mindset and competencies of students interested in social entrepreneurship and employment within the social economy sector by bringing real-world social entrepreneurial practice into their learning environments.
- To develop a replicable partnership model between SEs and VET institutions/HEIs and inform them about the development of state-of-the-art learning and educational resources and materials.
- To raise awareness and exploit SocialB's learning

material beyond the project's lifetime, strengthening the social economy ecosystems within the European Union (EU).

- To build on the current evidence base related to social entrepreneurship education, which suggests shortcomings and skills gaps across all EU states, which, if addressed, could catalyse the growth of the EU social economy sector.
- To establish a collaborative knowledge and learning alliance and model between four key stakeholder groups, active and influential in the field of social enterprise and social innovation – students, HEI/ VET institutions, SE practitioners and SE Business development agencies/ advisors – which can be replicated and adapted across the EU.
- To enhance the effectiveness of SE education provision by HEI/VETs.
- To produce an accessible repository of learning materials, accompanied by a practice toolkit, and provide a common framework for skills and knowledge acquisition.



#### Project Description and Methodologies

- The SocialB Project team designed, developed and piloted a suite of learning resources to support individual learning, organisational learning and network development in the field of social enterprise. Learning resources were presented in the framework of blended learning materials in 6 modules with 24 Learning Units (LUs) and addressed identified skills gaps and training needs (from a SocialB training needs analysis including desk-top research, surveys and interviews conducted in phase one of the project) in key areas critical for the development, sustainability and expansion of the Social Enterprise sector.
- The training methodologies and new training material were co-created and co-delivered by HEIs and SEs, thus having input from both academics and the 'real



world' of SE and support agencies. Subsequently, the resulting LUs reflected real world situations and issues. The participants in the pilots were a mix of SE members and students of SE and this cooperation in learning contributed to strengthening the innovative capacities of both.

- SocialB offered gamification activities to motivate and facilitate participation and engagement, promote peer learning and encourage situational problem-solving. This led to practical acquisition of skills, knowledge and competencies. It involved the collection of digital badges on the completion of each LU.
- The inclusion of Work Based Learning (WBL) and 'train-the-mentor' among SEs involved in the programme, is an important and novel outcome/output of the project. WBL allowed for greater sharing of knowledge and experience as well as theory. Those already working in SEs were able to help place students in working positions for their WBL and thus make professional connections for the students and boost their employability prospects.
- Training techniques were based on various methodologies employed in traditional entrepreneurship training, counselling practice, social sciences, humanitarian studies and ICT, and grounded in practice and activity-based pedagogies such as advanced goal analysis, problem tree/solution tree, decoding emotions / poster of myself, PechaKucha, and golden circle for inspiring stories. Consideration

was given to tools that were digitalised and could be applied in the context of WBL, face to face training, e-learning (synchronous or asynchronous), and could be harmonized with practice-based learning, process-oriented learning, problem-based learning, and active learning.

- SocialB partners designed different activities for students / trainees, several were assessed by trainers, and some were part of the student's self-assessment. Practical activities and WBL were assessed by the trainer, while self-assessment included self-directed learning and a gamification activity in Moodle in the form of a quiz applied after every LU. Questions for self-assessment were up-loaded on the e-learning platform and served the purpose of asynchronous e-learning and self-directed learning. Each LU might have 3-5 questions for repeating and understanding the topic. Questions were uploaded in Moodle within LU.
- Every LU included a practical activity which might include: individual (i.e. individual presentation, individually recorded video, individual reading assignment) or group assessment (i.e. group presentation, group video).
- Partners had an opportunity to identify any other assessment type which they found appropriate for a particular LU. Several LUs required students to develop a business plan or a strategic plan, etc. In these circumstances a template was provided and uploaded in Moodle.

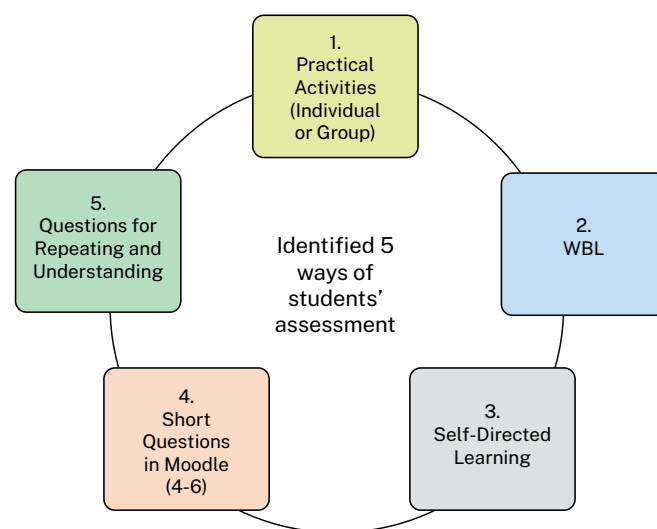
| MODULES                                                | LEARNING UNITS       |                                                                                                                                                                                                                                                       |
|--------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Introduction to Social Entrepreneurship             | 1<br>2<br>3<br>4     | "History and Evolution of SE in Europe"<br>"Reshape business value chain into social value chain"<br>"Introduction to Social Innovation"<br>"Public/Private partnership in the field of Social Enterprise"                                            |
| 2. Project Design and Management                       | 5<br>6<br>7<br>8     | "EU Projects-EU opportunities for the development and funding of social enterprises"<br>"Procurements processes, funding applications and proposal writing"<br>"Project Management"<br>"Soft Skills"                                                  |
| 3. Human Resource                                      | 9<br>10<br>11<br>12  | "The role of human resource management"<br>"Recruitment and selection of employees and volunteers"<br>"Managing employee performance"<br>"Leadership, and communication for maximum impact"                                                           |
| 4. Social Impact Assessment                            | 13<br>14<br>15<br>16 | "Introduction to Social Impact Assessment"<br>"Methodology and tools to assess social impact"<br>"Data analysis and visualisation"<br>"The importance of communicating social impact to key stakeholders"                                             |
| 5. Financial and Economic Sustainability of SE         | 17<br>18<br>19<br>20 | "Strategic planning and the life cycle of Social Enterprise"<br>"How to build a business plan"<br>"Financial planning and cash flow constraints"<br>"Credit access and opportunities for social enterprise: Social Finance and Social Impact Finance" |
| 6. Growth Strategies, Marketing and Fundraising for SE | 21<br>22<br>23<br>24 | "Growth strategies and long term profitability of Social Enterprise projects"<br>"Market evaluation and competitiveness assessment"<br>"Fundraising and diverse fundings for SE"<br>"Marketing, Sales and Networking skills"                          |

## Key Outputs and Future Opportunities

- Development of six Learning Modules with 24 Learning Units addressing the key skills gaps and training needs identified in the skills and training needs analysis carried out in phase one of the project. LU descriptors were developed and uploaded to the project eLearning platform. The LUs were designed as stand-alone units or can be integrated into existing programmes. They are delivered using a blended learning format and the final content, associated methodological guides, innovative assessment and gamification are accessible on the eLearning repository and project website. The LUs were developed as Open Education Resources (OERs) using a Creative Commons licensing approach.
- The Literature Review provided an overview of the status of social entrepreneurship education at HEI/ VET level across Europe. The status of SE education in the four SocialB partner countries was outlined in detail and supported by desktop research relating to other EU states. The literature review highlighted issues and challenges pertaining to social entrepreneurship education, content, training methodologies and delivery. The findings have been the basis of a core knowledge base on the status of SE education provision throughout the EU.
- Current SE Education and Training Provision Analysis provided an overview of all courses and course components offered in the field of social entrepreneurship in the EU, with a particular focus on the partner countries. It provided information (where available) about the country, city, teaching language, term specifications, fees applied if any, content, learning outcomes, certification, teaching methods, admission qualifications, type of education/ training, and delivery methodologies for each course/ component. The consortium established that an overarching analysis of this nature has not been undertaken at EU transnational level. An interactive map with this information was developed and made available on the project website.
- SE Skills Gaps and Training Needs Analysis provided a detailed analysis, based on extensive on-the-ground research undertaken in each of the four participating countries on SEs covering the following elements:
  - » The existing qualifications of social entrepreneurs and SE staff, including educational background, academic and practical specialisation and experience;
  - » Competencies required, of value to, and lacking in the social economy sector, addressed through targeted learning materials;
  - » Skills requirements with an emphasis on social enterprise establishment and management, strategic planning, assessing and balancing social impact and economic imperatives.
- SE Skills Gaps and Training Needs Mapping analyses and compilation of quantitative and qualitative data and information identifying, categorising and detailing the skills gaps and training needs, in terms of skill area, level of competency required, nature of qualification preferred, practical application/s of the skills and training required, and the typical nature of the roles which would be enhanced by the acquisition of the identified skills. The Mapping exercise incorporated

future projected skills needs in the partner countries, based on first-hand data compiled, national policy priorities regarding SE development, and national, EU and global trends which are likely to impact on the growth of the SE sector. It also presented the desired learning outcomes from the training courses/modules/ units that has been developed in the framework of the project.

- Training and Assessment Methodology presented trainers and training providers with the SocialB training and assessment methodology, along with recommended adaptations to respond to country-specific needs and/or requirements. The methodology was presented as a component of a Practice Toolkit and included theoretical frameworks, recommended training techniques, practical training methodology and procedures applicable for initial training (HEI students and future SEs) and upskilling (existing social entrepreneurs), as well as assessment techniques and tools.



## Student Perspective – Primary Impact of the Project

- Increased awareness of innovative models of SE education and training.
- Experience in applying the knowledge and skills acquired through this project and the capacity to engage with social entrepreneurial initiatives which will provide a social dividend to disadvantaged locations and/or to marginalised groups.
- An enhanced understanding of the different / innovative models of SE operating across Europe.
- Impact on other stakeholders:
  - » Greater awareness of factors that support and hinder social enterprise.
  - » Greater awareness of the steps to create a successful partnership/ relationship with key stakeholders.
  - » Communicating effectively with policymakers - an increase in the promotion of social entrepreneurial education and training within the academic and SE sector.
- The project has also led to an increase in the interactions between HEIs/VETs and SEs among participants. It has resulted in students/participants having an increased knowledge of the benefits of SE and its application to practice.

## 4. Connected Minds: Building an Online Community for Postgraduate Researchers

Jenna Barry

Department of Information Technology

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead - Jenna Barry (TUS)
- Participants - Postgraduate Students (TUS)

### Key Aims of the Project

- Reduce social and intellectual isolation among postgraduate researchers.
- Provide a dedicated space for networking, knowledge exchange, and community building.
- Facilitate professional and personal development through shared resources and discussions.
- Organise structured activities such as workshops, guest speaker sessions, and training programs.
- Foster interdisciplinary collaboration and peer support.

### Project Description and Methodologies

- An online platform for postgraduate researchers designed to reduce isolation and promote social and professional networking. The platform enables students to create profiles, ask and answer questions, share polls, documents, and links, and participate in planned activities.
- Research methodologies: Community Design: Informed by research on social isolation and the needs of postgraduate students.
- Feedback collection: Polls and analytics to assess platform usage, engagement, and user satisfaction.
- Iterative development: Adjustments and improvements based on user input and participation metrics.

- Student assessment: User engagement metrics such as the number of active participants and frequency of interactions.
- Qualitative feedback through polls on the platform's impact on their academic and social lives.
- Expected long-term outcomes include increased collaboration and improved mental well-being.
- This innovative project lays the groundwork for a supportive, knowledge-driven community tailored to postgraduate researchers' needs.

### Key Outputs and Future Opportunities

- Online platform: A functional, interactive digital community supporting postgraduate researchers.
- Community engagement: Regular discussions, polls, and collaborative research activities.
- Training Programmes: Sessions on research methodologies, mental health, and professional skills development.
- Guest speaker events: Expert-led virtual talks enhancing knowledge exchange.
- Workshops: Practical training in research writing, career development, and interdisciplinary networking.
- Sustainability: A long-term knowledge-sharing community hosted within the university network.

These outputs foster an inclusive, knowledge-driven environment, empowering postgraduate researchers with resources and peer support.

### Student Perspective – Primary Impact of the Project

- Reduction of Isolation: Students feel less alone and more connected to a like-minded community.
- Access to Resources: Easier access to shared knowledge, advice, and research tools.
- Skill Development: Opportunities to learn new skills through training and workshops.
- Sense of Belonging: The community fosters inclusion and strengthens peer relationships.
- Empowerment: Students are empowered to share.



## Department of Information Technology

## SDG 4 (4.7)



- Project Lead - Ita Kavanagh (TUS)
- Participants – Seamus Hoyne, Darragh Wynne, Reno Rajan, Bronagh Fleming, Clara Keevey, Raquel Cox, Diane Whyte, Declan Dore, Kate Hennessy.
- Guest lecturers - John Jennings, Liam Noonan, Paul Keating Mark Barry (TUS), Dr Maria Kirrane (University College Cork) and Sarah Geary (Tableau London Office).

- Students work in multidisciplinary teams to identify an actionable challenge from an abstract 'Big Idea'. The abstract Big Idea is a broad theme or concept that can be explored in multiple ways and should be important and relevant to the student team and the larger community. To date, students have engaged with SDG 11 in the context of the TUS Moylish Campus.
- Conduct rigorous, content and concept-based research to create a foundation for an actionable and sustainable solution.
- Use an Innovative Technology to develop an evidence-based solution for a complex real-world problem.
- Implement the proposed solution, measure outcomes, reflect on what worked and what did not and determine their impact on the challenge.
- Reflect, document and share the findings with all relevant stakeholders.

Innovative and pioneering technologies are constantly being researched and developed to improve the lives of people and society. Traditionally, learning was considered discipline specific. Students today need new knowledge, skills and competences that are not discipline specific to succeed in a workplace where advances in technology are changing

The module uses the Challenge Institutes Challenge Based Learning (CBL) Framework. Students' sustainability knowledge is assessed at the start and the end of the module using a Sulitest Awareness Assessment. Resources such as the National Technological University Transformation for Recovery and Resilience (N-TUTORR) *Introduction to SDGs and Introduction to Sustainable Living* are digital badges which are used to provide students with an understanding of the SDGs and to help with the formation of an actionable challenge in the engagement phase. Other guiding activities are used as appropriate. Feedback from stakeholders informs students' solutions. Module assessment comprises of group presentations, prototype assessment, group report and individual reflective practice.



The PPRD 08013 Innovative Technology and Future Skills module could serve as a template for embedding ESD in the curriculum for programmes where sustainability is not the core discipline. This module is the subject of an autoethnographic research study on the changes to teaching practice required to adopt a new innovative pedagogy (CBL) to teach sustainability competences. This module will also be used to test a new tool, the Challenge Matrix. The Challenge Matrix is the output of a research Masters project into tools that support the use of CBL to teach sustainability competencies.

The development of sustainability competencies.  
PPRD 08013 Innovative Technology and Future Skills.

## 6. Coffee Lab – Inclusive Coffee Learning Hub

June O'Byrne-Prior

Department of Hospitality, Tourism and Wellness

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 3



### Project Lead, Partners and Participants

- Project Lead - Michael Conway (TUS)
- Partners - June O'Byrne-Prior, Orla Fox Colleran, Gayle Tarmey, Dr Emma Reardon and Brid Crotty (TUS)

### Key Aims of the Project

This project aims to develop a sustainable coffee journey from bean to brew. The project allows students to see coffee beans in their raw state, roast the beans and bring them through to the finished product. The project supports employability and opportunities for lifelong learning. Another focus of the project is on inclusive teaching as we work to include students with disabilities by inviting local groups to participate in a coffee workshop. It will also develop:

- A learning experience that focuses on the enterprise of coffee.
- Coffee lab with technologies to support a sustainable coffee journey – from raw bean, to roast, to brew.
- 12-week Barista/Beverage Service programme supporting employability for those with disabilities.

### Project Description and Methodologies

Key component of the project would involve developing a small, onsite roastery, reducing the carbon footprint of end coffee product. Work with industry in developing this learning space. Work with local support groups to roll out an inclusive Coffee Workshop.

### Key Outputs and Future Opportunities

- The university has gained a new learning space with the opportunity for practical hand on learning offering - outside of the traditional classroom space.
- Students are gaining a greater understanding of where their food comes from (food miles), ways in which food production processes can be simplified for a less processed, more sustainable product with potentially increased nutritional benefit.
- Opportunities to look at further projects in management of food waste in the training space.
- Looking at other ways of reducing steps in food production/ reducing carbon footprint.
- Development of a micro-cred to support inclusive learning.



### Student Perspective – Primary Impact of the Project

Skills developed in this learning space and knowledge gained through this microcredential are much sought after in industry. Students also get the opportunity to work with student groups with learning difficulties, supporting them through the workshop.







## 7. Exploring the Sustainable Development Goals through Coding

Pamela O'Brien

Department of Information Technology

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



#### Project Lead, Partners and Participants

- Project Lead – Dr Pamela O'Brien (TUS)
- Research Project Team - Natasha Kiely, Aileen O'Mara, Mark O'Leary, Mark Delahunty, David Lombard (TUS)

#### Key Aims of the Project

The key aims of the project were to provide:

- Opportunities for primary school students to learn about the Sustainable Development Goals in a fun and engaging way through the development of games and embedded system application.
- Real world contexts through which primary school students could explore computer science concepts.
- Support for teachers to integrate computer science across the primary school curriculum
- Capacity building opportunities for teachers to upskill in computer science and sustainability concepts.

#### Project Description and Methodologies

During the project students learn about all the SDGs at a high level and explore a range of the goals in more detail including SDGs 11, 12, 13, 14 and 15.

This project is an interventional study involving the introduction of an educational tool. Several characteristics, including attitudes to, and interest in, Computer Science and the SDGs, were identified for the pre and post intervention questionnaires for both teachers and students.

The project provides primary school teachers and students with an opportunity to explore concepts in sustainable development through Computer Science (CS). The project team support teachers as they teach coding and

computational thinking constructs, building confidence and competence to ensure the successful teaching of CS topics. The theme of sustainable development underpins the initiative ensuring that CS can be integrated in a holistic way through the Social, Environmental and Scientific Education (SESE), maths, literacy and art curricula.

The SDGs provide a framework for a sustainable future for all. During the project, through a campus visit and in school workshops, students explore the goals in a fun and engaging way through the creation of games, animations and embedded system applications. Similarly, teachers gain experience in CS and sustainability concepts helping to build their skills and confidence. Active learning is embedded throughout the project with hands on practical coding workshops a key aspect of the initiative. The project materials, including applications and games, have been created by the project team with input from some of the participating teachers to ensure that they are suitable for the age range and ability levels of the target student audience. The activities include coding and computational thinking exercises and are differentiated by age. Students are also provided with opportunities to design and develop their own ideas for games and applications through games design workshops and hackathons during the project. This project has been funded under the Research Ireland Discover programme.



#### Key Outputs and Future Opportunities

- A set of computational thinking activities differentiated for primary school students from 3rd to 6th class.
- A set of coding activities differentiated for primary school students from 3rd to 6th class.
- A project website.
- A Community of Practice for primary school teachers.



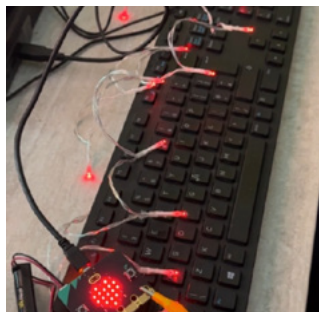


### Student Perspective – Primary Impact of the Project

From a student perspective the impact of the project was multi-faceted. Firstly, it enabled primary school students to learn about computer science in the context of the real-life exploration of the SDGs. Approximately half of the participants had not engaged with computer science previously but 90% expressed a wish to study computer science with similar figures for the SDGs. Secondly, the provision of a campus visit was a highlight for many students on the project. The impact of such visits for students in primary school have the potential to provide

insights into future study and career possibilities as these students prepare to transition to secondary school and make subject choices. Finally, the project specifically targeted girls and students from social, economic and educational disadvantage who have traditionally been underrepresented in the STEM area.

Projects such as this one provides opportunities for such students which are often not available to them and have the potential to impact these students, not just in the short term but in the longer term as they consider future careers.



A string of LED lights controlled by a micro:bit which automatically switch off when the light level is high and switch on when the light level is low coded during a workshop addressing SDG 13 Climate Action.



A wreath representing the SDGs created by students using origami techniques during a computational thinking workshop which introduced the Sustainable Development Goals.



Screenshot from a game to remove plastic from the ocean which was created during a coding workshop addressing SDG14 Life Below Water.



Pixel art created by students during a hackathon to address SDG 11 Sustainable Cities and Communities. This character was used in a game to clean up a city.

## 8. HumanTech (Digitalisation and Robotics Training for the Built Environment)

Gloria Callinan

Sustainable Development Research Institute (SDRI), TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG11



### Project Lead, Partners and Participants

Project Lead - Gloria Callinan and Martin Breen (TUS)  
Partners - Deutsches Forschungszentrum Fur Kunstliche Intelligenz GmbH, Holo-Industrie 4.0 Software GmbH, Technische Universitat Kaiserslautern, Sci-Track GmbH, Bundesanstalt Fuer Arbeitsschutz Und Arbeitsmedizin (Germany); Hypercliq Ike (Greece); Scaled Robotics SL, Acciona Construcción SA (Spain); Stam Srl, Universita Degli Studi Di Padova (Italy); Catenda AS, Sintef Manufacturing AS (Norway); Ricoh International Bv (The Netherlands); Australo Interinnov Marketing Lab SL, Fundacion Tecnalia Research & Innovation (Spain); Printstones GmbH, Palfinger Structural Inspection GmbH (Austria); European Builders Confederation (Belgium); Kajima Corporation (Singapore); Zurcher Hochschule Fur Angewandte Wissenschaften (Switzerland).

### Key Aims of the Project

HumanTech aims to:

- Develop innovative, human-centred technologies that go beyond the current state of the art.
- Contribute to the digitalization of the construction industry, making it safer and more productive, encouraging a new generation of highly skilled professionals,
- Accelerate the transition to green construction.

### Project Description and Methodologies

HumanTech sets out a credible pathway to contributing to climate-neutral, circular and digitalised energy-intensive industries, addresses the most important challenges faced by the European construction industry today – making it safer, greener and more efficient. It endeavours to disrupt the way construction projects are conducted by a new generation of highly skilled professionals, enabling them to work in a safe, rewarding, digital and sustainable environment, achieving major breakthroughs in cutting-edge technologies with a human-centred design. TUS-SDRI is contributing to the development of microlearning units for:

- Digitalisation
- Green Technology in Construction
- BIM fundamentals and managements (3 units)

- Digital twins
- Unmanned Aerial Vehicles (UAV) and Unmanned Ground Vehicles (UGV)
- Extended Reality and Exoskeletons
- Robotics in Construction
- Cameras and Mounting on Robotics, Drones and Wearables

### Key Outputs and Future Opportunities

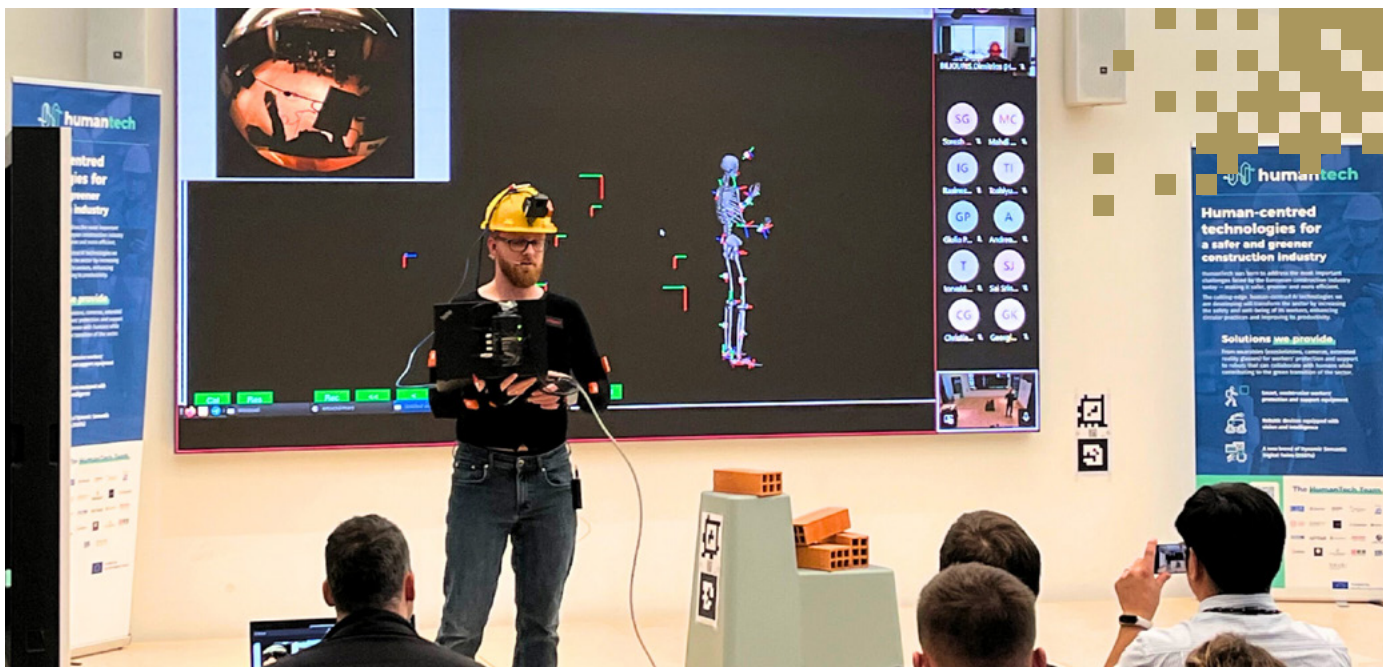
- Robotic devices equipped with vision and intelligence.
- Smart, unobtrusive workers' protection and support equipment.
- A new breed of Dynamic Semantic Digital Twins (DSDTs).
- Modular micro-learning units on technologies for workers' safety, well-being, and human-robot collaboration in construction, to be used as open educational resources.
- 10 training sessions with 200 participants and 1 'Train the Trainer' session for 20 educators and trainers.

### Student Perspective – Primary Impact of the Project

The upskilling and educating of students in new cutting-edge methods of construction and improving their job opportunities while focusing on the green transition. HumanTech will have an impact at the scientific, societal and techno-economic levels that will enable to achieve advances for example:

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Scientific      | <ul style="list-style-type: none"><li>• Create a new green, flexible and digital way to build and produce goods. This will lead to sustainable, flexible, responsive and resilient factories and value chains, enabled by digitisation, AI, data sharing, advanced robotics and modularity.</li><li>• Accelerate the twin green and digital transition of the manufacturing and construction sectors.</li></ul> |
| Societal        | <ul style="list-style-type: none"><li>• Set out a credible pathway to contributing to climate-neutral, circular and digitalised energy-intensive industries.</li></ul>                                                                                                                                                                                                                                          |
| Techno-economic | <ul style="list-style-type: none"><li>• Increase productivity, innovation capacity, resilience, sustainability and global competitiveness of European energy-intensive industries.</li><li>• Make the jobs of the humans working in the manufacturing sector more attractive and safer.</li></ul>                                                                                                               |







## 9. TUS WEWRITE! Academic Writing Generativity Project

Jennifer Moran Stritch

Department of Applied Social Sciences and Social Sciences ConneXions  
Research Institute

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**  
SDG 4



# TUS WEWRITE!

### Project Lead, Partners and Participants

- Project Lead - Jennifer Moran Stritch (TUS)
- Participants - Aoife Ryan, Rebecca O'Donoghue, Claudine Donnellan, Dr Sarah O'Toole, Billy Madden, Nora O'Mahony, Dr Derek McInerney, Valerie Noonan, Fiona Quill, Ruth Duignan, Jackie Kearney, Katrin Weittenhiller, Frank Doyle, Mary Pidgeon (TUS)

### Key Aims of the Project

- To create a consistent, inclusive and welcoming academic writing community for TUS research postgraduates and research-active staff.
- To support members in overcoming any barriers they encounter in writing productivity or confidence.
- To build a stronger and more sustainable culture of academic writing and publishing in TUS, led by WEWRITE! champions.
- To encourage a sense of community, identity and belonging among the TUS research postgraduate community across all campuses, disciplines and roles.

### Project Description and Methodologies

- Following on from the pilot TUS WEWRITE! project in 2023-24, this TUS WEWRITE! extension project included weekly virtual writing sessions for participating research postgraduates and research-active TUS staff across all TUS campuses.
- Writing sessions, modelled on the well-known Shut Up and Write! approach to writing generativity took place on Teams on Tuesday evenings and Friday afternoons from September - December 2024.
- The online writing sessions were supplemented with in-person and virtual workshops with writing facilitator and coach Niamh Bohane of [www.lifenotes.ie](http://www.lifenotes.ie). The workshops addressed the habits, mindsets and behaviour patterns that can impede confidence, effectiveness and productivity in academic writing.

- Staff members who are completing postgraduate degrees or who already have completed their postgraduate qualifications also participated in TUS WEWRITE! to work on academic publishing outputs. This created an inclusive community of staff and postgraduate researchers who supported each other in expanding their writing practices.



### Key Outputs and Future Opportunities

- Developing a consistent, inclusive and welcoming writing community among TUS research postgrads/staff across all faculties and disciplines.
- The introduction of TUS WEWRITE! champions across TUS campuses and faculties, to promote and continue this approach to academic writing.
- Reducing unproductive behaviours which can contribute to delayed completion or discontinuation of postgraduate studies, which supports sustainability for academic careers.
- Enhancement of transferable academic skills such as academic self-management, goal setting and productivity.
- Greater sense of confidence, social connection, inclusion and identity for participating TUS research postgrads/staff.
- Potential increase in academic publications for staff and postgrad participants.

## Student Perspective – Primary Impact of the Project

Anonymised feedback from participants included the following comments, which suggest greater engagement with academic writing practices for TUS WEWRITE members:

“

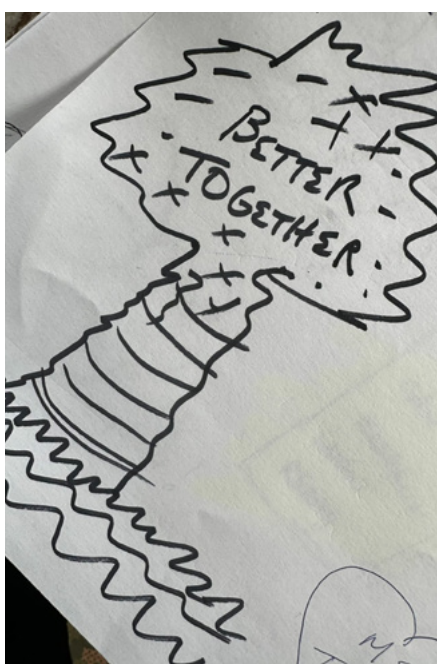
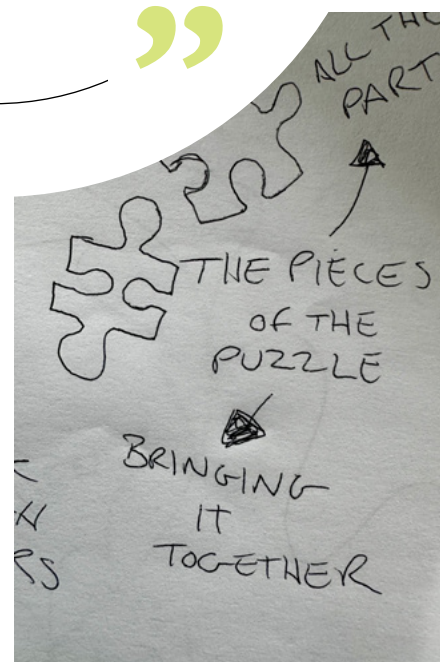
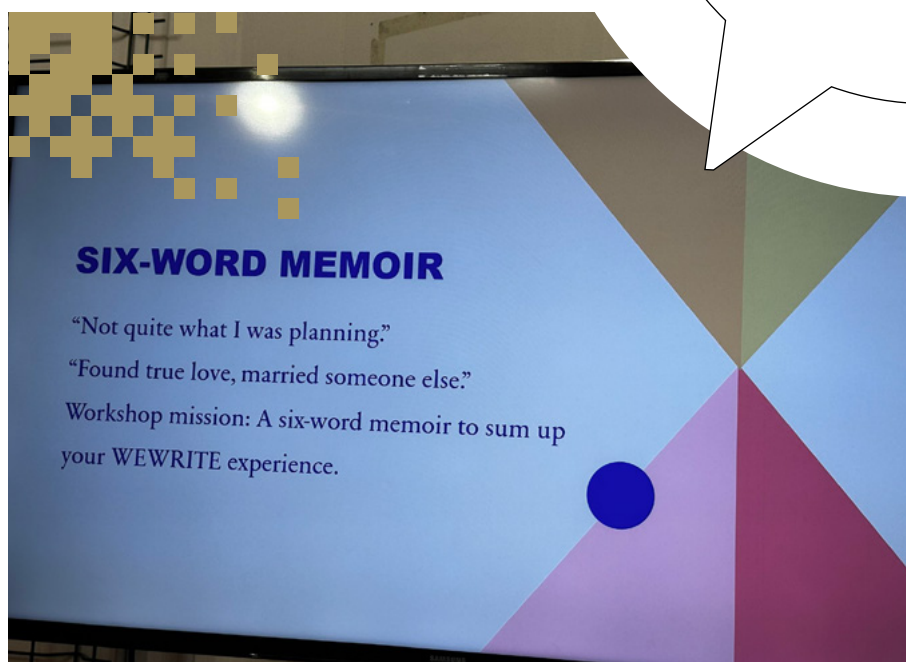
*The most important aspect for me has been the structure that it provided to me to just write. Not just think about what I have been reading but to write.*

”

“

*I have received positive feedback from supervisors, collaborators etc. It has also been a recognised event and structure so that others outside of my PhD team, such as my family, friends and colleagues were respectful and made allowances for the time that I was doing in the writing programme. This has been very helpful, as sometimes research can sound a bit woolly to people outside of it.*

”





# 10. POWER-E-COM - Empowering Renewable and Citizen Energy Communities in Ireland

Gloria Callinan

Sustainable Development Research Institute (SDRI), TUS

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 7



**Empowering  
Renewable and  
Citizen Energy  
Communities**

### Project Lead, Partners and Participants

- Project Lead - Gloria Callinan (TUS)
- Partners - Tipperary Energy Agency and Community Power - Templederry Wind Farm (Ireland); Wirtschaft Und Infrastruktur Gmbh & Co Planungs Kg, Energiewende Oberland Burgerstiftung Fur Erneuerbare Energien Und Energieeinsparung (Germany); Escan SL, Ayuntamiento De Rivas Vaciamadrid (Spain); Energiesparverband Oberosterreich (Austria); Chernomorski Izsledovatelski Energien Tsentar, Municipality of Gabrovo (Bulgaria), Energetsko Podnebna Agencija Za Podravje, Obcina Selnica Ob Dravi (Slovenia).

### Key Aims of the Project

- To create a consistent, inclusive and welcoming academic writing community for TUS research postgraduates and research-active staff.
- To support members in overcoming any barriers they encounter in writing productivity or confidence.
- To build a stronger and more sustainable culture of academic writing and publishing in TUS, led by WEWRITE! champions.
- To encourage a sense of community, identity and belonging among the TUS research postgraduate community across all campuses, disciplines and roles.

### Project Description and Methodologies

The project aims to empower citizens to take a more active role in the energy transition by supporting the development of models and tools that facilitate the creation of energy communities and foster the cooperation between regional/local authorities and citizens so that community energy projects can be realised in regions in the six different partner countries. By:

- Obtaining a comprehensive knowledge of the situation and framework conditions for energy communities.
- Raising awareness of citizens, local authorities

and other key stakeholders by means of 6 specific activation campaigns in the target regions of each partner.

- Creating 6 operational integrated local/regional service hubs at regional or local level (Energy Community Transition Offices).
- Enabling the target groups to collaborate on the set-up and growth of new energy communities.
- Designing a common but still unique methodology to develop energy community models.
- Setting-up of 30 citizen-led initiatives (energy communities).
- Replicating actions in other EU regions - further 85 energy communities.
- Triggering over €15.9m investment, 7.7 GWh primary energy savings, 28.3 GWh RES production, and 17,360 tCO<sub>2</sub> reduction.
- Legislation/policies (EU policy paper in 6 languages + 6 national papers).
- Communicating and disseminating actions will trigger over 400,000 stakeholders.

### Project Description and Methodologies

POWER-E-COM - Empowering Renewable and Citizen Energy Communities, is an EU LIFE funded project. POWER-E-COM will facilitate the creation and operation of Energy Communities (EC) across Europe and enable citizens to participate in the renewable energy transition by developing adaptable models for the establishment of ECs, provide training and knowledge sharing, support existing ECs, engaged citizens and local authorities. This approach will empower citizens and municipalities to participate in a more sustainable and decentralised energy future. Include research methodologies and / or student assessment details if applicable:

- Business model development (co-creation process)
- Communications and dissemination
- Energy community implementation
- Landscape assessment
- Sustainability and replication
- Training, mentoring and capacity building

### Key Outputs and Future Opportunities

- New training modules for communities and local authorities.
- Energy communities transition office in Tipperary.
- Energy communities' campaign.
- New business models for energy communities.
- Policy papers and published journal articles.



### POWER-E-COM Objective

Facilitate the creation and operation of ECs across Europe and enable citizens to participate in the renewable energy transition.

### POWER-E-COM Approach

Develop adaptable models for the establishment of ECs, provide training and knowledge sharing, support existing ECs, engaged citizens and local authorities.

### POWER-E-COM Output

Empower citizens and municipalities to participate in a more sustainable and decentralised energy future. Energy Community Transformation Offices are being established in pilot countries.

### POWER-E-COM Impact

Increased access to sustainable and affordable energy. Supportive regulatory environment for community energy initiatives.



### DO YOU WANT TO:

- Take action for a sustainable energy future?
- Create a more resilient, equitable and renewable energy system?
- Get involved in the local community?
- Strengthen the community through joint community projects and shared goals?
- Keep money in the local economy?
- Become more energy independent?
- Become an enabler for other interested citizens?
- Increase awareness and knowledge about sustainable energy practices?

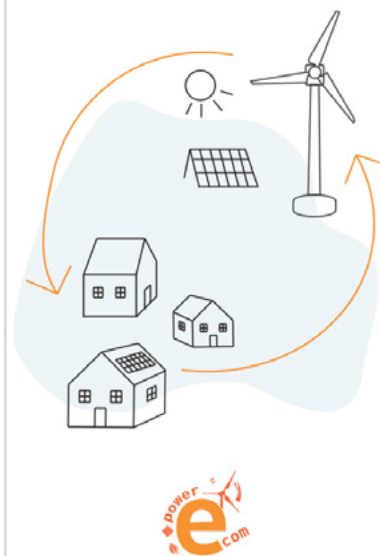
Then get in touch with our project partner in your country!

### PROJECT PARTNERS

We are a group of twelve project partners, coming from six different EU countries. As part of the project, models are being developed to support and facilitate the establishment of energy communities.

## POWER-E-COM

### Empowering Renewable and Citizen Energy Communities



### WHAT IS IT ABOUT?

#### Empowering citizens for a sustainable energy future

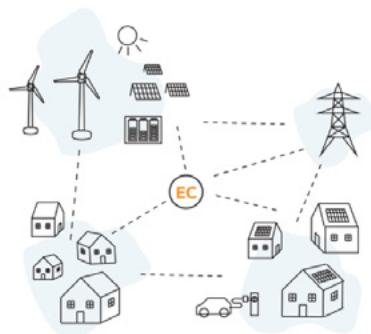
As the energy sector transitions towards a more sustainable and decentralized model, energy communities emerge as a promising approach to harness renewable energy resources and distribute it effectively among communities. The POWER-E-COM project aims to foster the development of these energy communities by providing support and guidance to municipalities, existing energy communities and engaged citizens.



*By supporting the development of models and tools that facilitate the creation of energy communities, the project aims to empower citizens to take a more active role in the energy transition.*

### ENERGY COMMUNITIES IN GENERAL

Energy Communities (ECs) are organised groups of people who come together with a shared goal: to generate, consume, and often share renewable energy. These communities are driven by a commitment to sustainability and a desire to reduce dependence on fossil fuels. ECs harness various renewable energy sources such as solar, wind, hydro, and biomass to produce clean energy. They often involve local residents, businesses and institutions collaborating to install renewable energy systems, such as solar panels on rooftops or wind turbines in the community.



### THE POWER-E-COM PROJECT WILL ...

- > Develop models for the establishment of energy communities
- > Provide Training and capacity building
- > Facilitating the exchange of knowledge and experience
- > Establish Energy Community Transformation Offices to support active citizens, existing energy communities and municipal decision-makers

#### Contacts

...  
<https://power-e-com.eu/>

#### Follow us on

Instagram / LinkedIn / Youtube

#### Funding statement

This project receives funding from the LIFE Programme – EU's funding instrument for the environment and climate action under contract No 101120998.



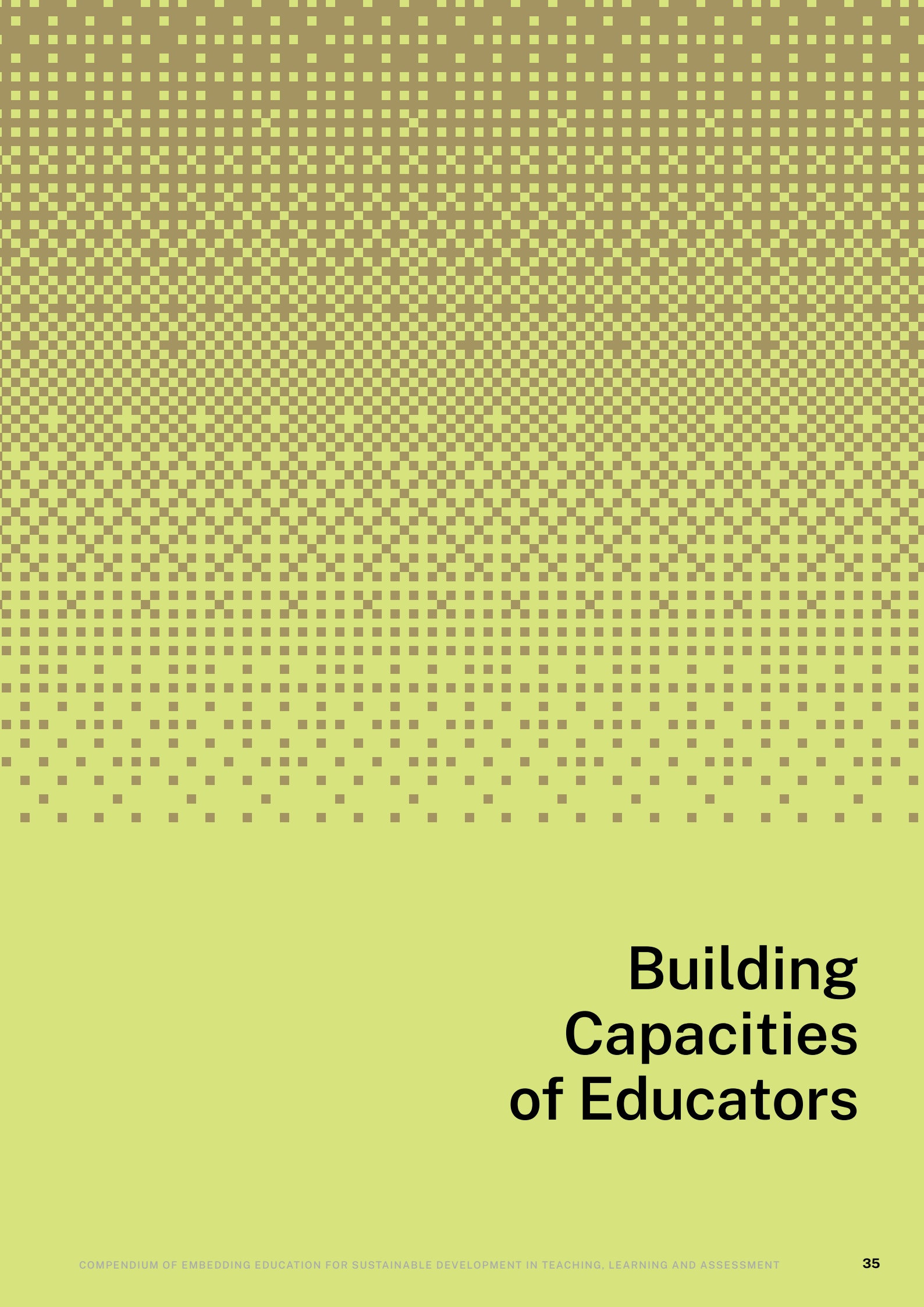
### Student Perspective – Primary Impact of the Project

The training developed by the project will improve access to sustainable and affordable energy for renewable energy communities, active citizens and municipal decision-makers within a supportive regulatory environment for community energy initiatives.

The impact of the project will be two-fold. A new knowledge will be created and immediately be made accessible to people compensating for the low level of existing research in this area. This training will also increase the awareness and the amount of affordable and clean energy available in Ireland where there is still only one energy community, compared to upper Austria where there are 300 energy communities in upper Austria alone.







# Building Capacities of Educators



# 11. The Go Green Project!

Dr. Rita Scully

Department of the Built Environment

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead -Dr Rita Scully (TUS)
- Partners -Dr Marie Walsh (Retired), Dr Josephine Treacy and Lisa Connoles (TUS), Universidad del Pais Vasco/ Euskal Herriko Unibertsitatea (Spain), Fundatia Euroed (Romania), Agrupamento de Escolas Emídio Garcia, Bragança (Portugal), ISIS Galileo Galilei, PIXEL Associazione Culturale and Ufficio Scolastico Regionale per la Toscana (Italy)

### Key Aims of the Project

- To promote awareness of school's communities on environmental issues and sustainable development.
- To promote transdisciplinary approach and problem-based learning;
- Implementing, experimenting and disseminating training models related to the environment.
- To develop lesson plans in the areas of environmental sustainability to be utilized by teachers in secondary schools.
- To enhance the contribution that the education system can give to environmental sustainability.

### Project Description and Methodologies

The project aims to empower citizens to take a more active role in the energy transition by supporting the development of models and tools that facilitate the creation of energy communities and foster the cooperation between regional/ local authorities and citizens so that community energy projects can be realised in regions in the six different partner countries. By:

- Obtaining a comprehensive knowledge of the situation and framework conditions for energy communities.
- Raising awareness of citizens, local authorities and other key stakeholders by means of 6 specific activation campaigns in the target regions of each partner.

### Project Description

Sustainable development is the core subject in the debate of global communities for a renewed development model which will be able to respect the environment and preserve natural resources. Schools have to educate new generations to an integrated and sustainable vision of development and to make them understand the impact of their behaviour on the environment and the consequences that their actions have on the future. The primary target groups are:

- High / secondary school teachers.
- Students from the first two grades of high / secondary schools.
- The secondary target groups are;
  - » General public
  - » Researchers
  - » Relevant organisations
  - » Universities

### Methodologies

#### E-learning Course

The E learning course developed a training package for secondary school teachers to prepare them in considering environmental and sustainable development-related issue in their lessons. Part of this course was the development and inclusion of Video recorded training developed and produced by the TUS team. This course consisted of sections:

- Introduction to the Four Dimensions of Sustainable Development
- General Competencies for Sustainable Development Education
- Knowledge, Systems and Strategies, Emotions, Ethics and Action for Sustainable Development
- Problem Based Learning, Active Learning, Active Didactic and Cooperative Learning
- Planning Interdisciplinary and Transdisciplinary Interventions

#### Lesson Plans

A database of 30 lesson plans and related teaching tools and sources that secondary school teachers and

students can use to address the main challenges related to environmental and sustainable development. The development of these lesson plans was achieved using lesson plan design templates. Each included a section to insert questions to access knowledge. Each lesson plan also included the appropriate overview, timings, instructions, resources, assessments and assessment rubric for the teachers to deliver the material. Assessments included:

- Answering multiple choice questions at the beginning and end of each lesson.
- Group projects
- Discussions
- Group presentations
- Class/School initiatives

### Key Outputs and Future Opportunities

- The key outputs from this project are:
  - An E-learning Training Package for teachers to promote an interdisciplinary approach to a sustainable environmental development
  - A Collection of Problem Based Learning Lesson Plans to implement a set of teaching materials about environmental and sustainable development issues.
  - A Transnational Pilot Syllabus for schools to teach environmental sustainability through a transdisciplinary and problem-based learning approach.
- Secondary outputs from this project are:
  - » Raising awareness of the importance of an interdisciplinary approach when teaching sustainability.
  - » Providing a central platform for teaching resources to assist teachers in their roles.
  - » Ensuring free access to the resources so that collaboration can be as open as possible.

### Syllabus

A proposal was made for a new school Syllabus for teaching environmental protection, sustainability and green practices. The Transnational Pilot Syllabus is designed for students in the first two years of upper secondary school. The syllabus aims to provide students with the knowledge, skills and competences to take an active role in Sustainable Development.

The European Union sets out the broad principles of sustainable development from the strategic objectives of the United Nations' Agenda 2030. At the same time, the development of a European sustainability competence framework is one of the policy actions set out in the European Green Deal as a catalyst to promote learning on environmental sustainability in the European Union. It provides a common ground to learners and guidance to educators, advancing a consensual definition of what sustainability as a competence entails. The syllabus proposal includes:

- Methodological Framework
- Structure
- Assessment Rubric



### Future Research

- Expansion of the material available.
- Development for follow on resources for senior cycle students.
- Additional Teacher training aids.
- Critical review of the delivery and application of the material provided towards future improvements.

### Student Perspective – Primary Impact of the Project

Giving teachers the knowledge and tools in a central, structured and professional electronic platform to assist their teaching of sustainability utilizing an interdisciplinary approach. Allowing them to support students on their learning path in Sustainable Development. The Lesson plans included the flexibility to enable students to take ownership of the learning and engagement with the various aspects of sustainable development. Having a suite of 30 lesson plans to choose from so that teachers and students could ensure variety in their learning approach.

Project website link - <https://go-green.pixel-online.org/syllabus.php>

## 12. UPLIFT: Revolutionising European Film and Literary Tourism with Immersive Technology Integration in Vocational Education and Training (VET) and Small Medium Enterprises (SMEs) Development

Dr Noëlle O'Connor

Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**

SDG 4



### Project Lead, Partners and Participants

- Project Leads - Guðrún Þóra Gunnarsdóttir and Vera Vilhjálmssdóttir (The University of Akureyri, Iceland).
- Partners - Dr Anthony Johnston, Dr Noëlle O'Connor and Alex Yu (TUS); Dr Lina Peciure, Dr Ryte Ziurienė and Leonardas Zilinskas (Vilnius Gediminas Technical University, Lithuania); Jerneja Lešnik and Tanja Abarca Kokol (Vocational College for Hospitality and Tourism, Slovenia); Laura Magan, Enda Felle, Laurence Cole and Val Robus (Momentum Consulting, Ireland); Canice Hamill, Catherine Neill, Kathy Kelly and Poul Jensen (European E-Learning Institute, Denmark).

### Key Aims of the Project

- UPLIFT is an Erasmus Key Action 2 Project which will innovate and sustain the European film and literary tourism sector by implementing extended reality skills for those in Vocational Education and Training (VET) by integrating immersive tourism practices into VET curricula, promoting Virtual Reality (VR) /Augmented Reality (AR) /Artificial Intelligence (AI) readiness for SMEs.

- We are currently in the process of training 20+ targeted stakeholders, involve 100+ VET students, educators, and professionals, and reach over 1000 individuals through digital platforms, ensuring 150+ future tourism leaders are equipped with skills in immersive technology.

### Project Description and Methodologies

- UPLIFT have conducted interviews with the European film and literary tourism stakeholders and are in the process of designing film and literary focused workshops with Extended Reality (XR), integrating immersive practices into VET curricula for implementation in the tourism industry.
- Later, we will host webinars for SMEs and trainers, using a proactive engagement and capacity-building approach. UPLIFT is currently creating online video lessons, stakeholder engagement clinics, and an international conference to share best practices and promote modern technology in the tourism sector. For further information on UPLIFT, please visit our website - <https://uplifttourism.eu/>.

### Key Outputs and Future Opportunities

- UPLIFT is currently finalising a comprehensive immersive skills report, a best practice showcase, a library of immersive experiences, and video workshops with lessons for VET integration into film and literary tourism SME's.
- UPLIFT Research Report: Vocational Skills for Immersive Tourism in Europe - <https://uplifttourism.eu/new-uplift-research-report-vocational-skills-for-immersive-tourism-in-europe/>





- As a result of our first in-person meeting in November (2024), TUS Visiting Internship Students Lisa Inizan and Mael Graizeau-Pontet from the University of Brest (France) created this **blog**:

### 1 Day in a Project Funded by the E.U. with 2 Second Year Students

We are Maël and Lisa, 2 interns at TUS supervised by Tony Johnston, the director of Research Development for the Faculty of Business and Hospitality Technological University of the Shannon. We are both 19 years old students in our second year of marketing techniques at the Institute University of Technology of Quimper, in France. Our studies focus on marketing, sales and communication. We are specialized in the international business, and we are going to be in Ireland for 2 months.

Today we are happy to tell you about the day we spent as part of a project team funded by the European Union! The project the team is working on is about film tourism and is called UPLIFT project. Thanks to our supervisor Anthony Johnston, on November 5 we had the luck to meet the different partners of the projects which are from different countries like Lithuania, Slovenia, Iceland and Northern Ireland. After the introductions, we started the meeting around 10h. For two second year students like us, it was very interesting to see the way the meeting was organized and how to have good group cohesion as quickly as possible to start working effectively. Further, the rest of the meeting was devoted to the arrangement of tasks within the project, put the different actions on a timeline, choose the right logo and obviously talk about the ideas of everyone to move the project forward. To finish this morning as good as possible we finally went to eat together to take a break before what awaited us for the afternoon! On the afternoon, we had the unique opportunity to visit Charleville Castle in Tullamore, an incredible experience for us.

Located in County Offaly, Ireland, Charleville Castle stands as a testament to architectural grandeur and historical significance. Designed in the Gothic-revival style, it's often considered the finest example of this architecture in Ireland. Charleville Castle is not just a castle; it's a vibrant hub of events and activities. Throughout the year, it hosts concerts, private parties, festivals and even paranormal investigations (<https://www.charlevillecastle.ie>, 2025). Furthermore, Charleville Castle welcomes volunteers assist with the upkeep of the castle. Our visit was very great, thanks to our kind guide who shared fascinating stories about the castle's ghostly past. The castle, known for rich history and haunting stories, recently became the filming location for season 2 of the famous series called Wednesday. I really loved the season 1, so I can't wait to spot the castle in the scenes when I will watch the new season! Other films and series like « The Faceless Lady » or « Eliza Lynch: Queen of Paraguay » have also been filmed there. In conclusion, as students, we feel incredibly fortunate to have experiences like this. Visiting Charleville Castle has not only allowed us to explore the rich heritage of Ireland but also given us the opportunity to meet new people and connect with local culture in a unique way.

- The project is developing VET trainers' guides and host a final conference to share insights, aiming for enhanced vocational skills, digital readiness, and immersive technology adoption in the tourism sector.

#### Student Perspective – Primary Impact of the Project

Assessing the achievement of the UPLIFT project's objectives involves a combination of quantitative and qualitative indicators, reflecting the comprehensive strategy which ensures a holistic evaluation of the project's impact on various target groups from VET providers and SMEs to educators, trainers, and the wider tourism industry.

From a student perspective, the primary impact of the UPLIFT project likely centre on enhanced learning opportunities, skill development, and increased employability within the tourism industry. By incorporating both quantitative and qualitative indicators in its evaluation strategy, the project ensures that student outcomes are measured holistically.







# 13. FoodTuristic: An Erasmus Key Action 2 Funded Project about Reducing Food Waste, Local Growing on Campus and Repurposing of Food Waste as supported by Technology

Dr Anthony Johnston

Faculty of Business and Hospitality

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 12



## Project Lead, Partners and Participants

- Project Leads – Dr Anthony Johnston and Alex Yu (TUS).
- Partners – Dr Noel Murray and Dr Colum Gibson (Munster Technological University, Ireland); Mojca Polak and Mitja Petelin (Vocational College of Hospitality and Tourism, Slovenia); Ronald Briffa, Arianna Mangion, Claire Briffa and Pierre Fenech (Institute of Tourism Studies, Malta) and Romain Raoul and Anne Baudriller (Lycée Hotelier de Dinard, France).

We are a consortium of five vocational and higher education institutions across Europe who are passionate about campus food growing, reducing food waste, and circularity of food.

## Key Aims of the Project

- The FoodTuristic project addresses the lack of green technology curriculum in European culinary and hospitality schools, which have traditionally focused more on gastronomy and hospitality management skills.
- Our project developed digital resources for educators and students in hotel and culinary schools across four partner countries to reduce food waste, develop circular economy skills, and localise food production.
- We developed a Vocational Education and Training (VET) course delivered as a digital badge, a website, a mobile application, and a good practice guide, to address the green skills gap in European culinary and hospitality schools.
- Our project reduces food waste, utilises food waste in novel technology composting systems, and adopts new technologies to grow appropriate foods onsite.
- The skills developed by project output users will have strong legacy potential and benefit the reduced carbon impact of schools and industry.

## Project Description and Methodologies

- FoodTuristic is funded via the Erasmus Key Action 2 framework, with the project running from November 2023 - November 2025.
- This project incorporates experiential and technology-driven learning.
- We have developed resources to help students learn about AI-monitored food waste systems, virtual reality case studies, bio-digesters, smart filters and more, presented in e-training modules, web apps and videos, to educate students in culinary and hospitality schools.
- These tools provide hands-on experience in applying sustainable practices, such as reducing food waste and improving circular economies.



## Key Outputs and Future Opportunities

- FoodTuristic Video Explained - <https://www.youtube.com/watch?v=12G9PjwiiCQ>
- Technical report which outlines site visits made in Ireland, Malta, France and Slovenia to technologies used to reduce food waste, localise growing and reuse food waste for new purposes - <https://www.foodturistic.com/technicalreportfromsitevisitsen>.
- Good Practice User Guide (available in English, French and Slovenian) which supports people in Vocational Education and Training to adopt new technologies into their education, training and work-based practices – <https://www.foodturistic.com/good-practice-user-guidessl>
- FoodTuristic Food e-Training Certificate Course - <https://learn.foodturistic.com/>
- The FoodTuristic App - [https://play.google.com/store/apps/details?id=io.kodular.e22305591.FoodTuristicMobileApplication&pcampaignid=web\\_share](https://play.google.com/store/apps/details?id=io.kodular.e22305591.FoodTuristicMobileApplication&pcampaignid=web_share)
- Lisa and Mael's 12 tips to reduce food waste - <https://www.foodturistic.com/news/lisa-and-mael-s-12-tips-to-reduce-food-waste>
- Video on Green Wall in Maribor VSGT - <https://www.foodturistic.com/news/new-video-on-green-wall-in-maribor-vsgt>





### Student Perspective – Primary Impact of the Project

This Erasmus+ project promotes sustainability in culinary education, and it focuses on raising awareness, educating communities, localising food production and developing innovative strategies to minimise waste across the world.

By integrating technologies like AI food waste monitors and on-site composting, it helps schools to minimise food waste, reduce carbon footprint, and develop circular economy skills. Also, the project provides digital training tools and resources for educators and students to adopt sustainable practices.

## 14. GreenHive - A European Ecosystem for Sustainability Education

Dr. Marie Taylor

Sustainable Development Research Institute (SDRI), TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Leads - Dr. Marie Taylor and Elaine Cleary (TUS)
- Partners - Miriam Lanzetta, Gianluca Abbruzzese and Anglea Mangiullo (Lasco, Italy); Mamen Lopez Cruz, Sabela Ben Zarandon, Marta Burgos Gonzalez and Area Illan (Femxa, Spain); Ovidiu Acomi and Dr Nicoleta Acomi (Team for Excellence, Romania) and Raina Melissinou, Dimitra Sofianou and Anastasia Sonia Maravelaki (Kean, Greece).

### Key Aims of the Project

- Increasing Vocational Education and Training (VET) providers' capacity to prepare learners for the green transition.
- Equip VET providers with European sustainability competence framework GreenComp-based initiatives and digital tools to foster learners' sustainability competences.
- Increasing VET teachers' knowledge and skills in sustainability education.
- Create a transnational cooperation platform with VET institutions for the continuous improvement and innovation of sustainability education and adapting VET provision to the needs of a greening economy.
- Increasing VET learners' sustainability competences.

### Project Description and Methodologies

- Providing VET providers with the tools to build local multi-stakeholder hubs to activate co-creation processes for sustainable development, and a long-term cooperation platform to connect the hubs and facilitate the transfer of knowledge and know-how across sectors and countries, contributing to adapting VET to the labour market needs.
- Developing the GreenHive Methodological Framework and validation toolkit. This will allow the design and development of platform-based networks where VET providers with different skills and needs connect, exchange resources and collaborate for innovating green education. The Framework Development will detail the requirements for building this infrastructure of collaboration, the role of the different actors within

the ecosystem, the information and resource flow between the actors, the function and dynamics for the ecosystem to grow, learn and evolve over time.

- Implementing direct actions to improve VET providers' sustainability competences, to equip them with the tools to foster learners' knowledge, attitudes and skills in the four competence areas of the GreenComp, in line with the Osnabrück Declaration, by developing educational resources that embed the European GreenComp concepts.
- Developing sustainability competences by gathering best practices in the GreenComp sustainability competences in the VET systems of the partner countries based on criteria such as effectiveness, inclusiveness, innovation and transferability.
- Increasing the quality and relevance of the partners' activities to develop their target groups' sustainability competences by equipping them with new educational resources, built on the exchange of experience and knowledge with transnational, cross-sectoral and multi-disciplinary teams.
- Boosting the internationalisation of the partners' activities, as members and managers of the GreenHive's transnational community by enabling them to establish synergies with minimum of 15 VET institutions in the four partner countries where the localised hubs will be established.

### Key Outputs and Future Opportunities

- A methodological Framework for developing a VET sustainability education ecosystem and localised hubs to facilitate the transfer of local experience, knowledge and innovation in the field of the implementation of the GreenComp and encourage collective action of VET providers, learners and external stakeholders to co-create solutions for sustainability.
- Educational resources for Green Combs, including guidelines to implement open spaces for discussion around learner-generated topics among members of localised hubs, micro-learning videos, workshop scenarios and project-based learning experiences in the 4 competence areas of the GreenComp.
- The GreenHive platform, connecting the hubs through the internet and providing capacity-building opportunities and digital tools for VET institutions, knowledge-transfer spaces, and co-creation activities for its members.
- A toolkit for VET providers (combs' coordinators) for the setup, management and growing of the Green Combs (communities of practice) for sustainability education, detailing the processes, tools and methods to set up a Green Comb in six development domains (Governance, Organization, Community, Activities,

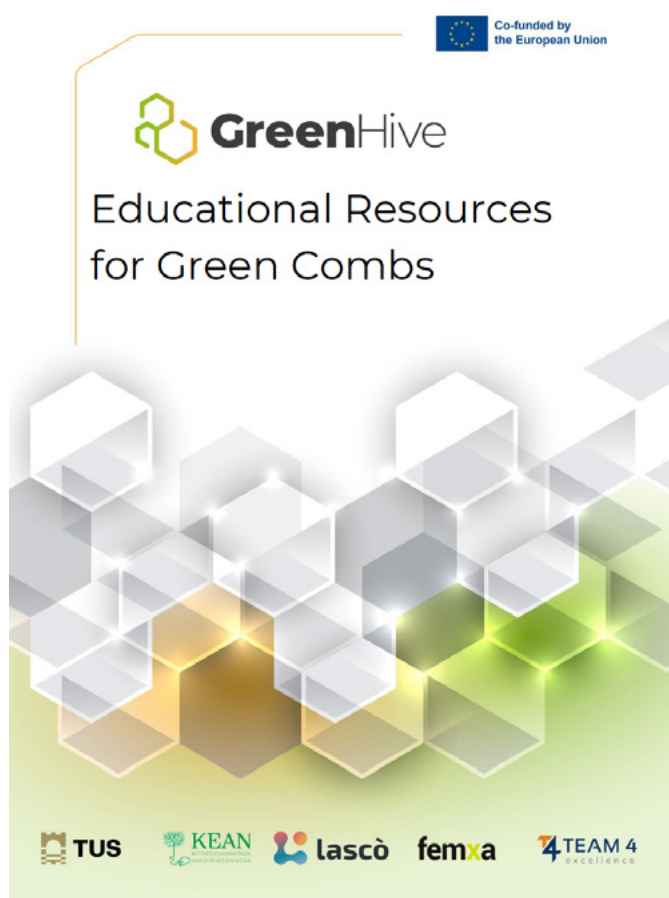


Tools, Relationships with the Hive). The toolkit includes a how-to guide (ePublication), 9 module MOOC (explaining The EU Sustainability Competence Framework; best practices and opportunities in implementing the GreenComp; system innovation approach to fostering sustainability competences in VET; the six domains to manage and nurture Green Combs) and 12 Canvases (to facilitate the management and growth of the hubs). This toolkit supports VET providers in setting up, managing and growing internal hubs for sustainability education and could be adopted by other VET, School, Higher and Adult Education providers, or nonprofit organisations, to develop internal hubs for developing sustainability competences, and/or used to develop communities and activities addressing sustainability challenges.

- Report of the Virtual Knowledge Fair, collect the results of the Fair, including the methodology applied for organising the event, to make it replicable by other institutions, and the descriptions of the successful initiatives, projects and practices showcased during the Fair by the attendees, divided per GreenComp competence area.
- A toolkit for Developing Educational Resources for Green Combs on collecting resources and tools for VET providers to foster learners' sustainability competences. The toolkit includes guidelines to implement open spaces, microlearning videos, workshops and project-based learning experiences for students, covering the twelve sustainability competences addressed by the GreenComp Framework.
- A training scheme for VET teachers to use the developed educational resources. This resource provides the staff of the participating organisations (not directly involved in the project activities) and the VET teachers with a framework for replicating the training experience and transferring the project results to other colleagues.
- Strengthened Networks: robust connections have been developed with external stakeholders, including VET institutes, education boards, trainers, and Higher Education Institutions (HEIs). Participation in national working groups and local hubs has facilitated knowledge exchange, allowing participants to share insights and learn from one another. VET institutes, Education and Training Boards, Education Centres, Education Trainers and HEIs have participated as members of national Working Groups, answering surveys / interviews, establishing local hubs. This has enabled participants to both share their experience and expertise and to learn from the practices and experiences of others.
- Enhanced Understanding: Participants have gained a deeper understanding of Education for Sustainable Development (ESD) within their countries, especially at VET level, enabling them to align their practices with global sustainability goals.
- Collaboration Opportunities: The project has fostered stronger ties among partaking organisations, leading to discussions about future collaborations and project proposals, which could further enhance the sustainability education landscape.
- Stakeholder Engagement: Initial groundwork by the project has identified potential stakeholders in

VETs and higher education who are eager to engage. These stakeholders are now part of a communications network, ensuring ongoing dialogue and collaboration.

- Feedback Mechanism: Key participants, including VET experts, academics and researchers, are positioned to provide valuable feedback on project outputs, particularly the educational resources being developed. This input is crucial for tailoring resources to meet the needs of the VET and broader educational community.
- Long-term benefits: the project has laid a solid foundation for ongoing collaboration and improvement in sustainability education, with the potential for long-term benefits in the involved organisations and their communities. The project has greatly enhanced the project partners understanding of education for sustainable development in their countries.



GreenHive educational resources for Green Combs.  
<https://trainingclub.eu/wp-content/uploads/2025/01/GreenHive-W4-Educational-Resources-for-Green-Combs-EN.pdf>

#### Student Perspective – Primary Impact of the Project

VET learners involved in the project activities are expected to improve their attitude and motivation to learn, increase their sustainability competences, thus improving their employability.





## 15. Exploring Perceptions of Campus Sustainability at TUS

Jennifer Moran Stritch

Department of Applied Social Sciences and Social Sciences ConneXions  
Research Institute, TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 11

### Project Lead, Partners and Participants

- Lead Partners - Dr. Lisa O'Rourke Scott, Dr. Frank Houghton, Ruth Duignan, Jennifer Moran Stritch and Dr. Sasha Noonan (TUS)
- Participants – Year 1 BSc in Applied Psychology students (Moylish and Coonagh campuses)

### Key Aims of the Project

- Create awareness of the 17 SDGs among 1st year psychology students.
- Encourage them to examine sustainability on TUS campuses through the technique of participatory photography (photovoice).

### Project Description and Methodologies

- Students completed the SDGs digital badge from the TUS Digital Backpack in September/October 2024.
- Ruth Duignan (TUS) delivered a guest lecture introducing the concepts of sustainability in the modern fashion industry in October 2024.
- Staff partners attended advanced participatory photography/photovoice training, to prepare to support students in capturing images of their perceptions of sustainability at TUS campuses using photovoice research methods.
- The students were assessed on their images and corresponding reflective text as part of the qualitative research methods material in the Year 1 module in Research Methods.

### Key Outputs and Future Opportunities

- Students and staff are developing a rotating slide show of the findings of the project for future sharing with the wider TUS community.
- Following the conclusion of the project, short reports were submitted to the newly formed TUS Green Campus committee and the Developmental Studies Association of Ireland (DSA) committee.
- Engagement with this pilot SATLE project will facilitate the development of a template for integrating teaching on sustainability issues into other arts and social sciences programmes at TUS.

### Student Perspective – Primary Impact of the Project

The primary impact of the project for students was an increased awareness of sustainability and its relevance to psychology. Engaging with the 17 SDGs helped students recognise the interconnectedness of environmental, social, and psychological well-being. Using photovoice encouraged critical reflection, as students identified both strengths and gaps in sustainability on campus. It also allowed them to explore creative research methods, which will benefit them across their degree. The reflective component enhanced their ability to apply psychological insights to real-world sustainability challenges.





# Empowering and Mobilising Young People



# 16. INSPIRE: Promoting Post-Conflict Refugee Tourism Entrepreneurship

Dr Anthony Johnston

Faculty of Business and Hospitality

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 1



### Project Lead, Partners and Participants

- Project Leads – Dr Anthony Johnston, Dr Noëlle O'Connor and Alex Yu (TUS).
- Partners - Yvonne Farrand, Dr Allan Lawrence and David Taylor (Businet); Katleen Vos and Christel Maenen (PXL Belgium); Dr Kateryna Skyba and Dr Serhii Matiukh (Khmelnytskyi National University, Ukraine); Nikolina Demark (PAR University of Applied Sciences, Croatia); Dr Gurhan Aktas and Dr Elif Uzgoren (Dokuz Eylül University, Türkiye) and Lesia Steblo and Kateryna Lutsyk (DVA Ukraine).

We are a consortium of seven higher education institutions and National Government Organisations (NGOs) who are passionate about supporting post-conflict refugee tourism entrepreneurship.

### Key Aims of the Project

- Funded by the European Union, focuses on empowering refugees to establish tourism-based businesses, fostering their economic independence and social integration.
- The project provides resources such as training, workshops, and a searchable databank for refugee entrepreneurs.
- It aligns with Education for Sustainable Development (ESD) by integrating education, skill-building, and sustainable entrepreneurship into its mission, promoting inclusivity and innovation in the tourism sector while addressing the economic and social challenges by refugees.

### Project Description and Methodologies

- The INSPIRE project provides training and education materials for refugee tourism entrepreneurs across Europe.
- We are funded by an Erasmus Key Action 2 grant for 2023-2025 to develop training and education resources to support this unique population.
- Our aim was to train refugees to start post-conflict tourism businesses, aiding their economic resilience and social integration through workshops, seminars and

mentoring for people in refugee like situations to start their own tourism business and providing guidance on tax, employment law, insurance, banking, finance, regulations.

### Key Outputs and Future Opportunities

- The INSPIRE project, led by Technological University of the Shannon supports the needs of refugee tourism entrepreneurs.
- The project started in late 2023 and will run for two years.
- During our partnership we will identify good practice case studies, barriers to success case studies, and lessons applicable across the partner countries, to support the integration and economic self-sufficiency of people in refugee like situations.
- Our project produced a detailed report conducted from primary and secondary fieldwork in Ireland, Belgium, Croatia, Türkiye, and Ukraine. We created a good practice user guide for refugee tourism entrepreneurs which will be supported by course materials, a website and mobile application.



- A final resource is the publication of a searchable databank of supports for refugee tourism entrepreneurs, including education and training supports, finance options, networking and business supports. Links to our outputs:
  - » Website - <https://www.inspireproject.eu/>
  - » Journal article publication 'How would forced migration influence tourism entrepreneurship in the future? Insights from Ireland, Türkiye and Ukraine' - <https://www.tandfonline.com/toc/rcit20/current>
  - » Entrepreneurship Support for People in Refugee Like Situations Resource Databank - <https://www.inspireproject.eu/entrepreneurshipsupports>
  - » Higher Education digital badge - <https://www.inspireproject.eu/digitalbadge>



- » Mobile App - <https://play.google.com/store/apps/details?id=io.kodular.maelgraizeaupontet.InspireProject>
- » Policy State of the Art Review - [https://3762351a-6f94-4186-a2d0-7e1c3a16c3cf.usrfiles.com/ugd/376235\\_7fce70b3c0bf4b7ebf8cfc574cb1db60.pdf](https://3762351a-6f94-4186-a2d0-7e1c3a16c3cf.usrfiles.com/ugd/376235_7fce70b3c0bf4b7ebf8cfc574cb1db60.pdf)
- » Report on Interviews - [https://www.inspireproject.eu/\\_files/ugd/376235\\_245cf09ff20e47b28000dee42545e5da.pdf](https://www.inspireproject.eu/_files/ugd/376235_245cf09ff20e47b28000dee42545e5da.pdf)
- » Support Guide for Refugee Entrepreneurs - Good practice user guide - <https://www.inspireproject.eu/supportguide>
- » Video published by our visiting French interns showcasing the project - <https://youtu.be/ssXsNKejtI0>
- » Workshops - <https://www.inspireproject.eu/workshop>

#### Student Perspective – Primary Impact of the Project

- INSPIRE involves students in mentoring refugee entrepreneurs, helping them develop tourism-related business plans.
- These projects encourage cultural exchange, teamwork, and the application of entrepreneurial and sustainable tourism skills.
- Students gain practical experience while contributing to social inclusion and economic sustainability.

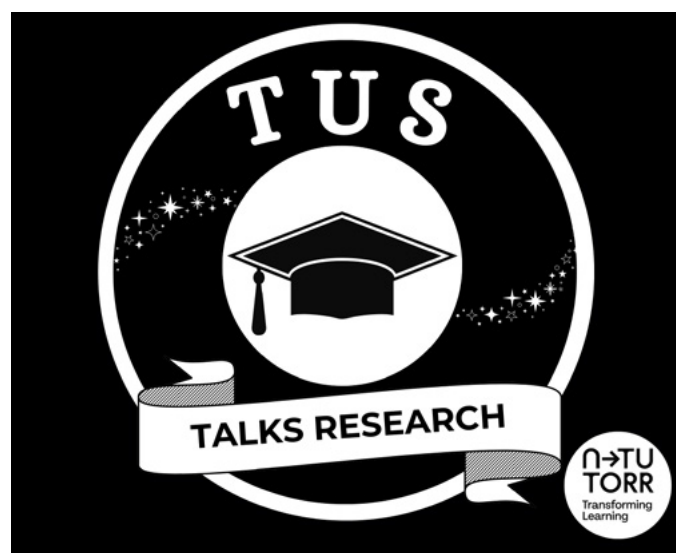
## 17. TUS Talks Research

Jenna Barry

Department of Information Technology

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead - Jenna Barry
- Speakers: Dr Jeff Buckley, Peadar Casey, Tania De Gasperis and Martina Rosenthal.
- Panel Members: Dr Lisa Hester, Dr Joe Fitzpatrick, Dr Rebecca Coughlan, Dr Declan Colbert, Dr Yvonne Cortese, Dr Patryk Makowski, Katie Shiels, Mohammad Altaf, Catherine O'Halloran, Patrick Duffy, Zeeshan Ali, Threnody Aldritt, Philbert Nshimiyimana, Jos Gijbels and Henrique Pereira.
- Volunteers: Kieran Molamphy, Claudine Donnellan, Nandini Sharma, Fiona Quill, Daniyal Masdar Mullaji, Ahmed Abdellatif, Edel Flynn, Jose Fernandes and Jayson Luis da Silva Ribeiro.

### Key Aims of the Project

- Inspire postgraduate research students through shared experiences and success stories.
- Highlight pathways from research to revenue generation and industry impact.
- Facilitate networking between students, academics, and industry professionals.
- Launch and promote a community of practice for postgraduate research students.
- Provide a platform to discuss challenges in academia and potential solutions.

### Project Description and Methodologies

Two research events were held in Athlone and Limerick.

#### Purpose

A research-focused event aimed at showcasing the impact of postgraduate research, fostering connections, and launching a supportive community of practice for postgraduate research students.

- Qualitative Approach: Insights and narratives shared through panel discussions and speaker presentations.
- Case Studies: "Abstrakta" as a real-world example of research leading to business innovation.
- Knowledge Exchange: Interactive Q&A sessions encouraging active participation and idea-sharing among attendees.

#### Structure

The event featured:

- Presentations on PhD research and its practical applications.
- What I wish I had known before I started my PhD.
- [Re]search to [Re]venue.
- "Abstrakta," a business born out of research.
- Panel discussions with PhD holders in academia and industry about career trajectory, the final viva voce, and advice on the PhD journey.
- Panel discussions with current PhD students sharing their lived experiences.
- The launch of a community of practice for postgraduate researchers.





### Key Outputs and Future Opportunities

The following key outputs contribute to Goal 4 – Quality Education:

- **Knowledge Sharing:** Presentations on research impact, commercialization, and industry transition.
- **Networking Opportunities:** Creating spaces for postgraduate researchers, academics, and industry professionals to connect.
- **Community Formation:** Establishing a community of practice to support postgraduate research students.
- **Panels and Discussions:** Providing insights from experienced professionals and current students regarding research challenges and career pathways.
- **Future Development:** Generating ideas for further events, interdisciplinary collaborations, and research projects.

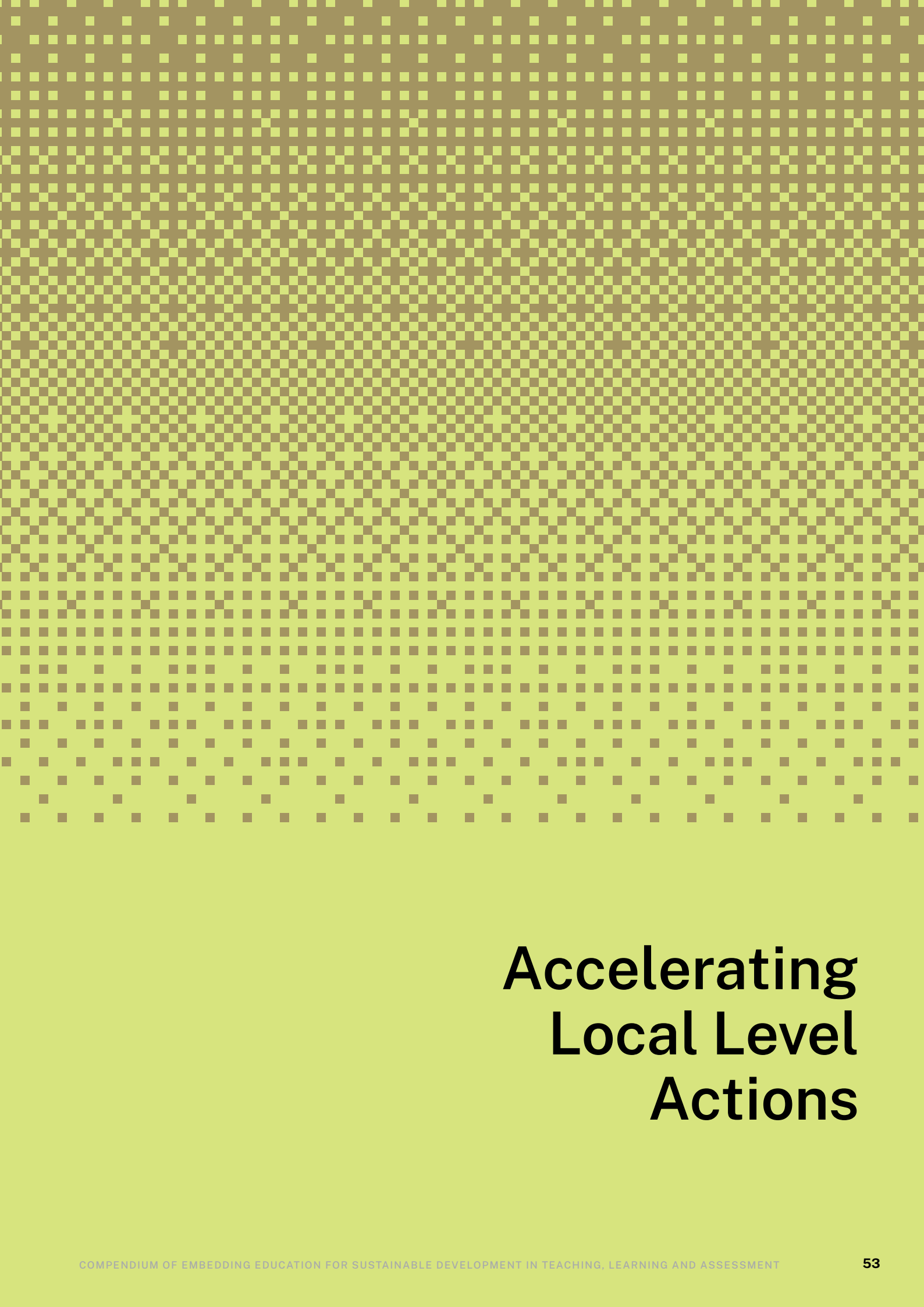
### Student Perspective – Primary Impact of the Project

- **Informal Feedback:** Attendees were encouraged to share their experiences, challenges, and expectations

- during the event, shaping the community of practice.
- **Networking Outcomes:** Connections made during the event were tracked informally through follow-ups and community engagement.
- **Engagement Metrics:** Participation in discussions, questions raised during panels, and interest in the community of practice were observed as indicators of impact.
- **Empowerment:** Students felt supported and inspired by learning about career pathways and overcoming challenges.
- **Community Building:** Creation of a supportive network that fosters collaboration and mutual encouragement.
- **Practical Insights:** Students gained actionable advice for transitioning from academia to industry or starting businesses.
- **Visibility:** Increased awareness of their roles as researchers and their contributions to society and the economy.







# Accelerating Local Level Actions



## 18. FarmElder - Social Farming for the Elderly

Elaine Cleary

Sustainable Development Research Institute (SDRI), TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 3



### Project Lead, Partners and Participants

- Project Lead - Elaine Cleary (Sustainable Development Research Institute)
- Partners - South Kerry Development partnership (Ireland); MOSAIK and Biothenski Naklo (Slovenia); Adrimag (Portugal); Eberswalde University for Sustainable Development and Hof Und Leben (Germany) and European Landowners Organisation (Belgium).
- Participants - Farmers, people working in the care industry, students in agriculture and care.

### Key Aims of the Project

- To reduce social isolation in rural communities through engagement, development of learning materials and mobility opportunity to social farmers.
- To produce a series of open access case studies, learning modules and video stories in social farming.
- To deliver pilot training and learning opportunities to workers in the care industry and farmers.
- To use digital tools such as Video Case Stories to tell the stories of Social Farming across partners countries.



### Project Description and Methodologies

#### Initiation Phase

- The project planning consisted of the initial kick-off meeting with a combined in-person workshop approach held in Ireland to agree and decide the project activities. During the meeting the future planning for the project was mapped out alongside quality assurance and communication strategies.
- A compilation of reports was produced consisting of mapping the research in Slovenia, Germany, Portugal and Ireland with one overarching summary report and general European report. These reports and analysis formed the basis for the project direction in the development phase. The information gathered was then used to evaluate the current situation of Social Farming throughout the partner countries, addressing challenges faced by the elderly. The reports informed the curriculum development in the development phase.
- Potential case study farms were identified and a series of 14 case studies were written as part of the learning pack. The case studies were based on participants showcasing social farming or horticultural practices, either by an elderly person or for an elderly person.

#### Development Phase

- Learning modules were developed to reflect the needs of the care organisations for elderly people and farmers. The modules were delivered through a blended learning format via a self-directed training website and in person classes and online sessions. The training and information website will remain active for two years after the project ends, therefore, facilitating content access and future dissemination beyond the project's lifespan.
- As part of the stakeholder engagement activities there were 2 mobility activities delivered. The first mobility opportunity included a visit to social farms in Germany and the second was a learning and training week held in Ireland for teachers and trainers in Vocational Education and Training (VET) and adult education. Two transnational project meetings were held in Slovenia and Portugal that all partners attended in person which included visits to social farms and rural development organisations.

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evaluation, Testing, and Dissemination Phase | <ul style="list-style-type: none"> <li>Quality assurance was done throughout the project through evaluation of meetings, piloting and evaluation of the training materials by external participants and a thorough evaluation report was produced. The communication and dissemination activities were monitored throughout the project using a comprehensive range of multimedia communication and dissemination activities such as in country conferences organised at a country level and a European Conference held in Brussels, bringing together policy makers and practitioners to discuss social farming at an EU policy level.</li> </ul> |
| Project Management                           | <ul style="list-style-type: none"> <li>To ensure that project management quality was completed throughout to a high standard, all partners agreed on a project management, quality assurance, and evaluation plan to ensure timely delivery, high quality, and adherence to the budget.</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |

### Key Outputs and Future Opportunities

- 14 case studies of social farming across Europe
- 4 video case stories
- 4 National and 1 European Report
- 2 Learning and Training and Teaching Activities in Ireland and Slovenia
- Website ([www.farmelder.eu](http://www.farmelder.eu)), newsletters and Fact Sheets
- YouTube Video - <https://www.youtube.com/@FarmElder>

Several key challenges were highlighted during the project which would warrant further research in the areas of loneliness in farming, access to care services in rural areas and peer advocacy in social farming.

Loneliness is a common emotion in rural areas amongst older farmers, especially those in remote rural regions. Farmers can experience this in diverse ways including if family members have left the farm to work in urban centres, a spouse or close friends pass away or move to a new location, or mental health deteriorates through stress or anxiety. This can contribute to a sense of loneliness and isolation in a community that they once may have been an integral part of.



Access to services in rural areas can often be sparse and fragmented, with limited access to specialised services and, therefore, primary care can often lead to lengthy trips to hospitals or clinics. Social farming has been identified as a method of reducing the level of care required, using a social farming day instead of a day within a day care facility, increasing access to nature, developing positive engagement links within the community, reducing stress and socialisation with networks of people in the locality bringing a sense of belonging.



Development of social farming leadership and advocacy programmes could be instrumental in rural areas to promote the methods of social farming using peer methodology. Development of peer leadership networks would support the National and European Policies on healthy aging and developing sustainable resilient rural communities throughout Ireland and the EU.

### Student Perspective – Primary Impact of the Project

Social Farming is still a relatively new concept within the care industry to combat stress and anxiety for the vulnerable, marginalised, or those at risk of social exclusion such as the elderly, people with disabilities, those recovering from addictions. The participants on the training programmes got first-hand experience of theory around social farming, working with the elderly and with farmers on social theories of belonging and communication. The learning included video stories that showed the benefits of Social Farming and case studies which provided a deeper understanding of the benefits, challenges, and development of Social Farming. The video stories allowed the inclusion of an emotive element in the learning experience within the project as a method to broaden the understanding of social farming from both social farmers and participants on social farms. The students learned about alternative care methods undertaken across Europe and how these can support social inclusion in rural areas using the land and nature rather than institutional methods.

## 19. REBOUND - Fostering Resilience in Rural Communities

Dr Shane O'Sullivan

Department of Social Sciences and Sustainable Development Research  
Institute (SDRI), TUS

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**

SDG 4



### **Project Lead, Partners and Participants**

- Project Leads - Dr Shane O'Sullivan, Dr Marie Taylor and Dr Catherine Corcoran (TUS)
- Partners - Dr Brendan O'Keeffe and Ann Marie Morrison (O'Keeffe Social Research); Dr Irma Potočnik Slavič and Sara Mikolič (University of Ljubljana); Rajko Antlejš (Development Agency Kozjansko); Kvirina Martina Zupanc (Development Agency Kozjansko); Dr Alistair Hernandez and Dr Urszula Budzich Tabor (AEIDL) and Fátima Rodrigues (ADRIAMAG).

### **Key Aims of the Project**

- To collate best practice experiences and models (drawing on our pre-development work and networks) in respect of place-based resilience-building.
- To devise a resilience measuring, signposting and strategic planning tool that practitioners can utilise in a diverse range of geographical settings.
- To engage with practitioners (in vocational education, rural development and civil society settings, among others) in collaboratively co-designing an innovative training and capacity-building programme that effectively enables them to promote resilience in tandem with place-making.
- To refine a digital assessment and learning repository with a series of dimensions and indicators to measure rural community resilience/vibrancy, including citizens' perceptions and experiences thereof – that can be transferred to diverse contexts and tweaked in line with territorial features and potential.
- To engage with multiple actors (as recommended in the OECD's Rural 3.0) in transferring project learnings in to practices in planning, land-use, climate adaptation, food production, ecology, economic diversification, service provision, well-being and other dimensions of liveability.

### **Project Description and Methodologies**

The notion of 'resilience' is very much to the fore in public and policy discourse. The European Union has put resilience and innovation at the core of its climate adaptation and zero carbon strategies. The European Green Deal envisages

resilient rural communities and farms that contribute to biodiversity and wellbeing. Regional policy, at the EU and member state levels, increasingly emphasizes the sustainable development of regional and territorial resilience. Indeed, the current global pandemic has propelled a renewed focus on individual and community-level resilience, which is associated with quality of life and social capital. Citizen and social movements are also advocating resilience and are embracing initiatives such as Smart Villages as part of multi-pronged and integrated approaches to place-making. Thus, our project sought to respond to macro- and micro-level imperatives and impetuses towards the promotion of resilience. Specifically, we proposed to identify and capture best practices in respect of resilience and to disseminate and promote conducive knowledge capital.

The main activities of the REBOUND Project included:

- Development of national (Ireland, Portugal, Slovenian) and European reports on the topic of Rural Resilience.
- Design, development and accreditation of a blended learning programme – Certificate in Rural Resilience (Special Purpose Award) which was accredited by TUS.
- Design, development and maintenance of learning repository (Moodle) and mirroring of resources onto project website.
- Development and testing of educational resources for the Certificate in Rural Resilience through collaborative workshops.
- Recruitment of students and delivery of the blended learning accredited programme.
- Development of student monitoring, evaluation and assessment instruments; and collation of student and staff feedback through an Evaluation Report.
- Scheduling of regular virtual and transnational project meetings throughout the lifecycle of the REBOUND project.
- Disseminating research outputs and key milestones of the REBOUND project to stakeholders through project website; conferences; multiplier events; social media; newsletters etc.
- Embedding key deliverables into higher education and VET programmes offered by project partner consortia.

### **Key Outputs and Future Opportunities**

The concrete outputs from the REBOUND project included:

- National and Summary Reports on the topic of 'Rural Resilience'.
- Accredited blended learning programme – Certificate in Rural Resilience (L6 Special Purpose Award).
- Teaching and Learning Resources including training handbook for the accredited blended learning programme.



# REBOUND

## Fostering Resilience in Rural Communities

This inter-territorial project is supported by the EU through ERASMUS+. It pursues an action-research approach to promoting rural community resilience. Partners from Ireland, Portugal, Slovenia and the EU-wide European Association for Innovation in Local Development (AEIDL) are pooling their expertise and engaging a diverse range of stakeholders. Having undertaken research with rural communities, the project partners are now offering places in a Level 6 training and capacity-building training programme on Rural Community Resilience.

### COURSE OVERVIEW

- Award Level: Level 6 NFQ Special Purpose Award (university accredited)
- Price: Free
- Duration: One Academic Semester (circa September to December)
- Study Mode: Part-time blended learning (recorded lectures, online tutorials and work based learning)
- Proposed Course Commencement Date: September 2023
- Delivery: One theory-based module, one practical-based module
- Working Language: English with materials in multiple languages

### WEEK-BY-WEEK COURSE CONTENT

- |                                                             |                                                         |
|-------------------------------------------------------------|---------------------------------------------------------|
| ■ Week 1: Key Concepts                                      | ■ Week 7: Community Animation and Place-Making          |
| ■ Week 2: Models of Rural Resilience                        | ■ Week 8: Rural Resilience Special Topic - Rural Ageing |
| ■ Week 3: Policy making Structures                          | ■ Week 9: Governance Structures - Quadruple Helix       |
| ■ Week 4: EU-wide Case Studies                              | ■ Week 10: Project Management                           |
| ■ Week 5: Community Audits / Planning and Measurement Tools | ■ Week 11: Facilitation Skills and Mediation            |
| ■ Week 6: Participation Models                              | ■ Week 12: Effective Communications                     |

- Student Evaluation Report on the delivery of the Certificate in Rural Resilience
- REBOUND Project Website - <https://ruralresilience.eu/>.

The findings from the REBOUND project were made available to other rural and community development project teams within our respective institutions. The methodologies for data collection and analysis could be replicated, along with the processes and practices for accreditation of a special purpose awards. The promotion of rural resilience should be further promoted in rural areas, especially those locations experiencing a transformation of their economic base due to the EU Just Transition Fund (EUJTF). The creation of employment opportunities through community owned businesses would be viewed as fair and sustainable.

This project has not explored the concept with specific regions in Europe – Scandinavia; Eastern Europe and Southern Balkan countries. The perspectives from across Europe should be incorporated. The project consortium

may consider applying for future research topics on rural resilience.

#### Student Perspective – Primary Impact of the Project

- Increased awareness of innovative models of rural resilience in other countries.
- Increased understanding of factors that support and hinder the development of resilient rural communities - cultural, legal, financial, administrative, attitudinal.
- Increased appreciation of the steps to create a successful partnership/ relationship with relevant community stakeholders - working with stakeholders' needs and abilities; and communicating effectively with stakeholders.
- Experience in applying the knowledge and skills acquired through this project to have the capacity on completion of learning to enter local and rural development initiatives which will provide a social dividend to disadvantaged locations and to marginalized groups.

## 20. ComEnt - Fostering Innovation in Community-Led Enterprise Development

Dr Shane O'Sullivan

Department of Social Sciences and Sustainable Development Research Institute (SDRI), TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 8



### Project Lead, Partners and Participants

- Project Lead - Dr. Shane O'Sullivan, Dr. Bridget Kirwan and Dr. Marie Taylor (TUS)
- Partners - Ciaran Lynch and Michael McGagh (Communities Creating Jobs, Ireland); Robert Moosbrugger and Dr. Erika Geser-Engleitner (FHV - Vorarlberg University of Applied Sciences, Austria); Prof. Milen Baltov, Dr Vilyana Ruseva and Gergana Kirova (Burgas Free University, Bulgaria); Sergio Pelliccioni and Milena Iaffaldano (Archivio della Memoria, Italy); Angela Achitei (Fundatia Alaturi de Voi, Romania) and Aventia Wilona-Jülich (ACEEU, Germany)

### Key Aims of the Project

ComEnt project equipped stakeholders with the necessary knowledge, skillsets and competencies to develop and enhance the development of community owned and community-led enterprises, which would be an innovative approach to fostering social inclusion amongst marginalized groups and disadvantaged areas across Europe. The key objectives of the ComEnt project were:

- To identify and reflect on best practice examples of successful community enterprise.
- To develop the knowledge, skillsets and competencies of learners on the concepts of community-led local development and community owned enterprises.
- To develop a course syllabus and associated teaching and learning resources.
- To engage with higher education institutions, policymakers and relevant community development stakeholders.

### Project Description and Methodologies

The ComEnt project developed a blended learning educational programme and associated teaching and learning resources for higher education institutions; accrediting agencies; and social entrepreneurs / innovators on the innovative topic of community enterprise development. The ComEnt project defined a community enterprise as an organisation owned and managed by the community, whose mission and vision are centred on serving

individuals from a defined geographical area (predominantly disadvantaged locations) and communities of interest (predominantly marginalised groups in society). This makes community enterprises a distinct group within the wider social enterprise sector, not only trading for social purposes but reinvesting any profits in ways that provide benefits to a particular community. Furthermore, the specific promotion of community sponsored entrepreneurship within higher education courses is innovative. It was critically important for Higher Education Institutions (HEIs), in partnership with the community and voluntary sector, to pursue research on the topic of community enterprise. It was equally important to educate students and relevant stakeholders on the ways in which community owned enterprises can facilitate Community-Led Local Development.



The main activities of the ComEnt Project included:

- Development of national and summary reports on the topic of Community Enterprise.
- Design, development and accreditation of a blended learning programme – Certificate in Community Enterprise.
- Design, development and maintenance of learning repository (Moodle) and mirroring of resources onto project website.
- Development and testing of educational resources for the Certificate in Community Enterprise through transnational workshops.
- Recruitment of students and delivery of the blended learning accredited programme.
- Development of student monitoring, evaluation and assessment instruments; and collation of student and staff feedback through an Evaluation Report.
- Scheduling of regular virtual and transnational project meetings throughout the lifecycle of ComEnt project.
- Disseminating research outputs and key milestones of ComEnt project to stakeholders through project website; conferences; multiplier events; social media and newsletters.



- Embedding key deliverables into higher education programmes offered by project partner consortia.



### Key Outputs and Future Opportunities

The concrete outputs from the ComEnt project included:

- National and Summary Reports on the topic of 'Community Led Enterprise Development'.
- Accredited blended learning programme – Certificate in Community Enterprise (L8 NQF Special Purpose Award).
- Teaching and Learning Resources for the accredited blended learning programme.
- Student / Staff Evaluation Report on the delivery of the Certificate in Community Enterprise.
- ComEnt Project Website - <https://www.comenterasmus.eu/>.

The project was based on the Open Educational Resources (OER) approach, thus developing training and learning materials in digital format, copyright-free that may be used and distributed free of charge. All the project partners are committed to sustaining the exploitation of the project results in the long term and will invest human and financial resources to make sure that the results are still available beyond the lifetime of the project. The most important role in guaranteeing the sustainability of the project products is the consortium network, including the ACEEU and its member organisations. ACEEU disseminated the project products to its applicant (n= 10) and accredited (n = 5) institutions, making it available for use free of charge. This allowed a significant number of potential users to take advantage of the ComEnt project results. The action carried out in order to guarantee the use of the products and the sustainability of the project beyond its lifetime include: -the project website and learning repository will be maintained for at least 2 years after the project lifetime; -each partner will maintain a link to the project web page on its own web-page for at least 2 years; -partners disseminated the key findings of the project at relevant events / workshops / seminars / conferences.

After the completion of the project, all the partners signed MoUs with at least 3 organisations. Examples include HEIs; higher education representative bodies in community development and social enterprise and business; community and voluntary sector; academic or professional societies; adult or further education providers; social enterprise

advocacy organisations. The MoUs recommend that these organizations will use the ComEnt products in their Continuous Professional Development (CPD) activities involving community development workers, enterprise development workers, social entrepreneurs or innovators and the exploitation of these products beyond the project life; - the syllabus for the Special Purpose Award was also uploaded onto the ERASMUS+ Project Results platform making it available to an even wider audience and thus helping for non-participating organizations to take up and use the project's resources and materials. After the conclusion of the project, the consortium will consider applying for other grants to disseminate the project products further and to deepen and widen the project scope.

The promotion of community enterprises should be further promoted in rural areas, especially those locations experiencing a transformation of their economic base due to the Just Transition. The creation of employment opportunities through community-owned businesses would be viewed as fair and sustainable. TUS is currently pursuing the development of a Just Transition Academy (through EU Just Transition Fund), which seeks to up-skill individuals in the region who have lost employment due to the curtailment of peat processing. Resources developed through the ComEnt project can be shared with relevant stakeholders. The fostering of 'green jobs' in the region could be facilitated through community owned wind or solar energy generation. Through one of FHV's case studies, we see the importance of developing sustainable energy communities. It is an issue of concern across Europe.



### Student Perspective – Primary Impact of the Project

- Increased awareness of innovative models of community enterprise development in other countries.
- Increased understanding of factors that support and hinder community enterprise and community development -cultural, legal, financial, administrative, attitudinal.
- Increased appreciation of the steps to create a successful partnership/ relationship with relevant community stakeholders -working with stakeholders' needs and abilities; and communicating effectively with stakeholders.
- Experience in applying the knowledge and skills acquired through this project to have the capacity on completion of learning to enter community development and entrepreneurial initiatives which will provide a social dividend to disadvantaged locations and to marginalised groups.



## 21. WeNaTour Project: The European Alliance for Innovation and Sustainability Education in Welfare, Nature and Tourism

Dr Shane O'Sullivan

Department of Social Sciences and Sustainable Development Research Institute (SDRI), TUS

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 8



### Project Lead, Partners and Participants

- Project Lead - University of Padua (Italy)
- Partners – Etifor; Carinthia University of Applied Sciences; Meath Partnership (Ireland), Nature Tourism Development, Dr Shane O'Sullivan and Dr Catriona Murphy (TUS), Austrian Research Centre for Forests (Austria); Transylvania University of Braşov (Romania); Innova Srl; University of Applied Sciences Krems, and Sano Touring Experience. Fergus Damery (M.A. student in University College Cork) completed a work placement during Summer 2024 (TUS)

WeNaTour (The European Alliance for Innovation and Sustainability Education in Welfare, Nature and Tourism) consists of a well-balanced partnership among 5 Higher Education Institutions (HEIs), 2 Vocational Education and Training institutions (VETs), and 4 companies across 6 countries, namely Italy, Romania, Austria, Ireland, Germany, and the Netherlands.

### Key Aims of the Project

WeNaTour's overarching ambition is to establish an EU and global interdisciplinary learning and business alliance for innovation and sustainability education in welfare, nature and tourism that will seek to continuously grow the need for the new professions and market services it identifies. It will do so by maintaining and expanding the existing project partnership in an Alliance and through the creation and launch of an innovative training programme on the topic of sustainable tourism and destination management, covering the two emerging markets of company welfare and nature-based tourism for health and wellbeing.

### Project Description and Methodologies

The WeNaTour project, co-funded by the Erasmus+ Programme by the European Union, is a three-year project that aims to increase the capacity of Higher Education Institutions (HEIs), Vocational Education and Training institutions (VETs), and businesses to integrate research

results, innovative practices, and digitalization into first-class educational offerings to foster sustainable tourism and its principles while supporting the creation of new products and services on two emerging markets: (1) company welfare, and (2) nature-based tourism for health and well-being. It will do so by facilitating the co-creation of knowledge and developing high-quality multidisciplinary training among EU networks of HEIs, VET, and businesses active in sustainable tourism. WeNaTour will actively work across Italy, Romania, Austria, Ireland, and the Netherlands. This will develop an international Alliance on Sustainable Tourism including professionals from the tourism system, academy members and interested public to replicate and exploit results and lead to tourism sector transformation and long-lasting impacts.



WeNaTour is a project developed around several key thematic areas. These include: Sustainable tourism students who successfully complete the WeNaTour specialisation programme will have the opportunity to gain hands-on experience in understanding the audit and certification process methods. These methods are aligned with the Global Sustainable Tourism Council (GSTC) certification standard, an international scheme for certifying destinations or individual operators.

- Nature for health and wellbeing - The rising demand for meaningful nature experience and the growth of global health challenges, such as non-communicable and stress-related diseases, present the tourism system with an opportunity to meet these societal needs. Green care tourism encompasses high-quality services designed to promote contact with the natural environment to improve people's health and wellbeing.
- Education and innovation - WeNaTour's innovative approach lies in training a new breed of professionals: Sustainability managers for tourism destinations. These individuals, both students and professionals,



will acquire a diverse skill set enabling them to assess and enable the required change to achieve the sustainability and accessibility of tourism destinations and operators comprehensively.

- **Company welfare**-Company welfare is a new proximity market that not only enhances employee well-being but also boosts organizational resilience. It helps businesses navigate present and future challenges while supporting corporate social responsibility strategies. WeNaTour is committed to strengthen the connection of company welfare with services from sustainable tourist destinations, to increase the positive impact that companies and their employees can have on environment and on local communities.

### Key Outputs and Future Opportunities

- **EU Report on Sustainable Tourism**-This report provides an overview at the European level on the emerging trends and challenges faced by sustainable tourism, and how destination management might provide the approaches and tools to give the adequate answer for a long-term sustainable development.
- **EU Outlook Report on existing and emerging sustainable tourism destination markets**-This report examines the emerging trends and markets in sustainable tourism, with a particular focus on corporate welfare services connected to tourism and green care tourism. Moreover, this report showcases the opportunities presented by these markets and the needs connected with their sustainable mainstreaming.
- **Report on sustainable tourism beneficiaries training needs' assessment**-In this report, the existing training opportunities in sustainable tourism, with a focus on destination management, to set the benchmark for training courses developed by the WeNaTour project consortium. Further, we launched a European survey to assess the gaps and needs in terms of training for students and professionals operating in sustainable tourism and developed answers to these needs.
- **Training Opportunities**-The WeNaTour project offers a program of highly innovative opportunities to turn theory into practice. WeNaTour practice participants

can consolidate their knowledge and, at the same time, expand their network with the goal of bringing their sustainable tourism entrepreneurial dream closer to reality. Training opportunities are available in:

- » E-Learning Course for higher education students
- » Sustainable tourism specialization program
- » VET courses on nature and tourism
- » Corporate Social Responsibility and welfare opportunities for companies
- **Development of an alliance**-Join our unique network of experts and innovators in sustainable tourism destination management, green care tourism, and corporate welfare. We are seeking individuals and organisations that are active or interested in the latest developments and practices within the thematic sectors of WeNaTour. These include:
  - » Individuals interested in sustainable tourism destination management
  - » Academic and HEIs
  - » VETs
  - » Learners in sustainable tourism destination management
  - » Businesses with welfare plans dedicated to tourism
  - » Professionals in tourism destination management
  - » Sustainable destinations and local communities
  - » Researchers and the academic community
- **Link to Alliance:** <https://wenatour.eu/join/>.
- **Project Website:** <https://wenatour.eu/>.

### Student Perspective – Primary Impact of the Project

Learners will benefit from the improved learning and training opportunities and the creation of new knowledge, methodologies, and approaches around the topic of sustainable tourism destination management and emerging markets. They will gain visibility, new skills, knowledge, capacity, and contacts, facilitating the knowledge triangle and strengthening their innovation capacity and entrepreneurship. Courses and training materials will guarantee the broadest accessibility and inclusivity.







# Education for Sustainable Development through Programme and Module Design



*.... ESD is an educational approach that aims to support learners in acquiring knowledge and competencies that will enable them to work and live in a sustainable society, one where the planet's finite resources and vulnerable ecosystems are preserved for current and future generations<sup>3</sup>*

Education for Sustainable Development (ESD) is not only a set of principles but also a transformative approach to teaching and learning that prepares students to address global sustainability challenges. This section examines how ESD can be effectively embedded into programme and module design.

By integrating sustainability across course content, learning outcomes, and teaching methodologies, universities can create educational environments that foster critical thinking, innovation, and real-world problem-solving. This approach supports policy advancement, capacity building for educators, and the development of learning experiences that empower students to become active agents of change in their communities and beyond.

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<sup>3</sup> Trinity College Dublin. (2025). Education for sustainable development (ESD). Academic Practice. Retrieved March 14, 2025, from <https://www.tcd.ie/academicpractice/resources/esd/>



# Transforming Learning Environments

## 22. Certificate in Embedding Education for Sustainable Development (ESD) in the Curriculum Level 9, 15 ECTS

Dr Noëlle O'Connor

Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4

### Project Lead, Partners and Participants

- Project Leads - Dr Noëlle O'Connor and Dr Nuala Harding (TUS)



**CPID**  
Centre for Pedagogical  
Innovation and Development

Certificate in  
**Embedding Education for Sustainable  
Development (ESD) in the Curriculum**  
Level 9, 15 ECTS

[Register Here](#)

**Delivery Mode:** Online

**Module Aim**  
This programme will enable educators to embed Education for Sustainable Development (ESD) in the curriculum and foster understanding of and engagement with the principles of ESD. Through the application of a trans-disciplinary approach, ESD seeks to balance human and economic well-being with cultural traditions whilst respecting the Earth's natural resources. Informed by national and international policy developments the module will use the four-C framework of Curriculum Development, Campus Practices and Culture, Community Partnerships and Collaboration to inform a best-practice approach to curriculum design of ESD within the module learning outcomes

**Module Overview**  
On completion of this module the learner will/should be able to:

1. Explain the core concepts of sustainable development and their impact on the economy, society, environment and governance.
2. Consider the Sustainable Development Goals (SDGs) 2030 from the perspective of teaching a specific discipline and the implications for curriculum design and use appropriate tools to evaluate current curricula to determine if SDGs are embedded.
3. Devise a plan for revising existing curricula to ensure alignment to include pedagogical approaches and assessment design which require the selection of appropriate concepts and theories to investigate and address sustainable development issues and the needs of the community.
4. Explore the synergies between teaching and research and the need to solve issues in a local, national and global context and critically review online materials and other resources that can be effectively integrated within ESD.
5. Demonstrate the capacity to critically reflect on potential solutions to challenges within ESD.
6. Design learning activities within the theme of ESD that can be implemented within the context of adult and/or further education.

**Module Assessment**  
The assessment strategy enhances engagement, promotes deep learning, is student centred and methods are varied, fair and inclusive. Students are required to demonstrate knowledge of theory, research evidence and contemporary practice. The assessment strategy is designed to provide students with the opportunity to demonstrate awareness and insight into ESD issues/practices in Higher Education Institutes. The module will be assessed by continuous assessment.

**For further information please contact:**  
Centre for Pedagogical Innovation and Development (CPID) TUS Midlands  
Tel: 090 648 3051  
Email: cpid@tus.ie

### Key Aims of the Project

- This module aims to provide participants with the prerequisite skills and knowledge to enhance the learning experience of the student population through the creation and implementation of an inclusive learning environment, underpinned by the principles of ESD, and meeting the diverse needs of the learning community. On successful completion of this module, through these learning outcomes, students are able to:
- Explain the core concepts of sustainable development and their impact on the economy, society, environment, and governance.
- Consider the SDGs 2030 from the perspective of teaching a specific discipline and the implications for curriculum design and use appropriate tools to evaluate

current curricula to determine if SDGs are embedded.

- Devise a plan for revising existing curricula to ensure alignment to include pedagogical approaches and assessment design which require the selection of appropriate concepts and theories to investigate and address sustainable development issues and the needs of the community.
- Explore the synergies between teaching and research and the need to solve issues in a local, national and global context and critically review online materials and other resources that can be effectively integrated within ESD.
- Demonstrate the capacity to critically reflect on potential solutions to challenges within ESD.
- Design learning activities within the theme of ESD that can be implemented within the context of adult and/or further education.

### Project Description and Methodologies

This module is part of the Master of Arts in Academic Practice suite, offered by the CPID. For more information, visit: CPID Programmes <https://tus.ie/cpid/programmes/>.

- This module enables educators to embed ESD in the curriculum and foster understanding of and engagement with the principles of ESD.
- Informed by national and international policy developments, the module uses the four-C framework of Curriculum Development, Campus Practices and Culture, Community Partnerships, and Collaboration to inform a best-practice approach to curriculum design of ESD within the module learning outcomes.
- Through the application of a transdisciplinary approach, ESD seeks to design education such that it supports the rebalancing of human and economic well-being with cultural traditions whilst respecting the Earth's natural resources.
- Formative assessment is used throughout the programme in a variety of ways and the development of assessments is done at module level by the module team. The assessment brief for this module includes:
  - » Assignment 1 PowerPoint Presentation: Contribute to the development of an ESD strategy for your university. (Learning Outcomes 1-4).
  - » Assignment 2 Report: Review a programme using a selected ESD framework and identify key revisions required. (Learning Outcomes 3-6).

### Key Outputs and Future Opportunities

- This module is delivered online (via the Zoom platform) to enable a diverse range of delivery methods to facilitate the learning requirements of students.
- Digital technologies have the potential to provide adaptable modes of delivery for coursework that



complement the learning environment for students where appropriate as they are incorporated into many aspects of the module (content, assessments, lectures, tutorials, etc.) to enrich both student engagement and create a student-centred experience. This approach is in keeping with SDG Goal 4 – Quality Education and Goal 10 – Reduced Inequalities and allows students to upskill, develop their digital literacy skills, and promote a lifelong, flexible model of learning.

- Guest lectures have significantly enriched the teaching and learning strategy of this module, including Seamus Hoyne and Sean Connell (TUS), Aðalheiður Snæbjarnardóttir (Landsbankinn, Iceland), Karina Seljak (Seljak Brand, Australia); Valerie Lewis (Take 1 Programme, Ireland), Professor Charlotte Holland (Dublin City University, Ireland) and Professor Georgina Gough (University of the West of England, United Kingdom).

#### Student Perspective – Primary Impact of the Project

- This fully online programme is designed for professionals who want to lead the charge in integrating sustainable practices into higher education and beyond.
- The students are both academic and non-academic from TUS, Iceland, Jordan, and Turkey.
- Read the module's glowing student testimonials:

*The ESD module provided a practical understanding & application of sustainability across a wide range of sectors. The online lectures were interactive and engaging, allowing the learner to enhance their knowledge through peer learning & guest lectures.*

*I now feel better equipped and more comfortable in promoting sustainable practices within my faculty. I recommend that we make an Education for Sustainable Development Module Mandatory on all first-year programmes.*

*The course gave me strategies and techniques to embed ESD across a whole institution. Through a connected curriculum the opportunities to embed ESD across teaching and learning, research and communities has been a transformative experience.*

*I found the module had extensive resources and provided insight into education for sustainable development. I feel more equipped to introduce this aspect into my learning and teaching environment.*

*The ESD course enabled me to see the opportunities for integrating sustainability into my professional practice and home life.*

*Completing the Education for Sustainable Development course has been somewhat of a transformative experience. The module has deepened my understanding of the interconnectedness between environmental, social, and economic sustainability, and has empowered me with some practical tools to drive positive change in my lecturing in this regard. The course content was thought-provoking, and aligned with real-world challenges, making it both relevant and actionable.*





# Building Capacities of Educators



## 23. RUN-EU Short Action Programme (SAP) Sustainability in the Context of Tourism along the Camino de Santiago (Portugal)

Dr Noëlle O'Connor

Department of Hospitality, Tourism and Wellness and Centre of Pedagogical Innovation and Development (CPID)

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



**SHORT ADVANCED PROGRAMME**

**Camino de Santiago**

**RUN** REGIONAL UNIVERSITY NETWORK EUROPEAN UNIVERSITY

**SUSTAINABILITY IN THE CONTEXT OF TOURISM ALONG THE CAMINO DE SANTIAGO**

**1-29.JUL.2024**  
Face-to-Face Week: IPCA, Portugal 22-26 July

This Short-Advanced Programme (SAP) introduces students to creating and extending knowledge and perspectives on tourism sustainability along the Camino de Santiago.

Students learn to work in multidisciplinary and diverse teams and will seek to create fruitful collaborations by learning in a structured, sharing and supportive environment.

**3 ECTS Credits**

**Eligible participants:**  
All RUN-EU degree, master, PhD students from first study year onwards, plus all RU-EU staff.

**Deadline for applications:**  
30 May 2024

### Project Description and Methodologies

This Short Advanced Programme (SAP) focuses on sustainability within the Camino de Santiago tourism framework with the Regional University Network Alliance (RUN-EU) <https://run-eu.eu/>. At the end of this SAP, the students were able to:

- Collaborate across disciplines for global sustainable tourism.
- Innovate in tourism for economic and sustainable solutions.
- Raise awareness of long-term sustainability impacts.
- Gain foundational tourism knowledge for advanced studies.
- Analyse data for informed sustainable tourism decisions.
- Develop teamwork skills for holistic approaches to sustainable tourism on the Camino de Santiago.

The School of Hospitality and Tourism of IPCA and the Department of Hospitality, Tourism and Wellness in the Faculty of Business and Humanities (TUS) provided a transcript of record of 3 ECTS and a Certificate of Attendance. Programme details:

- Mode of delivery: Blended
- Language of instruction: English
- ECTS: 3 Credits
- Eligible participants: All RUN-EU degree, master, PhD students from first year of study onwards, plus all RUN-EU staff.

### Project Lead, Partners and Participants

- Project Leads - Dr Noëlle O'Connor and Dr Catriona Murphy (TUS)
- Partner - Polytechnic University of Cávado and Ave (IPCA) (Portugal)

### Key Aims of the Project

Our primary objectives included:

- Assessing the current state of tourism along the Central Portuguese Camino de Santiago, scrutinising the role of heritage interpretation in sustainable tourism development.
- Proposing practical strategies to achieve equilibrium between tourism, heritage preservation, and environmental sustainability.



## Key Outputs and Future Opportunities

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Week 1<br>(Online)       | <ul style="list-style-type: none"> <li>• Introductory lecture to the SAP.</li> <li>• Online lecture -Sustainability in the context of tourism along the Camino de Santiago.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Week 2<br>(Online)       | <ul style="list-style-type: none"> <li>• Online lecture -Heritage Interpretation on the Camino.</li> <li>• Online webinar - Tourism: An Irish Case study approach. <ul style="list-style-type: none"> <li>» Creating an inclusive tourism for all framework: Boosting economic impact, enhancing local community involvement, and contributing to poverty reduction</li> <li>» Geology and walking the Burren</li> <li>» Guide with Terra Firma Ireland</li> <li>» Risk perceptions in tourism</li> <li>» Strategies for retaining employees in Ireland's challenged hospitality and tourism industry.</li> <li>» Sustainable management of trails in Clare (Ireland)</li> <li>» The importance of establishing a training framework for dark tourism sites: Overcoming intricate challenges in presenting sensitive heritage to visitors.</li> </ul> </li> </ul> |
| Week 3<br>(Face to Face) | <ul style="list-style-type: none"> <li>• Walk the Camino -Reflect and Explore the Way</li> <li>• Workshops: <ul style="list-style-type: none"> <li>» Industry guest lectures</li> <li>» Teambuilding exercises</li> <li>» Heritage Interpretation on the Camino de Santiago</li> <li>» Environmental sustainability on the Camino de Santiago</li> <li>» Sociocultural sustainability on the Camino de Santiago</li> <li>» Economic sustainability on the Camino de Santiago</li> <li>» Media, literature and the Camino de Santiago</li> </ul> </li> <li>• Student assignment -Group presentations.</li> </ul>                                                                                                                                                                                                                                                   |



### Student Perspective – Primary Impact of the Project

- Over a three-week period — two weeks online and one week in-person in Barcelos, Portugal with IPCA, our RUN-EU partner — participants collaborated in an international, multidisciplinary group to design, develop, and build valuable networks.
- The programme commenced with 2 weeks of online delivery, which included a series of icebreaking sessions, lectures, and tutorials to provide a solid base in advance of the in-person study week.
- The in-person study week included a series of workshops, lectures, and experiential learning and reflection. This included interactive activities including, but not limited to, walking the Camino.
- The group brought insights to creating knowledge on sustainability in tourism and community development along the Camino de Santiago in Portugal.



# Empowering and Mobilising Young People



## 24. Putting ISO50001, ISO50002, ISO14000, ISO26000, LEED, IS399, ExCeel into Energy and Quality courses for Renewable and Electrical Engineering L7 & 8 and Manufacturing Engineering L6 apprenticeships

David O'Rourke

Department of Electrical and Electronic Engineering

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**

SDG 12



### Project Lead, Partners and Participants

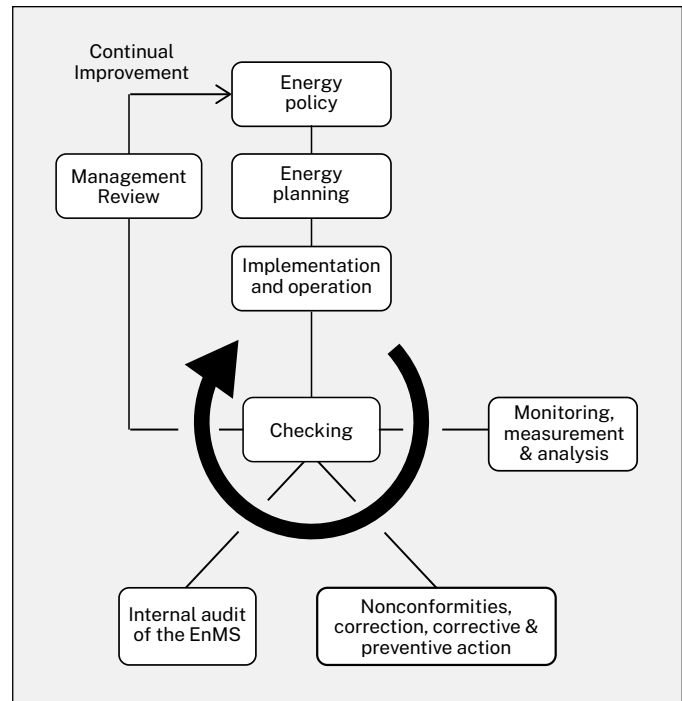
- Project Leads - David O'Rourke MEng MSc MIEI and Keith Moloney MSc (TUS)

### Key Aims of the Project

To educate the students around the changing laws and expectations in industry with respect to energy and sustainability responsibilities and the frameworks that can support these changes. Sustainable syllabus content and activities are encouraged by Engineers Ireland, who accredit the courses offered in electrical and renewable engineering.

### Project Description and Methodologies

Modules were changed through programmatic review. As an example, energy students are asked to do an essay on ISO50001, the energy management standard and use guidance based on ISO50002, the auditing standard to do an energy audit report. They also review a real industry energy project and do a post implementation review including basic financials.



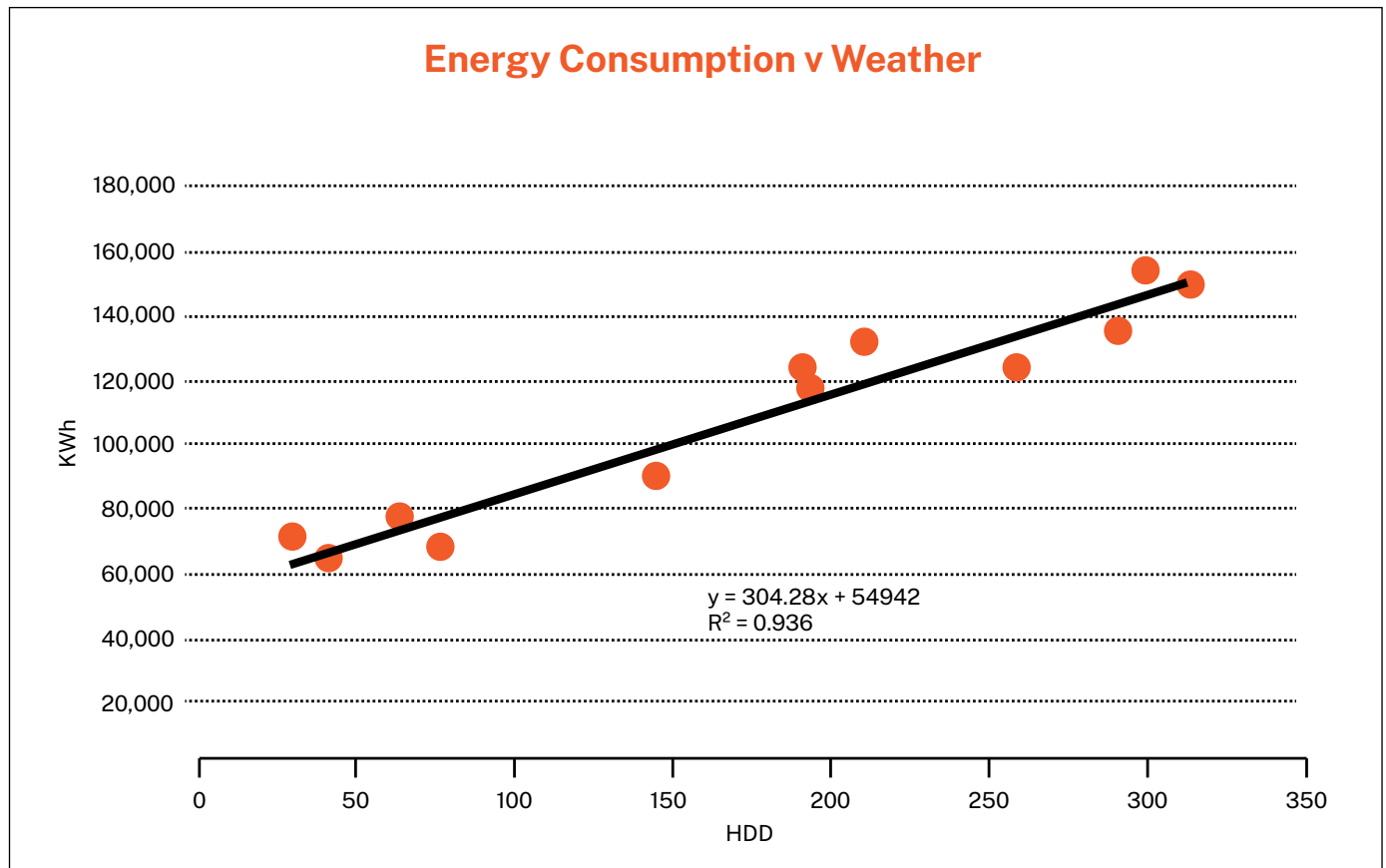
*International Organization for Standardization, 2025*

In another assignment, students are asked to interpret an address by President Michael D. Higgins (below) to the Engineers Ireland Conference speech in October 2022, where the President talks through his proposed routes to enhanced sustainability in the world and the increased role of engineers and scientists as thought leaders.



### Key Outputs and Future Opportunities

More educated students going into industry. It would be beneficial to talk to industry in the region to see how they make it real in terms of documentation and dashboards/reporting. The plot below is used to model heating energy use in relation to its main driver, the weather:



SEAI, 2025

### Student Perspective – Primary Impact of the Project

Preparedness to the fact that this is law now and not aspirational 'good things to do'. It is now law that emissions, sustainability actions and behaviours are reported with the financials of a large company, and this will directly affect business opportunities for grants, customer interest and investments.



(Twinview, 2025)

## 25. RUN-EU Short Advanced Programme (SAP) in Sustainable Marketing for Global Goals

Louise Murray and Sinéad O'Connell

Department of Business and Management

Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Leads – Louise Murray and Sinéad O'Connell (TUS)
- Partners – NHL Stenden (The Netherlands) and Tom Doyle (Choose Plastic Free Wipes)
- Participants – 25 students from across the Regional University Network Alliance (RUN-EU) <https://run-eu.eu/>.

### Key Aims of the Project

- Explain the fundamentals of sustainable marketing strategy theory to students from all disciplines across RUN-EU.
- Explore traditional and digital tools that aid businesses locally and globally and how to use these platforms to create and communicate sustainable content.
- Demonstrate an awareness and create a discussion of the impact on society of marketing and digital marketing strategies.
- Develop a sustainable digital marketing strategy for a live organisation (Choose Plastic Free Wipes).
- Bring together academics and students from across the RUN-EU, who are committed to working collaboratively across cultures to create and deliver sustainable marketing strategies.



### Project Description and Methodologies

Sustainability is a key concern for both businesses and consumers. Organisations are increasingly being held accountable for their environmental and social impact. Consumers and particularly younger consumers are actively seeking brands that demonstrate a genuine commitment to sustainability through ethical supply chains, responsible communication, and environmentally friendly products and services. Businesses therefore need to have the skills required to deliver an authentic sustainable message benefiting all stakeholders and the planet and we hoped to address this skills gap with this unique programme. This project was developed to provide interdisciplinary students from across the RUN EU network (future graduate global citizens) with an awareness of ethical and sustainable approaches to designing and implementing marketing strategies within the organisations they will work with and for, that contributes to the triple bottom-line of planet, people and profits. As organisations continue to adapt socially responsible marketing practices it is hoped that RUN-EU students will be leaders in this area. We wanted to create a programme that encouraged students to use marketing more mindfully and ethically that has a positive impact on the environment and society. This SAP not only identified current tools and models of marketing strategy, but it also enabled students to apply these to a real-world organisation; Choose Plastic Free Wipes.



A key aspect of the programme was for students to develop a sustainable digital marketing campaign for this Offaly-based global brand. The challenge for the company at the time was that they needed a strategy to grow their brand in the Canadian and Australian markets. They needed to know what digital content would work best in each market that would also reinforce the strong sustainable brand message that was the foundation stone of the global brand. This application to a real-life marketing challenge enabled us to take key sustainable marketing academic theory and apply it to the company. Students worked together in groups on this task and received feedback from the academics in TUS and NHL Stenden as their ideas developed. The students then presented their strategies to the company on the final day. They also had to produce a group strategy document as well as an individual reflective video diary. This Short Advanced Programme (SAP) was one part of a collaboration of 2 complimentary SAPs developed by TUS Athlone and NHL Stenden. The NHL Stenden SAP, Meaningful Content Production, was delivered in April 2024.

### Key Outputs and Future Opportunities

- The students received a micro credential for the SAP completion and 2 ECTS where applicable.
- The programme contributed directly to the Sustainable Development Goals (SDGs) by driving sustainable practices, and promoting ethical, inclusive, and environmentally conscious marketing approaches.
- The integration of the live project emphasised practical application aligned with global sustainability goals.
- The success of this SAP has inspired us to develop a joint master's programme within the RUN-EU network with partners HAMK (Finland) and NHL Stenden (The Netherlands).
- We are in the process of creating a special purpose award for industry called Embedding Sustainable Marketing Strategy for delivery in September 2025.
- We have also written several articles for publication on this unique European project.



### Student Perspective – Primary Impact of the Project

By participating in this SAP, students have actively contributed to the SDGs and have developed an awareness of how marketing impacts society, ensuring that the future strategies they develop align with responsible consumption, production and contribute positively to climate action.

Student feedback from the individual reflective video diary completed at the end of the programme highlighted the unique experience of collaborating with students from different disciplines with shared values from across Europe. They mentioned the accelerated learning they gained from contributing to the strategy of a live company with a strong sustainability message. Many students talked about having had a once-in-a-lifetime experience where they enjoyed a period of intense learning alongside establishing lifelong friendships with students from across RUN-EU.

## 26. Level 9 SPA Certificate in Design for Sustainability & Circular Economies

Dr Adam deEyto

Limerick School of Art and Design (LSAD)

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4

#### Project Lead, Partners and Participants

- Project Lead - Dr Adam de Eyto, Aisling Griffith, Rebecca Marsden and Dr Orlaith Borthwick (TUS)
- Partners - Niamh O'Shaughnessy (Design Skillnet); Charlotte Barker (Institute of Designers, Ireland)
- Participants - 50+ professional learners from the Level 9 SPA Certificate in Design for Sustainability and Circular Economies

#### Key Aims of the Project

- To build applied knowledge in Regenerative Design for Sustainability and Circular Economies amongst professional learners and design educators.
- To offer a Continuing Professional Development programme for Design and other Professionals.
- To respond to the future skills needs that the Institute of Designers in Ireland (IDI) and Design Skillnet identified for design professionals.

#### Project Description and Methodologies

The Programme content covers the following:

- Introduction to Sustainable Development (SD) including Case Studies, Best Practices in Design for Sustainability (DfS).
- Circular Economy (CE) principles and application
- Approaches, philosophies, and guiding principles in SD, DfS and CE.
- Practical DfS strategies for designers.
- Policy, legislation, standardisation and certification in DfS.
- Life Cycle Assessment (LCA), overview of LCA tools, simplified applied LCA for designers
- Material flow and production.
- Social Corporate Responsibility (CSR) and environmental responsibility.
- Marketing 'Sustainable Design' and managing user expectations.
- Business model design and procurement for CE.
- Packaging and waste considerations for designers.
- Regenerative design practice.
- Sustainable Product Service Systems (SPSS).

The Design for Sustainability and Circular Economies Certificate facilitates and supports design professionals in their practice-based enquiry into design for sustainability. The continued professional development course structure increases awareness and shines a light on opportunities and challenges facing design practices by critically evaluating the current cultural, social, economic and ecological

landscapes and interrogating their existing models and approaches to design for sustainability and circular economies.

Suited to practitioners from all design disciplines, it invites designers to identify opportunities to adapt with agility, to re-shape and remodel existing approaches within their own design practice and wider design communities and to build on valuable and existing skill sets through the adoption of regenerative, circular and sustainable practices in order to address global challenges at their roots, enact meaningful change, make a real impact now and future-proof their design processes. Guided by expert specialists, this course equips participants with the tools to actively query existing modes of design for sustainability, deepen their understanding of Life Cycle Thinking, Circular Economy Principles and Regenerative Design Practices, gather industry insights, generate dynamic discussion with both peers and subject matter experts, co-design for best practice and propose new ways of shaping our design futures.



*Personal Design Project Figure 1: Clare Anne O'Brien – Primary applied research into the potential to rebuild a sustainable homegrown fibre industry, 2024.*

#### Key Outputs and Future Opportunities

Programme was Co-Developed between Limerick School of Art & Design at TUS and Design Skillnet <https://designskillnet.ie/event/design-for-sustainability-and-circular-economies/>.

Students complete a personal design project as part of the assessment of this programme/ module. The personal design project is an opportunity for students to apply some, or all, of the learnings that they have taken from the certificate programme and to place them context of their own personal practice, the work of their design studio/ agency or company and their work as an academic design



educator / researcher. The Project should be based on one of the following DfS or CE thematic directions:

- A design proposition addressing an opportunity or problem that identifies as a having potential as new DfS or CE business.
- An existent or emergent project or brief that the studio/ agency or company have from a client or an opportunity arising from client work that has been taken on.
- A speculative design for a new product or product service system. (Not more than 5 years into the future)
- An information campaign for a specified audience which might create awareness or facilitate a behavioural change around sustainable development (Social, Environmental and Economic) or around a circular economy theme.
- A policy intervention which could address a sustainable development (Social, Environmental and Economic) challenge or around a circular economy theme.
- A novel design education initiative introducing DfS or CE to students you facilitate (primary, secondary or tertiary level)
- A primary research project which provides a steppingstone to identifying any of the above.

The personal design project develops the key competency of applying knowledge and skills in the field of design for sustainability, circular economies and regenerative practices in an applied manner within work and practice.

The programme is delivered in a *Hybrid Studio-based* format with an integration of *Online Workshops, Expert Lectures and Interdisciplinary activities*.



*Personal Design Project Figure 2: Eva Sunderland –What are the Factors that shape peoples waste disposal practices. 2024*

The *In-person studio sessions* relating to the development of personal design project briefs and life cycle thinking are integral to the networking value of the programme.

#### **Student Perspective – Primary Impact of the Project**

- Graduates of the programme have commented on how the knowledge, skills and competencies developed on the programme have assisted them in addressing sustainable development opportunities within their own practices and design agencies.
- Knowledge and case study examples which can be applied to their own professional practice.
- Network building (meeting other designers with an interest in DFS+CE).
- Quite a few of the 2023 and 2024 Graduates were also responsible for setting up Design Declares Ireland <https://designdeclares.ie/>.

#### **Graduate Reflections on the programme:**

*"Having the qualification is excellent — it's another nice addition to the CV. But for me, doing the course was more about the opportunity to learn, gather knowledge, and bring that into my practice. I understood if I wanted to position myself as a designer committed to sustainability, I'd have to upskill at some point. The DfS CE course was the perfect opportunity to do that. I'd highly recommend it to anyone in the design industry looking for a comprehensive introduction to sustainable design and the circular economy."*

**Brian Byrne, Lands Studio**

<https://designskillnet.ie/qa-with-brian-byrne-design-for-sustainability-and-circular-economies-graduate/>

*"I learned a wealth of new information from the diverse panel of expert designers and their roles in circular design and how complex, yet important, it is to apply the principles into design practice in all industries. The United Nations 17 Sustainable Development Goals' number 12 'Responsible Consumption and Waste' inspired me to work on an awareness campaign for my personal project."*

**Fiona O'Reilly, On the Dot Design**

<https://designskillnet.ie/fiona-oreilly-design-for-sustainability-and-circular-economies-certificate-graduate/>

*"Before starting the course, I hoped to connect with peers in the industry interested in similar approaches. The course was invaluable for meeting designers from diverse communications design and related design fields — interior, fashion, digital and industrial design. Conversations with a wide range of design practitioners enriched the experience and gave me access to a wider spectrum of perspectives beyond my own field of design. I am also delighted to say, I still continue to collaborate with peers I met through the course through Design Declares and other initiatives."*

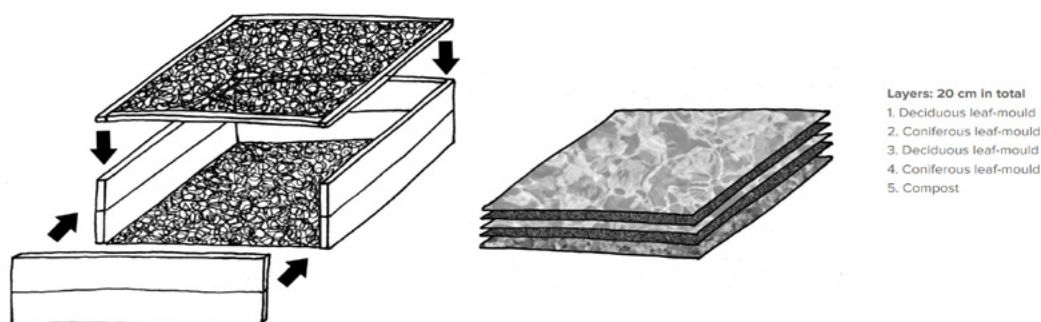
**Stephen Ledwidge, Chart**

<https://designskillnet.ie/qa-with-stephen-ledwidge-design-for-sustainability-and-circular-economies-certificate-graduate/>

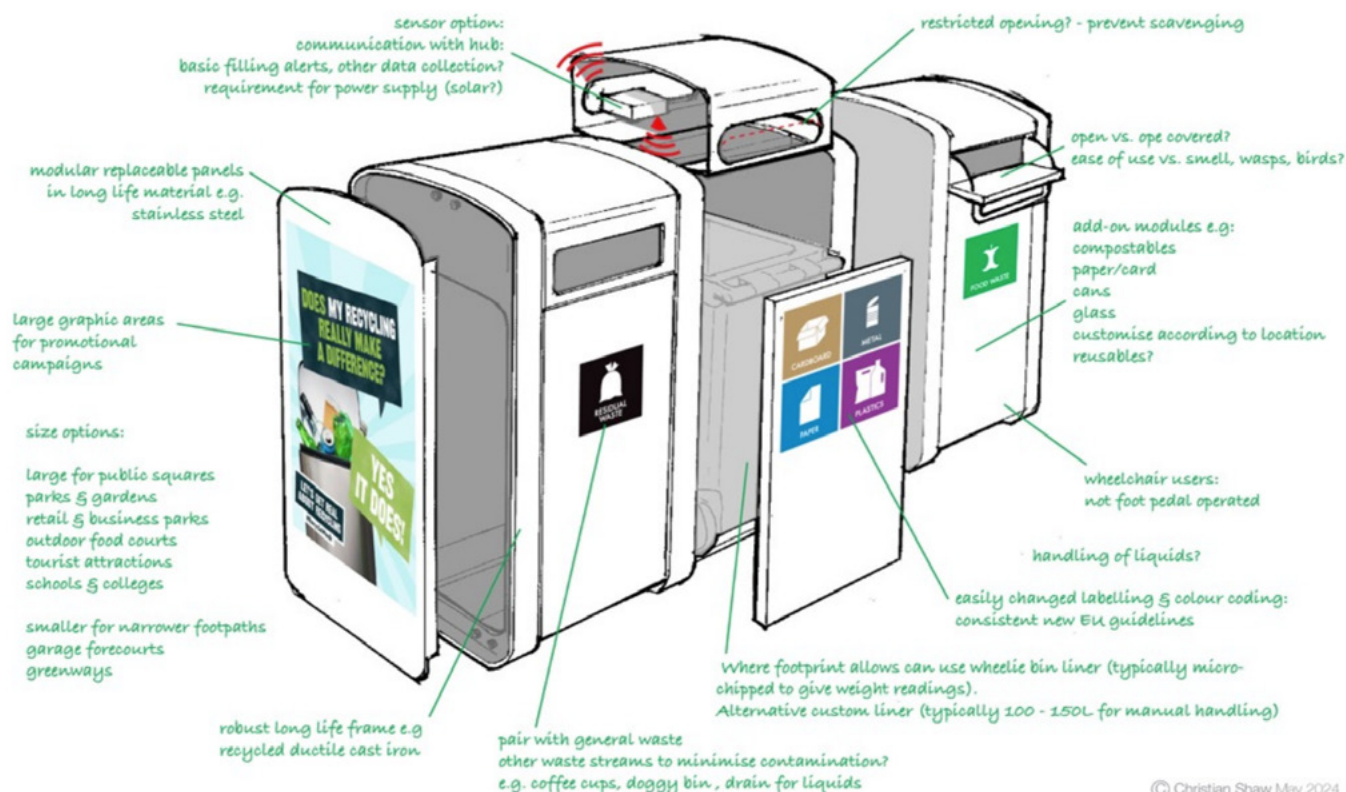


# Micro tree nursery toolkit for farmers and landowners

## Dunemann box with layer build up

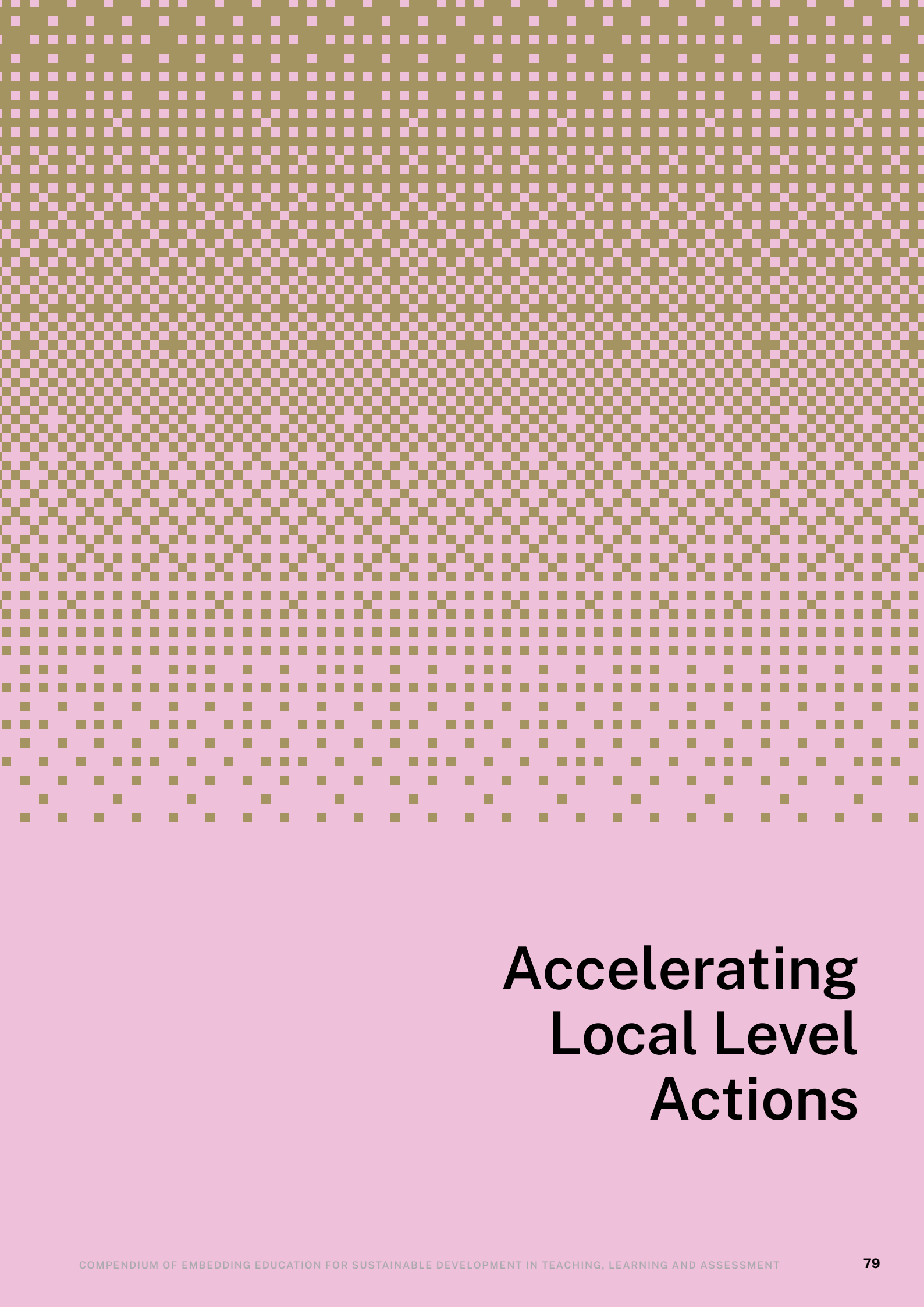


Personal Design Project Figure 3: Éilish Murphy – Micro Tree Nursery toolkit for Farmers and Landowners, 2024



## modular street recycling bin

Personal Design Project Figure 4: Christian Shaw –Modular Street Recycling Bin, 2024



# Accelerating Local Level Actions

## 27.B.A. (Hons.) Fashion Design - Sustainability Pathway

Dr Adam deEyto

Limerick School of Art and Design (LSAD)

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4

#### Project Lead, Partners and Participants

- Project Leads - Ruth Duignan, Linda Quinn, Alan J. Kelly, Hugh Finnerty and Sandra Murphy (TUS)
- Participants - Students of the B.A. (Hons.) Fashion Design programme

#### Key Aims of the Project

- To begin to educate the next generation of fashion and textiles designers in the field of sustainability.
- To provide industry with sustainable fashion experts that are knowledgeable and practiced in the complexities of sustainable and circular fashion design.
- To integrate sustainability as a specialist pathway on the B.A. (Hons.) Fashion Design at the Limerick School of Art and Design (LSAD).
- To offer students the opportunity to specialise in sustainable fashion and to graduate with an award that specifies same.



*Project 1: Mary Corcoran, FYP, exploring Eco Printing.*

#### Project Description and Methodologies

The sustainability pathway development in the B.A. (Hons.) Fashion Design effectively means that students are given the opportunity to formally specialise their knowledge, skills and competency in sustainable fashion while pursuing their primary degree. The sustainability pathway specialisation will also be recorded on their B.A. (Hons.) transcripts so as they graduate with a B.A. (Hons.) Fashion Design with Sustainability, thus giving them specialist recognition for industry employment and Curriculum Vitae purposes. Students and graduates can be involved with RUN-EU SAP activities, Post Graduate Research studies at M.A. by Research or PhD and or taught M.A. in the areas of design for sustainability.



*Project 2: Ellen Greenan, FYP, exploring Bio Plastics. Winner of the IDI Student Sustainable Fashion and Textiles Award 2023.*

The programme fosters independent thinking, creativity and innovation in both creative design processes and technical skills across four pathways. Students will choose the sustainability pathway of specialisation during their second year that will inform their focus for the rest of their studies. The student will be supported in exploring fashion design through subjects and processes that are of interest to them as they develop their voice as a designer. It is our aim to guide students through finding their own approach to creating design solutions in clothing, textile development, fashion technology with a special emphasis in sustainable systems for fashion and textiles.

We place emphasis on encouraging our students to balance physical craft with digital skills, innovative creativity, and critical thinking. We are consistently reacting, adapting, and responding to the changing landscape of the industry, both in Ireland and Internationally, within the course structure. This strategic alignment with the industry gives our students and graduates a competitive advantage as they progress their careers in fashion and textile design.

Nurturing originality of thought and transferable skills, the B.A. (Hons.) Fashion Design will support the student in becoming a dynamic, empathetic, creative, and self-motivated designer who can work at all levels of the fashion and textiles design industry and beyond.

The project has been developing over a 3-year period with the first of the sustainability pathway students graduating from the B.A. (Hons.) in Fashion Design with Sustainability in 2025.

The introduction of the sustainability pathway on the B.A. (Hons.) Fashion Design has been a 3-year process since it was proposed as part of the last LSAD Programmatic Review in 2021/22. The pathway allows students to



increasingly specialise in sustainable fashion and textiles design and to graduate with this specialism on their final degree awards.



*Project 3: Ellen Edwards, Y3 Studio Project, exploring Zero Waste Pattern Drafting and Construction.*

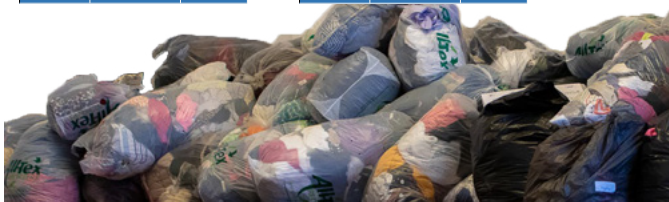
The pathway gives the students the opportunity to develop critical thinking skills, and a variety of interdisciplinary skills with respect to addressing the problems associated with fast fashion, overconsumption, poor levels of textile circularity and often very poor labour practices within sectors of the fashion and textiles industries. The sustainability pathway on the B.A. (Hons.) Fashion Design collaborates widely with the LSAD TUS Sustainability Station and with other programmes and research specialisms across TUS to develop a more holistic and informed approach to materials selection, circularity, bio economy practices and business development.

## 2023

| Retail | Storage | Rag |
|--------|---------|-----|
| 266    | 19      | 147 |
| 62%    | 4%      | 34% |

## 2024

| Retail | Storage | Rag |
|--------|---------|-----|
| 172    | 4       | 78  |
| 68%    | 1%      | 31% |



*Project 4: SVP X LSAD Project, Ongoing Post Consumer Waste Project, collecting data on Garment Failure Reasons and Rates.*

The fashion design sustainability pathway develops the students' skills and competencies in negotiating the complexity of the fashion and textiles industries by facilitating creative applied learning in a studio-based environment. Students are given the opportunity to address materials selection, circular economy, user behavioural changes and the potential for regenerative practices when developing, sourcing and specifying fabrics and labour. They are also given exposure to current practices of clothes sorting and recycling and to industry leading initiatives in responsible fashion design and retail. All the above develops their Education for Sustainable Development (ESD) competencies in a targeted and specific direction to deal with the opportunities and challenges of a rapidly changing sector.

The project is a pilot example of how ESD and Curriculum change can respond to the SDGs in a holistic manner within existing programmes. It embeds sustainability at the heart of the programme and provides an excellent opportunity for student to address challenges and opportunities throughout their degree studies and into their future careers.

### Key Outputs and Future Opportunities

Student will have additional opportunities to specialise in their discipline with respect to ESD: sustainable development, climate action, design for circular economy and regenerative design practice.

Students are expected to demonstrate and understanding of the complexity of sustainable development, and the opportunities for change and development in the fashion and textiles industries.



*Project 5: Rachel McKinney, FYP, exploring Deadstock and scrap fabric uses. Winner of a Future Makers Award 2024.*

Specifically, with respect to climate action, circular economy, user behavioural changes and the potential for regenerative practices when developing, sourcing and specifying fabrics and labour. See images of students work from across the pathway.

### Student Perspective – Primary Impact of the Project

Students' engagement over the three years of increasing specialisation is evidenced in the creative output and work of the students (as illustrated in the attached images). Students drive the agenda and demonstrate a practical, applied and creative knowledge of the SDGs and how these can inform their design practices in their future careers.



*Cosima Augustin Malloy FYP 2024  
Shortlisted in Arts Thread Global Creative Graduate Showcase 2024 Showcase*

*Project 6: Cosima Augustin Molloy, FYP, exploring Natural Dyeing and Printing Techniques. Winner of an Arts Thread Student Award 2024.*





# Education for Sustainable Development through Student and Staff Extra-curricular Activities



*For Ireland, achieving SDG 4 means ensuring that every individual, regardless of their background, gender, or socio-economic status, has access to education at all stages of life<sup>4</sup>*

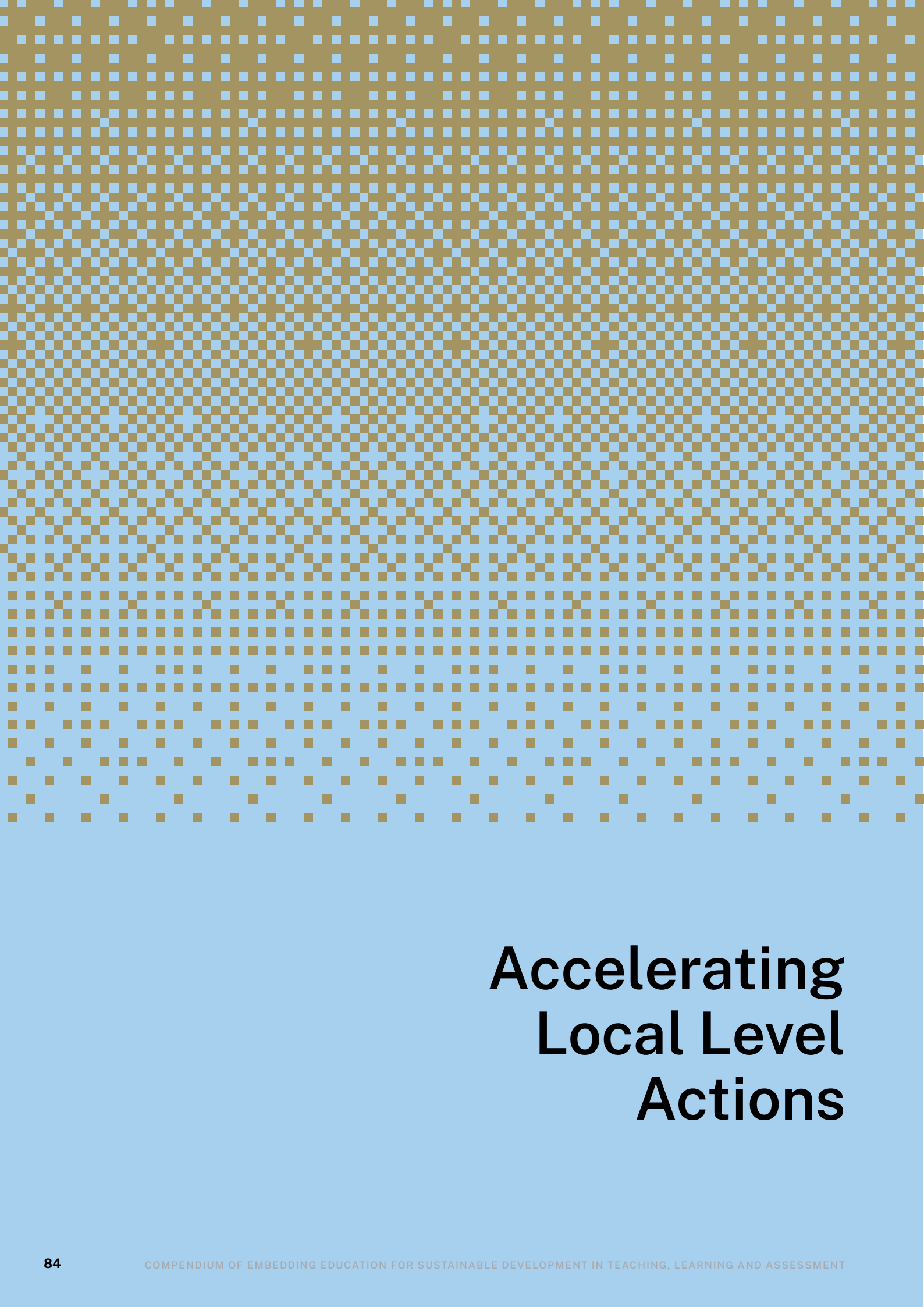
Education for Sustainable Development (ESD) extends beyond the classroom, thriving through the vibrant landscape of extra-curricular activities that involve both students and staff. These initiatives, from clubs and workshops to competitions and community projects, offer dynamic, hands-on learning opportunities that foster critical thinking, innovation, and real-world problem-solving. By engaging in extra-curricular activities, participants develop practical skills in sustainability and additionally build leadership and collaborative networks that enhance the overall educational experience.

This section explores how integrating ESD into extra-curricular activities can support policy advancement, capacity building, and the promotion of sustainable practices at local and university level. By providing spaces where students and staff can experiment with sustainable solutions, share insights, and engage with broader community challenges, these activities help embed sustainability into the very fabric of the university. Ultimately, such efforts empower all participants to become active agents of change, driving forward the sustainability agenda both on campus and within their communities.

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<sup>4</sup> Social Justice (2024). Ireland's SDG Progress – Goal 4 Quality Education, 2024. Social Justice Ireland. Retrieved April 4, 2025, from <https://www.socialjustice.ie/article/irelands-sdg-progress-goal-4-quality-education>





# Accelerating Local Level Actions

## 28. Rathkeale Together: Pathways to Higher Education Workshops

Aileen Sheehan

Access Service

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 3



#### Project Lead, Partners and Participants

- Project Lead - Aileen Sheehan (TUS)
- Partners - Eithne Gavigan and Jim O'Meara (TUS)

#### Key Aims of the Project

This project aimed to develop healthy eating habits and choices among the Traveller and non-Traveller communities in Rathkeale. The group created meals from scratch, served the food once cooked and ate together as a group. The group was provided with an ingredient list and recipe cards while taking part in the initiative. This project would further develop intercultural relationships between the two communities as well as promoting lifelong learning and inclusive education.

- Build and sustain positive relationships between TUS and the Traveller community.
- Begin a committed and collaborative relationship with Rathkeale Together.
- Promote healthy eating and wellbeing for all, through food.
- Provide a 4-week culinary workshop for the group.
- Enable participants to make healthy food choices.
- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- To foster intercultural relationships between Travellers and non-Travellers within Rathkeale.
- Provide a positive educational experience for the Traveller community.

#### Project Description and Methodologies

- The project entailed creating a 4-week culinary workshop for women from the Rathkeale community. Ingredient and recipe cards were provided to the women so they could recreate the dishes at home.
- The ingredient list was cost-friendly, ensuring the affordability of the items needed. This helped to build individual and community capacity to enhance their

food-related skills (e.g. budgeting, preparation and cooking).

- The group attended the TUS Moylish campus once a week over a 4-week period. As the chefs got to know the women and their preferences, they readily adapted the cooking menu.
- An intrinsic component of the project was allowing time at the end of each session for the group to display and serve the food and then dine together. This allowed valuable time to build intercultural relationships within the group as well as allowing informal conversations with TUS staff to further strengthen the relationship between the group and TUS.
- After the project was finished, the women were invited back to Moylish for a certificate of participation awarding ceremony. This was done to foster a sense of accomplishment for the women as well as providing a positive educational experience for the group.



#### Key Outputs and Future Opportunities

- It has been well documented that the Traveller community can often face negative educational experiences. This project provided a positive experience for the group whilst also breaking down the barriers to higher education.
- The group built intercultural relationships which strengthened their sense of community.
- TUS staff expanded their awareness of Traveller culture through informal conversations.
- The group finished the sessions with a broader knowledge of food, cooking and choosing healthier options. They also learned budgeting skills in preparing a range of nutritional dishes.
- Having a certificate of participation and award ceremony provided a sense of accomplishment to the group whilst also fostering lifelong learning.

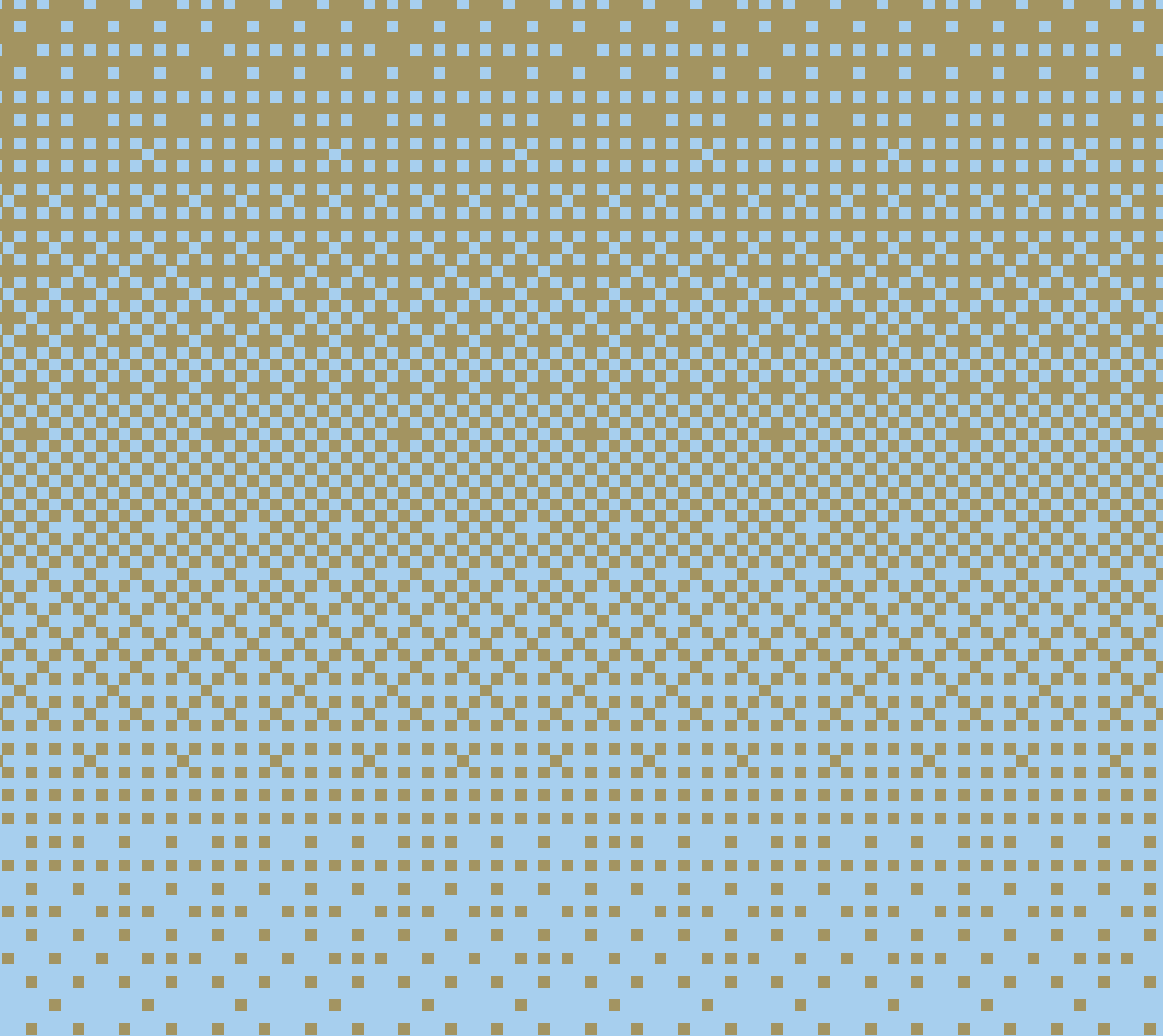


### Student Perspective – Primary Impact of the Project

The group improved their skills, knowledge and confidence in choosing healthy and affordable ingredients. Integral to this was the use of healthy cooking techniques. The opportunity also provided a chance for the women to have

a positive experience within an educational environment. The group left the sessions with stronger intercultural relationships and knowledge of higher education. The group gave a time commitment, by being available each week for the cooking sessions. All of this has contributed to a positive start of a lifelong learning journey.





# Empowering and Mobilising Young People

## 29. Field Trips to Kingspan's IKON Innovation Centre in Kingscourt, Co. Cavan

**Brendan McLarney**

Department of Accounting and Business Computing

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 7



### Project Lead, Partners and Participants

|                 |                                                                                                                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2023 Field Trip | <ul style="list-style-type: none"><li>• Project Lead - Brendan McLarney (TUS)</li><li>• Partners - Karen Guest and Eoin Conway (TUS).</li><li>• Participants – Year 1 students from the Higher Certificate in Business, Bachelor of Business (Hons.) ab initio (Level 7) and Bachelor of Business and Law Programmes</li></ul> |
| 2024 Field Trip | <ul style="list-style-type: none"><li>• Project Lead - Brendan McLarney (TUS)</li><li>• Participants – Year 2 students from the B.A. in Accounting with Finance and B.A. in Accounting with Finance and Placement Programmes</li></ul>                                                                                         |

### Key Aims of the Project

- Enhancing the learner experience.
- Enabling students to link classroom theory with workplace practice on sustainability issues (integrated into module assessments).
- Facilitating students in experiencing the workplace environment first-hand.
- Assisting staff and students in collaborating and communicating with experienced professionals.
- Building relationships with a local (and global) organisation.

### Project Description and Methodologies

The 2023 field trip was integrated into an assessment for a module called 'Macroeconomics' taken by the above-mentioned students in semester 2. The module was delivered by lecturers Karen Guest and Eoin Conway. The assessment was titled 'Economics of Sustainability'. As part of this assessment, students had to comment on how Kingspan specifically is meeting the requirements of the SDG's and are on course to reduce carbon emissions. As part of the assessment, students were able to link sustainability activities to the SDG's and determine if the organization was likely to achieve the goal based on their current performance.

The 2024 field trip was integrated into an assessment for a module called 'Sustainability for Accountants' taken by the above-mentioned students in semester 1. The module was delivered by lecturer Brendan McLarney. The assessment was titled 'Overview of sustainable business practices/ sustainability activities of an organisation'. Students were required to select an international organization and conduct an overview of their sustainable business practices/ sustainability activities. As part of this assessment, many students focused on organisations' commitments to reducing their carbon emissions and the actions they are taking to shift towards more affordable and cleaner sources of energy (SDG7). Kingspan are a leader in this space and as part of their 'Planet Passionate' sustainability programme, achieved a 65% reduction in carbon emissions in 2023 from their base year of 2020. This was achieved through a mixture of using more energy-efficient production equipment, space heating and process electrification, use of renewable gas and on-site electricity generation (solar panels). Following the field trip, many students used Kingspan as a case study in reviewing their sustainable business practices/sustainability activities, as part of the assessment. Undertaking the assessment gave greater awareness to students on the actions that organisations are taking to become more sustainable daily. Students were able to identify key Environmental, Social and Governance (ESG) metrics used by organisations to report their sustainability impacts and determine whether they were likely to meet internally/externally generated sustainability targets.

### Key Outputs and Future Opportunities

- Undertaking this project enabled student completion of module assessments.
- Students developed a greater understanding of how Kingspan integrate sustainability into their operations and strategies. From undertaking the field trip, students got to see first-hand what actions Kingspan were taking to achieve their sustainability goals and



what KPIs they were using to measure sustainability performance.

- Based on current and past performance on sustainability activities, students were able to determine whether Kingspan were likely to achieve targets for Net Zero emissions in the future.
- The field trip allowed the potential for future engagement with Kingspan for student work placement opportunities and/or internships.
- The field trip and assessment process enhanced student critical thinking and communication skills.

### Student Perspective – Primary Impact of the Project

The field trip enabled students to experience first-hand, an international organisation's workplace. Being able to link classroom theory to workplace practice gave students a taste of what post-graduate life will entail. Getting to speak directly to industry experts reinforced and consolidated the learning from classroom lectures.

SDG 7 calls for “affordable, reliable, sustainable and modern energy for all” by 2030. SDG 7 was reinforced to students in classroom lectures and consolidated through a review of the Kingspan sustainability report ‘Planet Passionate’ and furthermore through a field trip visit to Kingspan HQ. Analysing the sustainability report allowed students to see how Kingspan are transitioning from fossil fuels to cleaner sources of energy such as renewable gas (BioLPG) and on-site electricity generation (solar panels). The field trip enabled students see how these cleaner energy sources were implemented in practice throughout

the research and development and manufacturing departments.

The use of case studies can provide a practical method of reinforcing student learning. Sustainability is an evolving topic and reporting on sustainability activities has been mainly a voluntary activity for organisations in the past. This has led to inconsistency between organisations on how best to approach and report on their sustainability activities. Comparing and contrasting different organisations' approaches to sustainability using case studies can enhance students critical thinking skills and reinforce learning. Furthermore, field trips allow students to experience and understand an organisations sustainability activity, whilst enabling them to speak to industry experts on the topic. This can enhance student engagement with modules and assessments and increase their motivation.







# Education for Sustainable Development through Teaching and Assessment Strategies



*"SDG 4 ensures inclusive and equitable quality education and promotes lifelong learning opportunities for all. Education liberates the intellect, unlocks the imagination and is fundamental for self-respect. It is the key to prosperity and opens a world of opportunities, making it possible for each of us to contribute to a progressive, healthy society. Learning benefits every human being and should be available to all"*<sup>5</sup>

In today's evolving educational landscape, embedding Education for Sustainable Development (ESD) within teaching and assessment strategies is crucial for preparing learners to address global sustainability challenges.

This section explores how innovative instructional methods ranging from active and problem-based learning to authentic, formative assessments can effectively integrate sustainability principles into our teaching and assessment. By aligning teaching practices with robust assessment techniques, educators can ensure that students not only acquire essential knowledge but also develop the critical thinking and problem-solving skills needed to tackle real-world issues. Ultimately, this approach empowers students to become proactive, sustainability-focused leaders while advancing the broader goals of sustainable development.

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<sup>5</sup> The Global Goals. (2025). Goal 4: Quality education. Retrieved March 14, 2025, from <https://www.globalgoals.org/goals/4-quality-education/>



# Transforming Learning Environments



## 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

Kevin Ward

Department of Hospitality, Tourism and Leisure

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 12

### Project Lead, Partners and Participants

- Project Lead - Kevin Ward (TUS)
- Partners – John Killeen and Shane Sheedy (TUS)



### Key Aims of the Project

- To re-imagine food waste as a resource
- To shift the focus from disposal of food waste to responsibility for food waste

### Project Description and Methodologies

- Culinary students are learning to view food waste through a new lens, not as a by-product of commercial kitchens but as a valuable resource capable of supporting sustainable horticulture.
- Using Systems Thinking (ST) and Action Research (AR) methodology, students explore lacto-fermentation composting as a method to enrich and feed soil life, creating a circular system where waste becomes nourishment for soil life which in turn feed food crops.
- This approach demonstrates how culinary education can cultivate a deeper and more holistic understanding of sustainability and food production.
- Continuous assessment and formative assessment are used as a practical and ongoing means of assessment. Continuous monitoring of the system happens naturally as the food waste moves through the processes. Issues are identified and corrective actions are taken.

### Key Outputs and Future Opportunities

The development of the outdoor BioTerraCycling Lab at TUS Athlone now acts as a sustainable food production and food waste conversion facility. The success of this initiative offers opportunities for several broader applications:

- Expanding the focus to other sustainability challenges, from energy efficiency to water conservation.

- Building partnerships and collaborations with local growers, can extend the impact of these initiatives beyond the classroom. The project was presented to the Irish branch of the National Vegetable Society in March 2024 at their Spring seminar and is being trialled by members, who seek to reduce dependence on synthetic fertiliser.
- Institutional Commitment, TUS can embed sustainability into their culture, creating spaces like the BioTerraCycling lab where theory meets practice.
- Opportunities for cross faculty collaboration: Expertise in Faculties of Science and Engineering could collaborate with HTL to conduct further developments and improvements to this food waste system.

These opportunities could include Interdepartmental collaboration focused on:

- Optimisation of lacto-fermentation inoculants for microbial isolation.
- To isolate and characterise Lactic Acid Bacteria (LAB) strains that demonstrate optimal fermentative activity, while concurrently inhibiting the proliferation of spoilage or pathogenic microbes.
- Engineering of Advanced Fermentation Vessels.
- Collaboration with the Faculty of Engineering and Informatics could focus on the design and fabrication of fermentation vessels optimised for enhanced microbial breakdown of food waste and embedded sensor technologies for real-time monitoring of pH, temperature, and gas levels with adaptive control systems that modulate environmental conditions to maximise microbial metabolism.
- Microbiological characterisation of fermented food waste.



- Detailed microbial profiling is essential to identify the specific microorganisms present within the fermented food waste to elucidate the functional roles of microorganisms, thereby guiding process optimisation and ensuring product safety.
- Assessment of optimal food waste loading rates.



- To determine the optimal quantity of food waste for efficient fermentation within the system and to evaluate the impact of varying waste loads on fermentation kinetics and microbial community dynamics. As an example, these experiments might reveal threshold values beyond which the fermentation process becomes inhibited due to substrate overload or nutrient imbalance.
- Identification of crop species for maximised nutrient assimilation.

Finally, research should address the selection of food crops most capable of utilising the nutrients generated from fermented food waste. Such an interdisciplinary approach could involve soil nutrient profiling, and studies to assess nutrient uptake efficiency across different plant species and cultivars. For example, controlled greenhouse experiments could compare the growth and nutrient assimilation rates of various crop cultivars when irrigated with treated fermentation effluent, thereby identifying species that maximise nutrient recovery.

#### **Student Perspective – Primary Impact of the Project**

- Shifting mindsets regarding food waste from a disposal problem to a valuable resource opportunity.
- Refocusing of student mindset from unconscious disposal of food waste to considered and thoughtfully repurposing.
- Hands-on experiential learning by doing through deliberate engagement directly with the process including:

- » Inoculant production
- » Fermentation of food waste
- » Soil enrichment
- » Planting
- » The importance of maintaining soil life health including soil invertebrates, bacteria, mycorrhizal fungi and other soil microbes
- » Cultivation
- » The importance of pollinators
- » Harvesting and back to the kitchen to continue the cycle.

- Students are empowered to become agents for positive change.
- Reinforcing ecological awareness and responsibility by making students aware of the delicate ecological systems on which humans and other life forms depend. Their understanding of the importance of protecting and nurturing these critical resources
- How are the impacts on students being measured?
- Students are encouraged to write reflections of their learning experience.
- Reflective writing encourages students to articulate not only what they have learned but also how and why the learning process occurred.
- The content of reflections offers the student the opportunity to reveal shifts in perspectives, critical and systems thinking abilities, and problem-solving strategies.



# 31. Enhancing Students' Understanding and Differentiating Traditional SEO Output Compared with Appropriated Prompt AI Output

Dr Aisling Keenan

Department of Business and Management

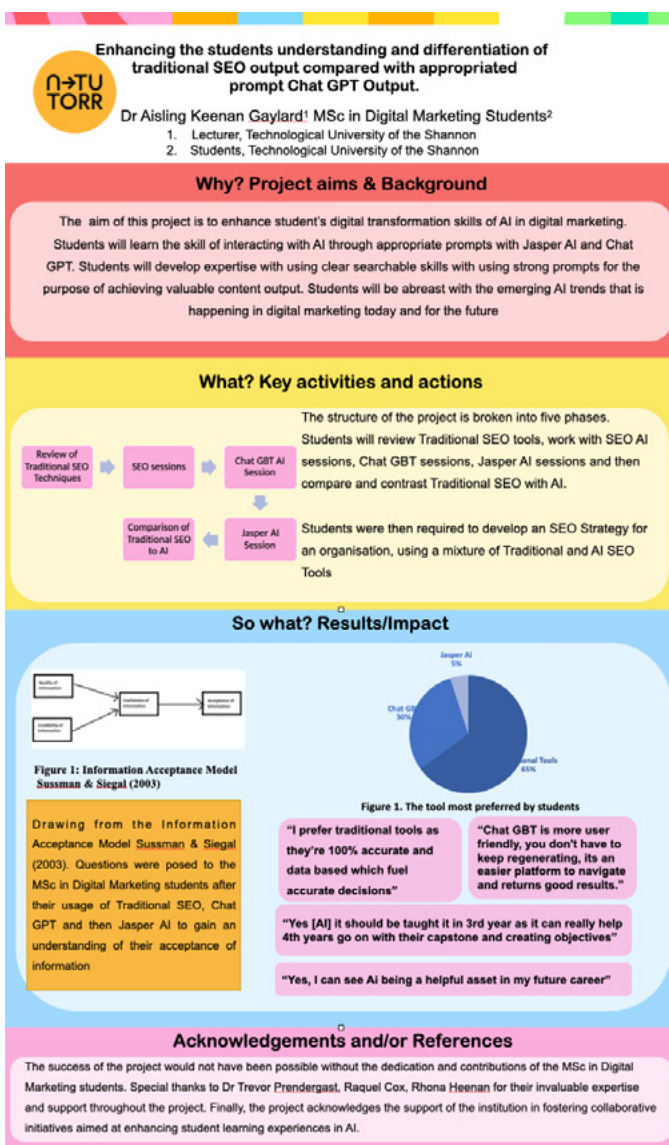
## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4

### Project Lead, Partners and Participants

- Project Lead - Dr Aisling Keenan Gaylard
- Participants - Students from the MSc in Digital Marketing and Analytics over the last two years

- Development of problem-solving skills, students will learn to evaluate output from the AI, critical analysis the effectiveness of this output for problem solving.
- Enhance research skills, the students will be abreast of the emerging AI trends that are happening in digital marketing today and for the future.
- Reflection on the use of AI, students will evaluate which tool is better, traditional Search Engine Optimisation (SEO) tools, or AI tools.



### Project Description and Methodologies

The MSc in Digital Marketing is a one-year programme that provides graduates with an opportunity to gain specific digital marketing knowledge and applied new skills with their digital consultancy partner. The programme merits itself of being closely tied to industry needs and demands. Artificial intelligence (AI)-enabled digital marketing is revolutionizing the way organisations create content for campaigns, generate content, leads, optimise websites, reduce customer acquisition costs, manage customer experiences, market themselves to prospective employees, and convert their reachable consumer base via social media (Van Esch & Stewart Black, 2021). AI facilitates the creation of innovative marketing strategies that prioritise sustainability (Gündüzyeli, 2024). This project activity has been integrated into the Organic Paid Search Strategy module that is taught on the MSc in Digital Marketing and Analytics, equipping students with the skills of search engine optimization. Students learn on-site and off-site SEO techniques with the view to increase a websites online ranking in the SERP (Search Engine Ranking Pages). This project activities will require students will utilize AI with an industry partner and develop an SEO strategy for that organization analyse a company's existing SERP position.

This research project is grounded in existing literature and has developed the below conceptual model (see Figure 1). The model has been adapted from the Information Acceptance Model by (Erkan & Evans, 2016).

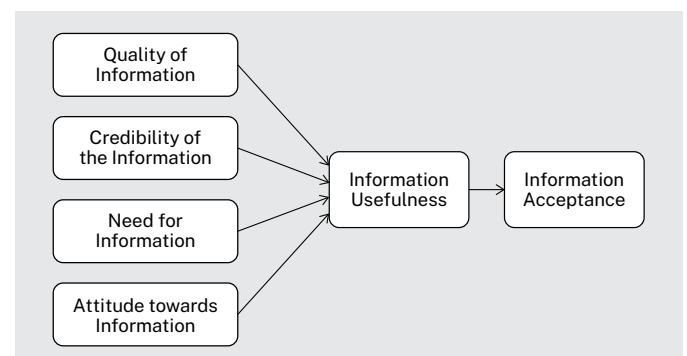


Figure 1: Conceptual Model

### Key Aims of the Project

- Enhance students' digital transformation skills of Artificial Intelligence (AI) in digital marketing.
- Understand and develop prompt engineering skills; the students will learn the skill of interacting with AI through appropriate worded prompts with Jasper AI and Chat GPT.



Students evaluated SEO traditional and AI tools under the following constructs: the quality of information, credibility of information, needs of information and attitudes of information.

The research methodology used for this project was a comparative usability study within a mixed-methods research approach. Specifically, this methodology incorporated the following stages:

- Experimental Research: Students tested Traditional SEO, different AI software under controlled conditions.
- Usability Testing: Each Tool (Traditional, AI) software is assessed based on usability factors (e.g., ease of use, efficiency, satisfaction).
- Survey Research: Students complete surveys after using each tool (Traditional, AI software) to provide qualitative and quantitative feedback.
- Comparative Analysis: The data from different tools (Traditional, AI software) tests is compared to determine which one performs best.

This project activity has been integrated into the Organic Paid Search Strategy module that is taught on the MSc in Digital Marketing and Analytics, equipping students with the skills of search engine optimization. The students will go through the four steps in this methodology and will produce a SEO strategy for an industry partner based on their findings.

#### Key Outputs and Future Opportunities

- Opportunity to get hands-on experience with using AI and testing the different systems.
- Development of prompt engineering skills, students test the different AI, working on their searchable skills in probing the AI to return the output that is most desirable.

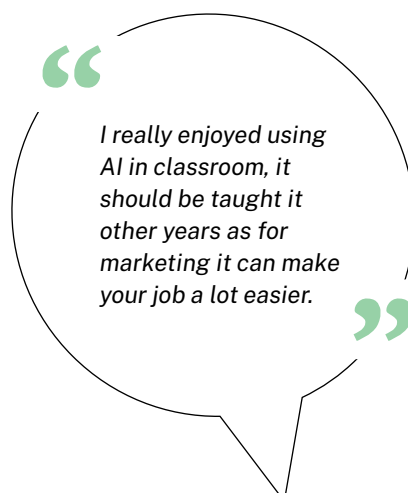
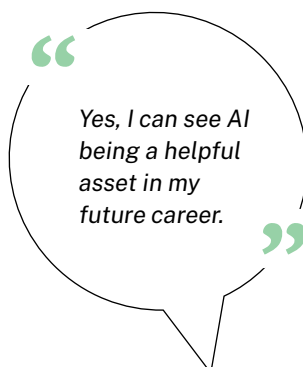
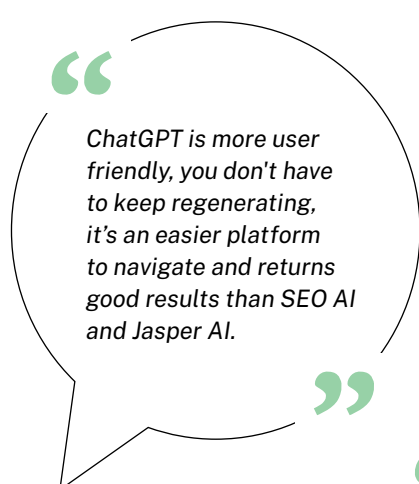
- Research skills, enable students to bridge the gap between academic research with practitioners' use. Drawing from the Information Acceptance Model Sussman & Siegal (2003) theory, students apply theoretical concepts in real-world scenarios enhancing their ability to integrate research findings into professional practice.
- Consultation skills, students were able to evaluate the quality, credibility, usefulness and acceptance tools, to recommend the most sustainable SEO strategy for their industry partner ensuring long term impact.
- Providing alternative assignments and projects for students helps develop their overall learning experience. Lecturers keep abreast with the ever-evolving landscape of digital marketing. Organisations are under a digital transformation with the implementing of AI. Incorporating AI into the curriculum and testing research concepts not only enriches student learning but also allows me to continuously expand my expertise in this rapidly advancing field.

#### Student Perspective – Primary Impact of the Project

The impact of this project from the student's perspective was highlighted in the following key areas:

- Students are now confident is using Jasper AI and SEO AI alongside ChatGPT.
- Students evaluated how useful each AI was in terms of their overall goal with evaluating the quality of the information that it provided.
- Students enjoyed the freedom of working with prompt engineering and testing the outputs from the AI. The hands-on experience allowed them to refine their problem-solving skills and to think critically about AI-generated content.

#### Comments from the students regarding their experience:



# 32. The Impact of Vertical Tower Gardens on Environmental Management and Resource Efficiency in Hospitality

Nicola Ryan

Department of Hospitality, Tourism and Leisure

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4

### Project Lead, Partners and Participants

- Project Lead - Sean Connell (TUS)
- Partners - Nicola Ryan, Dr. Noëlle O'Connor and Dr. Emma Reardon (TUS)
- Participants - Students of B.A. in Culinary Arts, B.A. (Hons.) in Hospitality Management and B.A. in Hotel and Leisure Management (TUS)

### Key Aims of the Project

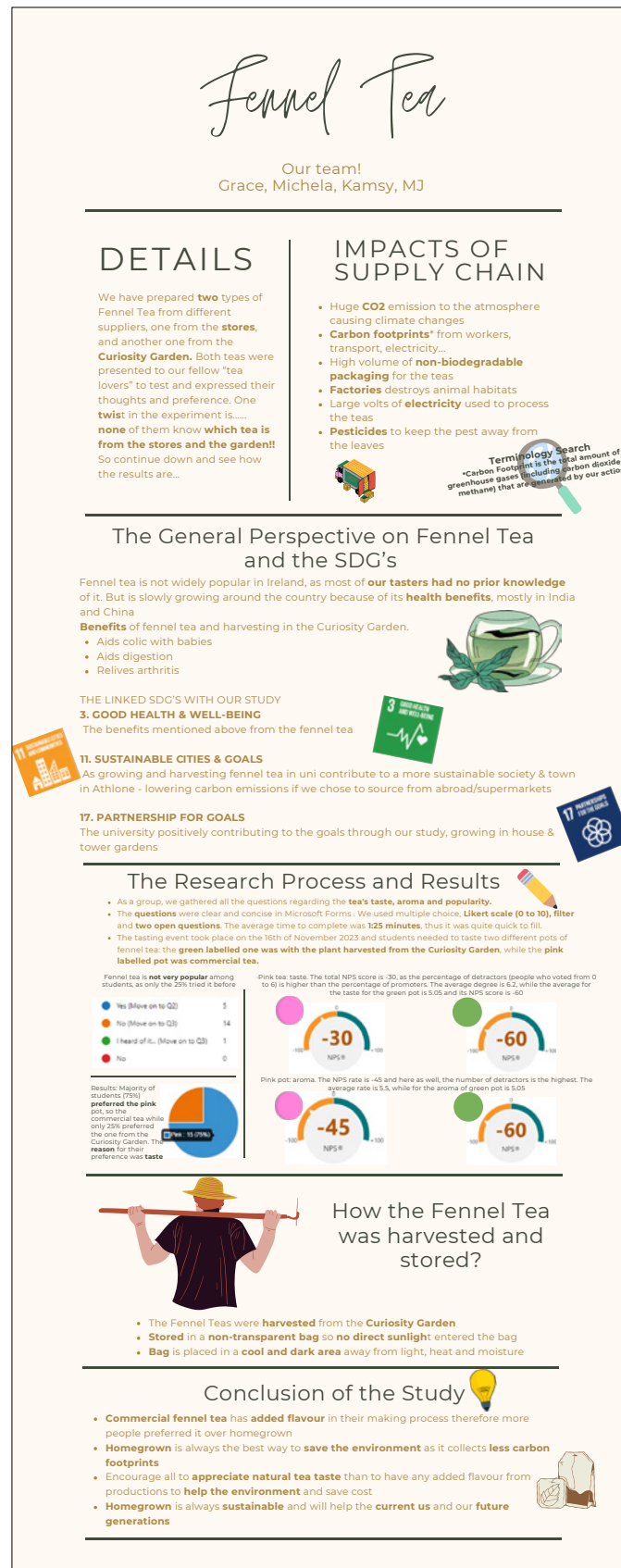
- To enable the students to use aeroponic vertical tower gardens as alternative to traditional food production methods.
- To measure the resource efficiencies of aeroponic vertical tower gardens for food production.
- To administer a comparative study using plants grown in the aeroponic vertical tower garden versus commercially grown produce.
- To consolidate the results of that study as a project for assessment.

### Project Description and Methodologies

- Students germinate plants from seeds using rockwool (as opposed to soil).
- Students plant the seedling plants in the aeroponic vertical tower garden.
- Students are charged with cultivating and nurturing plant growth in aeroponic vertical tower garden.
- Additionally, they measure the resource inputs and costs of growing plants in the aeroponic vertical tower garden.
- Students compare the value chains of aeroponic vertical tower garden grown plants versus commercially grown plants.
- Fully developed plants are harvested by students, dried and stored.
- Students host a comparative taste testing experience using plants grown in the aeroponic vertical tower garden versus commercially grown produce.
- The students' portfolio of work is shared across the department.

### Key Outputs and Future Opportunities

- Lecturer outputs: Conference presentations and papers; a podcast; guest lectures on ESD: collaboration with peers from science and engineering faculties.
- Student outputs: Student survey of the impact of the aeroponic vertical tower garden with sensory taste testing participants; Infographic, presentations and poster exhibition.



# TASTE AND AROMA TESTING RESEARCH

EMBARK ON A JOURNEY THROUGH OUR ENGAGING POSTER, REVEALING THE MINT TEA'S SUPPLY CHAIN FROM CULTIVATION TO CONSUMPTION. EXPLORE ENVIRONMENTAL ASPECTS, POPULARITY DYNAMICS, AND CONTRIBUTIONS TO FUTURE HOSPITALITY MANAGEMENT. REACH OUR POSTER TO REMAGINE MINT TEA – WHERE TRADITION MEETS SUSTAINABILITY.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STUDENTS</b><br>Nam Le<br>Amelie Aubert                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>MENTOR</b><br>Kati Fennelly<br>Fahad Khanolkar<br>Yu Xuan Tang                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>LECTURER</b><br>Nicola Ryan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>DETAILS OF PROJECT</b><br>This aims of this project was to find out what would be the economic and environmental impact of Tower Garden. Measure the level of its sustainability and impact on SDG's (sustainable development goals). Most important, find out the taste and aroma of the mint grown on the tower garden. Detail research has done on those topics. Our team has found some remarkable results. Our research shows tower garden mint is more sustainable and economy friendly. It produced better taste and aroma compared to commercial and home garden mint. | <b>THE KEY IMPACTS OF COMMERCIAL TEA SUPPLY CHAIN ON THE ENVIRONMENT (PUKKA TEA)</b> <ul style="list-style-type: none"> <li>• Pukka Tea committed to reducing its environmental impact.</li> <li>• 2022 Impact Report highlights:             <ul style="list-style-type: none"> <li>• Exclusively sourced organic certified herbs</li> <li>• Planted 313,334 trees in Brazil and Madagascar, reaching over 15 million trees since 2017</li> <li>• Continued protection of areas of forest in Guatemala and Mexico</li> <li>• Emission reduction target of 20% by 2030 forest challenges</li> <li>• Acknowledged the difficulty of achieving this target</li> <li>• Emissions increased, requiring intensified efforts to meet goals</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>THE COMMERCIAL SUPPLY CHAIN OF THE MINT TEA (PUKKA TEA)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>THE GENERAL LEVEL OF POPULARITY OF THE MINT TEA</b><br>Mint tea is generally popular and widely enjoyed in various cultures around the world.<br>5 top countries known for consuming a significant amount of mint tea:<br>1. Morocco<br>2. Iran<br>3. Egypt<br>4. Turkey<br>5. Algeria<br>The Perpetuum Tea Market size was USD 205.5 million in 2022 and is expected to reach USD 308.2 million by 2030.                                                                                                                                                                      | <b>THE GROWTH, HARVESTING, AND STORAGE PROCESS</b><br>The initial phase of our research project involved the cultivation of mint, a herb designated for our study. The cultivation process encompassed the systematic observation of plant health, growth measurement, and monitoring of water and nutrient levels. In the first week, a transition was made to separate, completing a reimagining of the cultivation process with the retention of established plants.<br>The harvesting phase transpired during the sixth week, preceded by a pre-harvest wash in water. The harvested mint was then meticulously processed, including washing, drying, and packaging. The final product, a high-quality mint tea, was then prepared and served to the participants. The entire process was meticulously documented, ensuring transparency and accountability in the cultivation and harvesting stages.<br>Participants: Estimated individuals, including Emma Reidman, the Head of the Department of Hospitality, Tourism & Leisure, alongside lecturers, and approximately 20 students.<br>Process: Evaluation of three distinct types of tea originating from different sources, each housed in specially labelled with corresponding colour pink, green, and yellow. Participants were instructed to carefully observe the tea's appearance, smell, and taste. The tea samples were then prepared and served to the participants. The entire process was meticulously documented, ensuring transparency and accountability in the cultivation and harvesting stages.<br>Participants: Estimated individuals, including Emma Reidman, the Head of the Department of Hospitality, Tourism & Leisure, alongside lecturers, and approximately 20 students.<br>Process: Evaluation of three distinct types of tea originating from different sources, each housed in specially labelled with corresponding colour pink, green, and yellow. Participants were instructed to carefully observe the tea's appearance, smell, and taste. The tea samples were then prepared and served to the participants. The entire process was meticulously documented, ensuring transparency and accountability in the cultivation and harvesting stages. | <b>CONTRIBUTION</b> <ul style="list-style-type: none"> <li>• Water conservation by using aerobic system. Using less water due to the closed-loop system that recirculates nutrient-rich water.</li> <li>• Significant reduction in food miles - Reducing carbon footprint associated with transportation.</li> <li>• Green Certifications and Recognition - Implementing vertical farming practices aligns with various green certifications and standards to showcase their commitment to environmental.</li> <li>• Educational and Awareness Programs - educational tools to raise awareness about sustainable agriculture and healthy eating.</li> </ul> |

# TASTE AND AROMA TESTING RESEARCH

Introduction

We were given the task to successfully grow, harvest and store lemon balm tea. We then compared the taste of lemon balm tea from the tower garden to commercial lemon balm and lemon balm grown in gardens outdoors. We held a tasting test on campus.

Our team includes Billy, who undertook the heavy lifting and maintenance of the tower garden, Charlotte, who took care of measuring the plants and water usage, Victoria along side Marcella, who overlooked the sustainable side of using a Tower garden to grow plants and leaves instead of buying it commercially, and Farah who maintained the plants by removing the dead leaves.

The growth, harvesting and storage process of lemon balm

1. We first soaked the rockwood in water, cut rockwood in half, layered roots of lemon balm in centre of rockwood and wrapped with a band to keep in place.
2. Inserted in pot and into slip of Tower Garden.
3. Tower garden included 40L of water and one cup of Part A and Part B minerals and nutrients.
4. Degreasing of growth took place within 2-3 weeks.
5. Removal of dead leaves took place twice a week.
6. Water and nutrient level was measured weekly.
7. Harvesting took place to week 8.
8. We snipped the mature leaves using scissors.
9. Mature leaves were stored in a paper bag, in a dry area to allow it to dry up.

Process of Taste & Aroma test research

Sample: A selection of three lemon balm tea labelled with three different colours, which were pink, yellow and green. Pink represents the commercial tea, yellow appeared for the Vertical Tower Garden and green stored for the outside garden.

Participants: Lecturers and representatives of HTL building, such as Dr. Emma Reidman, Fiona Budge, Sean Connolly, Gayle Tierney & approximately 20 students.

Procedure: Participants underwent blind tea tasting test, evaluating aroma, flavour, mouthfeel and overall impressions by using Microsoft form.

Survey Feedback: The tea from the Tower Garden got the highest rating for taste: 3.8/5 compared to 2.8/5 for the commercial and outside garden tea. Out of 16 respondents, 13 stated that taste was a quality they look for when buying tea.

One participant said the commercial tea tasted "vague" whereas the other two tasted more organic and vibrant.

Multiple participants said that this was due to the commercial tea having a drier taste/texture underutilised.

One participant said the commercial tea tasted "vague" whereas the other two tasted more organic and vibrant.

Key impacts of commercial lemon balm tea on the environment based on its supply chain

The environmental impacts of commercial lemon balm tea can be assessed by examining its supply chain from cultivation to consumption. These are the key impacts associated with various stages of the supply chain:

- Carbon Footprint: Transportation of raw materials and finished products over long distances can result in a significant carbon footprint, especially if transported by air or inefficient modes of transportation.
- Energy consumption: Processing and manufacturing involve energy-intensive activities, contributing to carbon emissions if the energy comes from non-renewable sources.
- Labour concerns: Agriculture remains to be one of the most dangerous industries. Farmworkers may be exposed to long hours in the sun causing heat stroke, subject to dehydration, unprotected exposure to harsh chemicals and/or no overtime pay.
- Water usage: Tea processing may require substantial water usage, potentially leading to water scarcity issues, especially in regions with water stress.

General level of popularity of lemon balm tea

According to the research, over the projected period, the lemon balm tea market is expected to expand at a compound annual growth rate (CAGR) of 5.5%.

The industry's estimated value will increase from US\$ 1,026.1 million in 2023 to US\$ 2,781.3 million in 2033.

The lemon balm tea market was worth US\$ 1,567.0 million at the end of 2022.

On the basis of region, the market is segmented into North America, Latin America, Europe, Asia Pacific, and the Middle East & Africa.

Key results of the study

- Lemon balm can be grown in the Tower Garden
- Efficient water supply, energy and nutrients allows for growth to begin between 2-3 weeks
- Little taking care of needed
- No soil used, meaning no pesticides or harsh chemicals needed to protect the plant.
- Sustainable all year around
- Planting within the Tower garden allows for better flavour than when buying commercially.

Conclusion

Vertical Tower Gardens can contribute significantly to future environmental management strategies in the hospitality industry, such as:

- Sustainable food production
- Reduction in food waste
- Green marketing and brand image
- Educational opportunities
- Air quality improvement
- Water efficiency

# Wheatgrass tea tasting event.

By Martin, Eva and Gurleen

Introduction

The tower garden is the way of the future when it comes to growing fresh produce in a confined space. We used product A&B, the plant food, for the tower and water. The aim for us is to produce products for our taster event and compare them to commercially produced products. The products our team were assigned was wheatgrass and fennel. For the wheatgrass we will be making a juice as opposed to a tea. During this assignment we will team up with the engineering students from the campus and hopefully make some improvements in the tower.

Cost of running the tower

The purchase cost per tower

- The cost of the tower we measure the amount of electricity we used and calculated it at .66c per day
- Electricity cost per hour .0275
- Cost of electricity per plant 0.0017 per day
- Water the 16 plants of the tower is running 10 liters of water over 14 days
- (we should look at harvested water for this in future)
- Cost per plant ready to be placed in tower .37 cent
- Cost of wheat grass shots is 1.79c per 25ml shot (honey pot)
- Cost per pot of tea for clipper bags .45c
- Each plant use 1.14lt of water per 14 days this also includes loss of water through evaporation.
- the tower uses 100ml of water a day
- Each plant uses 6.25ml of water per day
- Every 2 months its recommended to completely change the water
- The cost of buying a tower runs from 800 to 1400 euro
- Student time 5 minutes twice a week to remove dead leaves check water and ph levels.

Collaboration with the engineers

- We got to create a 3d bracket to support the wheatgrass
- Develop sensors for keeping an eye on the water level & ph.
- We also got to see the real benefit of interdepartmental teamwork within TUS.

Benefits of wheat grass

- Lower cholesterol, Improve energy
- Boost immune system, Aids digestion, Anti inflammatory
- Contains 17 amino acids
- Helps removes toxins
- High in fiber

Conclusion

Conclusion when we look back at the learning of the semester, we can really see a lot of our food comes with huge impact on the environment. We have gained a much better understanding of how the tower garden works and a better understanding of where our food comes from and how we can maximise the space we have by using the tower. We were also able to work out the cost of running the tower. We had a great opportunity of handling a tea tasting event, which the results are displayed in the poster.

Supply Chain

QR Results

## Student Perspective – Primary Impact of the Project

The project provided students with hands-on experience and a fresh perspective on sustainable food production. It enhanced their communication skills, fostered a sense of ownership over a tangible project, and boosted their confidence.



# 33. Investigating the Feasibility of Agricultural Land Use Change Options Using Problem-Based Learning (PBL)

Elisha McGrane

Department of Applied Science

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 15

### Project Lead, Partners and Participants

- Project Lead - Elisha McGrane (TUS)
- Partners - BSc Environmental Science and Climate and BSc Agricultural Science and Sustainability Programme Boards (TUS)



### Key Aims of the Project

- To promote the type of deep learning that can emerge from a Problem Based Learning approach.
- To encourage student agency and engagement by producing a meaningful and relevant project for them to participate in.
- To provide students with the opportunity to explore challenges facing the agricultural sector in Ireland today.
- To provide students with time to delve into a range of issues pertaining to sustainable land use and explore the complexity of environmental, social and economic dimensions involved.
- To allow students to focus on a specific type of agriculture to carry out their investigations.

### Project Description and Methodologies

- The "problem" has been designed to address learning outcomes across four modules, Biology and Botany; Land Use and Climate Change; Soils and Peatlands and Forestry.
- Using a Problem-Based Learning (PBL) model, students are put into groups of between 7 and 10 where they decide on roles (chair, note taker, timekeeper, and presenter) and a group charter. Students are then taken through the various steps involved in the PBL process.
- The "problem" is presented to the groups. Each group

gets a problem with a slightly different context.

- The "problem" takes the format of a project brief from a landowner requesting the group (a consultancy with expertise in agriculture, forestry and environment) to carry out a feasibility study of changing the land use from farming dry stock to one of a range of scenarios. These scenarios include;
  - » Continue in dry stock but add new hedges
  - » Continue in dry stock but incorporate agroforestry
  - » Rewetting (reversal of artificial drainage) and nature restoration
  - » Convert to coniferous forestry
  - » Convert to deciduous forestry
  - » Convert to short rotation coppice.
- The brief instructs the consultancy firm to outline how the various options could future proof the farm in the context of EU and government policies in the areas of climate, forestry, biodiversity, agriculture and land use. The feasibility study must be informed by the most up-to-date science and technology available.
- Students are then brought to the farm in question, given relevant maps and data, shown around the land and given the chance to ask the landowner questions.
- The groups then spend a few days researching the pros and cons of converting from one land use to another and compiling a 1500-word evidence-based report (under 10 prescribed headings that focus on economic, social and environmental considerations) and 10-minute presentation.
- The assessment weighting is 50% for the group mark and 50% for an individual report (a personal reflection on the student's key learnings from the project).



### Key Outputs and Future Opportunities

- Each group produced an evidence-based report and presentation on the implications of changing agricultural land from one use to another.





- The structure for the report provided to the students, ensured that they addressed important topics including current tree and hedgerow cover on the farm; current farming practices and required changes to meet the objectives of the scenario; site suitability including soil type, drainage, field sizes and infrastructure; most appropriate vegetation change details including species, density, management and timescales; environmental benefits and impacts; economic considerations (including grants); site suitability for education, training, demonstration and other social benefits; ecosystem services, case studies and best practice in Ireland and abroad; key recommendations.

#### **Student Perspective – Primary Impact of the Project**

Students benefited from an opportunity to immerse themselves in a real-world issue and focus on the challenge in hand in a format that forced them to be self-directed and in charge of their own learning. The nature of the problem forced students to look at the problem from multiple perspectives and bring their experiences and learning from a range of modules into the process.

Relating the project to a specific farm that students visited, allowed the students to see the direct connection between "college work" and "the real world" in a practical way. The project was particularly impactful as the students could clearly see the potential for the application of their research.

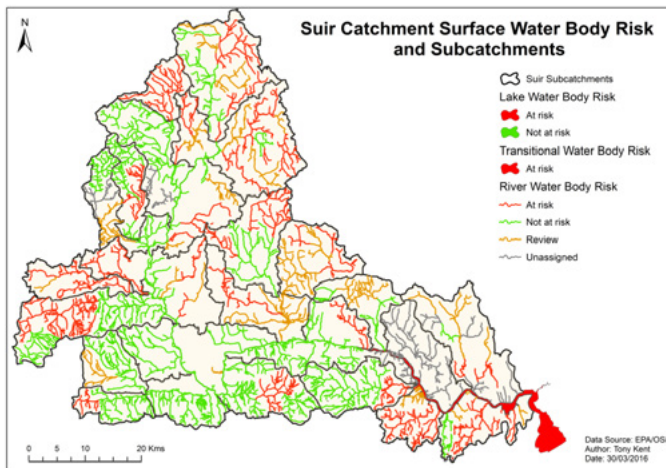
## 34. Investigating Our River Suir, our collective responsibility. A Problem-Based Learning exercise

Elisha McGrane

Department of Applied Science

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 6



### Project Lead, Partners and Participants

- Project Lead - Elisha McGrane (TUS)
- Partners - BSc Environmental Science and Climate and BSc Agricultural Science and Sustainability Programme Boards (TUS)

### Key Aims of the Project

- To provide the opportunity for students to investigate a complex environmental problem.
- To give students a theoretical framework (The Tragedy of the Commons) to consider the problem of shared responsibility for a shared resource (river water).
- To allow students time to tease through the issues pertaining to a local river catchment that continues to experience environmental decline.

### Project Description and Methodologies

- The project was designed across three second year modules (Environmental & Sustainable Development; Ecology; and Surface Water and Hydrogeology) across two courses (BSc Environmental Science & Climate and BSc Agricultural Science & Sustainability).
- The project was developed using a problem-based learning model to address learning outcomes from the three modules.
- Each student group of between 7 and 10 members, was given a prompt in the shape of a map of the status of water quality in the River Suir and an article from a local Tipperary newspaper outlining the continued decline in the health of the river catchment. The overarching issue is that despite all the EU and national regulations, surface water quality in Tipperary declined by 28% in the last 12 years.

- Groups were tasked with looking into this issue in the context of the theoretical framework devised by Elinor Ostrom who shared the Nobel Prize in Economics in 2009 for her lifetime of work investigating how communities succeed or fail at managing common finite resources such as grazing land, forests and irrigation waters. Ostrom offers eight principles for how commons can be governed sustainably and equitably in a community.
- Armed with their new insights and understanding of the issues, the groups were asked to produce a video aimed at all the river stakeholders, with the purpose of convincing the audience of their collective responsibility and the collective benefits from a good quality water catchment.
- Students were assessed through the group video (40%), an individual report based on specific questions on sustainable development, ecology and hydrogeology (50%) and attendance/participation (10%).

### Key Outputs and Future Opportunities

The main output from each group was a video aimed at highlighting the shared natural resources versus shared responsibility message.

### Student Perspective – Primary Impact of the Project

Students gained valuable insight into the challenges faced in communicating scientific messages about shared environmental resources to the public. They also got an opportunity to grapple with the complexity of the problem that is water quality and the crucial role that multiple stakeholders play in managing the resource sustainably.



## 35. Embedding Sustainability in Education through the TUS Learning Gates Initiative

Jim Gilchrist

Department of Lifelong Learning

**Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)**

SDG 4

### TUS Learning Gates

The TUS Learning Gate is a community location/space where TUS students and academic staff can meet and learn together, through the provision of online programmes. There are 60+ TUS Learning Gates operating across 32 Counties.

The TUS Learning Gate initiative is a pioneering model of sustainable education delivery. By addressing the barriers to higher education through decentralised learning and inclusive pedagogical strategies, it directly contributes to UN SDG 4 Quality Education. The initiative not only fosters equitable access to education but also establishes a foundation for continuous research and development in sustainable educational practices.

#### Project Lead, Partners and Participants

- Project Lead - Jim Gilchrist (TUS)
- Participants – 50 students from the Certificate in Supervisory Skills for Team Leaders (Level 6) Programme (2023/2024) (TUS)

#### Key Aims of the Project

- Sustainability and regional Impact
- Transformational learning environments
- Accreditation and recognition
- Alignment with ESD and SDG 4
- Personal achievement for participants

#### Project Description and Methodologies

- The TUS Learning Gate initiative supports inclusive and equitable quality education by allowing students to access higher education in their local communities, reducing barriers such as travel, relocation costs, or limited resources.
- This initiative aligns with key Education for Sustainable Development (ESD) objectives, particularly in addressing the challenges of equitable access, sustainable practices, and regional growth.

The TUS Learning Gates initiative employs a multi-faceted approach to embedding sustainability within education. The methodology includes:

- Decentralised learning hubs: Establishing TUS Learning Gates in rural and regional areas to increase higher education accessibility. Ensuring infrastructure supports digital learning environments.
- Student-centred pedagogical approaches: Implementing flexible learning strategies such as online teaching, digital skills, project-based learning, and flipped classrooms. Integrating sustainability-focused curriculum components that align with ESD priorities.
- Assessment and Measurement:
  - » Student engagement metrics: Monitoring attendance, participation, and engagement levels in TUS Learning Gate locations.
  - » Academic performance analysis: Evaluating grades and feedback from students and faculty to measure effectiveness.
  - » Real world sustainability impact: Reductions in student travel-related emissions and cost savings are implicit but still to be measured.
  - » Qualitative feedback: Conducting student and faculty surveys to assess perceptions of accessibility and learning quality.





### Key Outputs and Future Opportunities

- Research projects and community impact: Students engaged in local case studies that assess the impact of regional education accessibility. Compilations of student work demonstrated learning outcomes aligned with sustainability principles.
- Skills development tracking: Measuring improvements in digital literacy, problem-solving, and collaborative learning through formative and summative assessment.
- Personal achievement: Measurable personal development through appropriate assessment mechanisms coupled with testimonials and anecdotal accounts of transformative learning.
- Opportunities for further research and development:
  - » Longitudinal impact studies: Tracking student

success rates, employment outcomes, and community impact over time.

- » Scaling the initiative: Exploring additional TUS Learning Gate locations and partnerships with local industry and government bodies. There is a real appetite amongst the TUS Learning Gate community for this.
- » Enhance digital infrastructure: Leveraging emerging educational technologies such as AI-driven learning support and immersive Virtual Reality (VR) classrooms.

### Student Perspective – Primary Impact of the Project

The TUS Learning Gate initiative is a leading example of how embedding ESD principles in higher education can create meaningful societal and environmental benefits. It aligns closely with UNESCO's goals for inclusive and sustainable education while addressing the unique challenges of diverse communities in Ireland. The TUS Learning Gate demonstrates a practical application of ESD principles through innovative teaching, assessment strategies, and community collaboration.



## 36. Using the N-TUTORR Introduction to Sustainability Digital Badge to Complement a Macroeconomics for Business Module Assignment

Karen Guest

Department of Business and Management

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead - Karen Guest B.A. M.Sc. Econ.
- Participants - Higher Certificate in Business Level 6 and Bachelor of Business Level 7 students taking the module Macroeconomics for Business (TUS)

### Key Aims of the Project

- The TUS graduate attribute framework emphasises the need to embed sustainability and good citizenship into the curriculum and programme design of the University. Specifically, graduate attribute 6 refers to developing ethical, social, intercultural, environmental awareness and responsiveness within TUS graduates. Economics modules within the Faculty of Business were updated to include specific learning outcomes that addressed the sustainability theme. As a result, the themes of the SDGs, private and social costs, externalities, economic growth conflicts, behavioural nudges and rethinking globalization were embedded into existing syllabi.
- Students in the Macroeconomics for Business module were encouraged to undertake the National Technological University Transformation for Recovery and Resilience (N-TUTORR) programmes Introduction to SDGs Digital Badge to complement the continuous assessment assignment which specifically addressed how the UN SDGs are implemented in Irish macroeconomic policy.

### Project Description and Methodologies

- The digital badge is non-accredited, and participation was voluntary.
- Class time was devoted to introducing the UN SDGs and resources were posted on Moodle to assist students in completing the assignment.
- Dr. Trevor Prendergast, N-TUTORR TUS Institute Lead, spoke to students directly about the benefits of undertaking the badge and emphasised the competitive advantage that such a badge gives to students when seeking graduate employment.

It was emphasised that the digital badge would act as a complement to the assignment.

### Key Outputs and Future Opportunities

- Assignment requirements:
  - » Choose any one of the SDGs and comment on how current Irish Economic policy is targeting your chosen goal.
  - » Reflect on how you are currently incorporating the SDGs into your life as a TUS Business student or how you intend to do so in the future when you graduate.
  - » Prepare an economic development plan for your country. Include your top 3 strategies to address any one of the SDGs in your country over the next 5-10 years.
- Economic policy issues addressed within the assignment included the following:

### Student Perspective – Primary Impact of the Project

Students engaged with the process enthusiastically from the outset and appreciated the benefit that undertaking the digital badge afforded them while completing the assignment. As the semester progressed, class discussions were facilitated on the progress of both the assignments and the digital badge process. The feedback from students was very positive.

| SDG's                                      | Economic Policy                                                                                  |
|--------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1. No Poverty                              | Hot School Meals Programme.                                                                      |
| 4. Quality Education                       | Early Childhood Care and Education (ECCE) Scheme.                                                |
| 6. Clean Water and Sanitation              | Water Quality in Ireland.                                                                        |
| 8. Decent Work and Economic Growth         | Connected Hubs - revitalising Ireland's towns and villages through the promotion of Hub working. |
| 12. Responsible Consumption and Production | Agri-Climate Rural Environment Scheme (ACRES).                                                   |
| 13. Climate Action                         | Climate Action Plan 2023, Changing Ireland for the Better.                                       |



I am pleased with the implementation of both the assignment and the incorporation of the digital badge into the process. I intend to continue to promote and use the badge within my modules. I believe it empowered students and should promote improved sustainability awareness, behaviour and citizenship amongst our business graduates.



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## Comments from the students regarding their experience:

“

*Doing this badge made me think critically about complex issues related to sustainable development such as climate change, poverty and equality*

”

“

*Knowing this information will be help me spread awareness*

”

“

*It has helped me to understand how the Government is working towards these goals to ensure a better living standard for everyone and create an equitable living standard*

”

“

*When I graduate I intend to keep these SDGs in mind in my personal life such as volunteering and in my professional life such as supporting or working for organisations whose goals align with the SDGs*

”

“

*After I graduate, I plan to incorporate these goals into my life by making better personal and professional choices that would line up with these targets*

”

## 37. The Outdoor Classroom: The Addition of Outdoor Spaces and Open Educational Resources in the Department of HTL 2022-2024 3 Zones

Gayle Tarmey

Department of Flexible and Professional Learning

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead - Gayle Tarmey (TUS)
- Partners - June O'Byrne-Prior, Kevin Ward, Shane Sheedy, John Killeen and Orla Fox Colleran (TUS) and 100+ Hospitality, Culinary and Sports Programme students (2023/2024, 2024/2025) (TUS)
- Participants - Cormac Cloonan, Patrick Moloney, Aisling McConn, JJ Leonard, Dr. Nuala Harding, Georgina Hogan, Dr. Emma Reardon and colleagues in the Department of Hospitality, Tourism and Leisure (TUS)
- 100+ students were involved in the delivery, maintenance and development of the spaces.

### Key Aims of the Project

- Leverage teaching and learning connectivity between the teaching kitchen and outdoor teaching and learning spaces to deliver a more comprehensive approach in teaching and learning.
- To educate and promote students and future employees in skills such as food production, waste management, harvesting, sowing, cost efficiency, and soil management providing a more holistic view of food growing, preparation, production, consumption and waste management, learning applicable to all food consumers.
- To deliver a creative space that promotes and encourages the learning environment to be more innovative, interactive, diverse, and inclusive, and provides a living-labs for action and participative research applicable across the wider suite of programmes offered in the department of Hospitality, Tourism and Leisure in TUS Athlone and Limerick.
- To deliver an outdoor educational space project which will be a legacy left by our hospitality, culinary and

sports graduates of 2023 and 2024, who embraced, recognised, and utilised the outdoors in ways not yet envisaged because of Covid-19 and that can be used by colleagues and students into the future.

### Project Description and Methodologies

This project initiation involved three strands in total:

- The infrastructural development of three separate spaces. The Garden of Curiosity, an Open Educational Resource (OER) and learning enhancement project, composting and grow beds to support food waste repurposing and a digital book of recipes and tips for sustainable food practices.
- The addition of an outdoor classroom infrastructure, pergola and benches that in time will allow classes to encompass the outdoor teaching space in programme delivery and maximize spatial use in teaching and learning.
- Digitally connecting the space to our website on this and other projects delivered across TUS. This facilitated installing posts with QR codes mounted on them, signposting businesses' digitally to a second OER. This allowed for transparency in relation to use of this digital pathway from spaces in both TUS Athlone and Limerick.



### Key Outputs and Future Opportunities

- New learning enhancement spaces for the departmental and campus use and further advancement going forward into the future.
- A digital book of sustainable tips and recipes.
- A published hardcopy edition of the book to represent the project and research output delivered through student and colleague collaboration.
- Assessment and programme pedagogical enhancement allowing ESD embedment in selected culinary programmes and assessments in modules including Environmental Management and Resource Efficiency to embed a prototype for future use.





- The dissemination of research and project deliverables including multiple conference presentations nationally and internationally, international guest site visits, cross campus collaboration days within the spaces and action research across modules.
- Opportunity to further develop the space to demonstrate a fully 'recycled on site food waste' campus and potential for biogas harvesting as a renewable energy product.
- These spaces have been further enhanced in 2025 and beyond and provide an innovative learning enhancement for teaching, learning and assessment.

#### **Student Perspective – Primary Impact of the Project**

The students and staff feedback pointed towards:

- The benefits of student and staff as partners being beneficial, empowering and a key partnership that should be promoted.
- The action research simplifies the perceived complexity of research, and the spaces present an alternative living lab for conducting, experimenting and observing research in a 'living lab'.
- The diversification of learning environments will continue to provide an enjoyable alternative to the traditional classroom learning space, that in combination with traditional spaces offers diversity in teaching approach.
- As a department through this and other relatable projects there is opportunity to build on the positive ESD initiatives and further promote innovation in teaching and learning, including cross faculty collaborations and other potential enhancements of these new learning environments for students.



## 38. Integration of Teaching and Learning with the Green-Campus Programme in TUS Thurles and TUS Clonmel from 2011 to the Present

Kevin Healion

Department of Applied Science

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



### Project Lead, Partners and Participants

- Project Lead - Green-Campus committee in TUS Clonmel and Thurles including Clifford Guest (Chairperson) and Kevin Healion (Secretary) (Department of Applied Science, TUS)
- Partners - Darragh Wynne (Sustainability Coordinator, TUS)
- Participants - Approximately 200 different students and staff (Academic and Professional, Management and Support) have attended a committee meeting over the years, with many more engaging in activities or assessments linked to Green-Campus

### Key Aims of the Project

The project contributes to the goal of Education for Sustainable Development (ESD) to 'promote and support the development of the requisite skills, knowledge and attitudes that help everyone to take action for a sustainable future and planet', with a particular emphasis on students 'living what they learn' (Government of Ireland, 2022, p. 2). Specific aims of the project include:

- To engage students in real-world environmental work.
- To improve the environmental performance of TUS.
- To practically implement the 'active learning' pedagogy.
- To use the TUS campus buildings, grounds and community as a 'living laboratory'.
- To obtain external evaluation and accreditation through involvement in the national Green-Campus programme (<https://www.greencampusireland.org/>).
- To partner with external organisations in undertaking environmental action.
- To encourage responsible environmental citizenship by students, staff and TUS as an organisation.

### Project Description and Methodologies

- The activity has been undertaken since 2011 across two TUS campuses involving students from several programmes, with linkages to the environmental programmes on the TUS Thurles campus. Some modules have connections with Green-Campus written into the module descriptions.
- The Green-Campus process involves several steps which have been completed on the Clonmel and Thurles campuses, as follows:
  - » Establishing a Green-Campus Committee incorporating student and staff representatives.
  - » Undertaking an environmental review.
  - » Implementing an action plan.
  - » Monitoring and evaluating the actions that have been carried out.
  - » Linking to learning on campus.
  - » Informing and involving the campus and wider community.
  - » Developing a Green Charter.
- There have been many different student assessments linked to Green-Campus across programmes in the environmental, social, computing and multimedia areas. Assessments have included individual and group work in a variety of formats including written reports, presentations, posters, video, software development, board and computer games and event organisation. Problem-based Learning (PBL) has been used for some assessments. Some students have undertaken work placements and Final Year Projects linked to Green-Campus. An account of one of the student assessments (an 'Environmental Action' group project) has been published previously (Healion, 2021).





### Key Outputs and Future Opportunities

- Achievement of environmental performance improvements on the Clonmel and Thurles campuses in areas such as waste, water, energy and grounds management.
- Award of Green Flags for the Clonmel and Thurles campuses in 2021.
- Connecting with local organisations to take environmental action together (e.g. Mary Immaculate College Thurles, schools, Thurles Tidy Towns).
- Enabled participation in an EPA-funded research project 'Developing the Potential of Third Level Campuses as Change Agents in Transition toward Sustainable Communities'.
- Encouragement and support to other TUS campus locations to get involved in the national Green-Campus programme.
- Engagement of many students from several programmes in real-world learning and assessment that is connected to the actual environmental challenges and opportunities within TUS. A particular highlight is the organisation of events for national Green Week each year, with students and staff working together across disciplines to host a variety of talks, workshops and activities. A highly successful example was a bird of prey flying display by the wildlife rescue charity, Animal Magic, which took place in a large field on the TUS Thurles campus (see photo on top-right of the montage). This gave students and staff the opportunity to see these magnificent birds in action, appreciate their beauty up close by handling the birds under supervision and learn about the threats faced by birds of prey in the wild including poisoning by rodenticides. Participants developed a meaningful connection with SDG 15 Life on Land on the theme of ecosystems and biodiversity loss.
- Influence on policy and practice in TUS by putting environmental considerations on the organisational agenda. As part of the Green-Campus process, a Green Charter for the Thurles and Clonmel campuses was signed by the TUS President in 2018 and an updated and expanded version in 2024.

There are many opportunities to widen and deepen connections between academic work and Green-Campus activities. Likewise, there are opportunities for research on Green-Campus technical topics (e.g. waste, biodiversity, carbon), the people aspect (within and external to TUS) and on the process itself.

### Student Perspective – Primary Impact of the Project

The following list of benefits was compiled by two students as part of a presentation on linking academic work with environmental action on campus (Guest et al., 2015):

- Communication skills
- Hands on, practical experience of our course work - before we hit the workplace
- Increased awareness
- Innovation
- Leadership skills
- Logical thinking in problem-solving
- Networking
- Professional conduct
- Responsibility
- Team building skills
- Wellbeing

In conclusion, the involvement of TUS in the Green-Campus programme offers many practical opportunities for linking teaching and learning into ESD. With the emergence of Green-Campus initiatives across the network of TUS campus locations (<https://tus.ie/sustainability/green-campus/>) there is a growing community of staff and students acting together on sustainability issues.



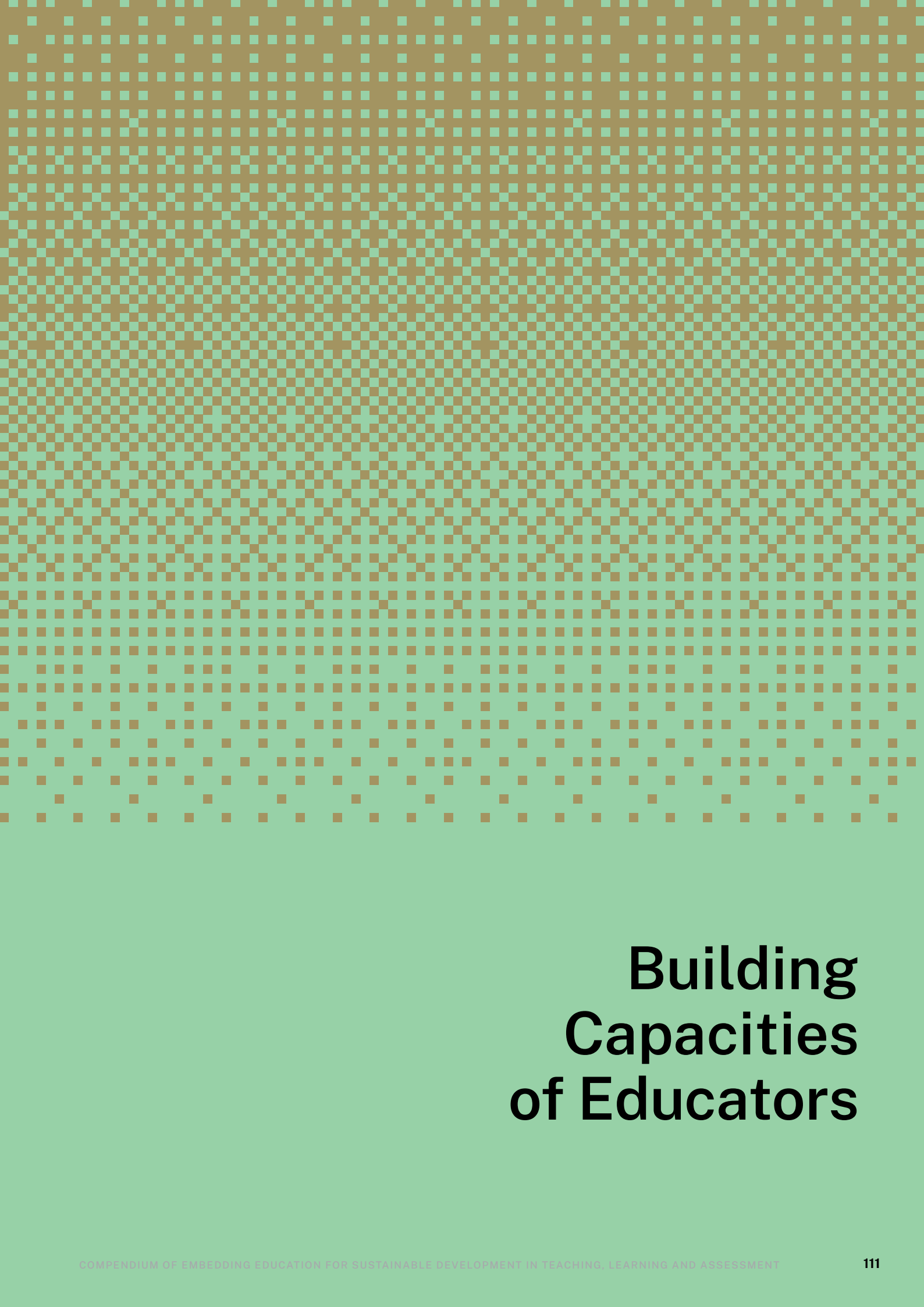
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# Building Capacities of Educators

# 39. Embedding Sustainability in Early Childhood Education: A Reflective Exploration

Aoife Prendergast

Department of Flexible and Professional Learning

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 11

### Project Lead, Partners and Participants

- Project Lead - Aoife Prendergast (TUS)
- Participants - Year 2 B.A. Early Childhood Education and Care Students (TUS)

### Key Aims of the Project

- The primary aim of this project is to integrate Education for Sustainable Development (ESD) principles into teaching and assessment practices within the Professional Practice Placement module in the B.A. Early Childhood Education and Care programme in the Department of Flexible Learning (TUS). This involves:
- Developing a deep understanding of ESD: Gaining a comprehensive understanding of the core principles of ESD and how ESD can be applied to early childhood education settings.
- Designing sustainable pedagogical approaches: Incorporating sustainability themes into professional practice.
- Creating authentic assessment tasks in the form of an E Portfolio: Developing assessment tasks that align with ESD principles and promote student learning.
- Using a variety of assessment methods, including an e portfolio.
- Promoting reflective practice: Encouraging students to reflect on their own learning and the impact of their actions on the environment and this is evidenced in the E Portfolio.

By achieving these aims, this project seeks to equip future early childhood educators with the knowledge, skills, and values needed to create a more sustainable future for children.

### Project Description and Methodologies

The key objectives of this project are:

- To integrate ESD principles into early childhood education curriculum and pedagogy.
- To create authentic assessment tasks that align with ESD principles.
- To foster a culture of reflection and critical thinking among students.

### Methodology

- Literature Review: A comprehensive review of relevant literature on ESD, early childhood education, and sustainable pedagogy.
- Case Study Analysis: A detailed analysis of specific case studies to identify effective strategies and challenges.
- Student Assessment:
  - » Reflective entries: Students maintain reflective journals to document their learning experiences and critical reflections on ESD for the duration of semester 1 and semester 2.
  - » Portfolio assessment: Students create portfolios showcasing their work and demonstrating their understanding of ESD principles.
  - » Peer and self-assessment: Students participate in peer and self-assessment to develop critical thinking and self-reflection skills.

### Key Outputs and Future Opportunities

### Key Outputs

- Revised curriculum materials for the Professional Practice Placement module: Updated curriculum materials that integrate ESD principles into this module.
- Literature review: A comprehensive review of relevant literature on ESD, early childhood education, and sustainable pedagogy was completed.
- E-Portfolio: A repository of student reflections in this E Portfolio on their learning experiences and the impact of ESD on their understanding of the world.
- Case studies: Detailed case studies highlighting successful

|                                           |                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | implementation of ESD in early childhood settings.                                                                                                                                                                                                                                                                                                                                           |
| <b>Opportunities for Further Research</b> | <ul style="list-style-type: none"> <li>• Interdisciplinary collaboration: Explore opportunities for interdisciplinary collaboration between early childhood education, environmental science, and social sciences to enhance ESD education.</li> <li>• Community engagement: Investigate the role of community partnerships in promoting ESD and fostering sustainable practices.</li> </ul> |

### **Student Perspective – Primary Impact of the Project**

- Enhanced pedagogical knowledge and skills: Students develop a deeper understanding of ESD principles and how to integrate them into their professional practice as early childhood educators.
- Innovative teaching strategies: Students are equipped with a range of innovative teaching strategies, such as project-based learning, inquiry-based learning, and experiential learning, to promote sustainability.
- Critical thinking and problem-Solving: Students develop critical thinking skills to analyse complex environmental and social issues.
- Reflective practice: Students are encouraged to reflect on their own teaching practices and identify areas for improvement.
- Positive environmental impact: By incorporating ESD into their practice, students can contribute to a more sustainable future by inspiring young children to become environmentally conscious citizens.
- Ultimately, this project aims to equip early childhood educators with the knowledge, skills, and values necessary to create a more sustainable and equitable future for all.





# Empowering and Mobilising Young People

## 40. Teaching Tort Law – Trials, Tribulations and Ties – A Sustainable Strategy - Clinical Legal Education – Mock Trial Assessment

Edith O'Leary

Department of Business and Financial Services

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 4



#### Project Lead, Partners and Participants

- Project Lead-Edith O'Leary (TUS)
- Participants –50 Year 1 students from the LLB in Law and Business and Law degree programmes and Year 3 and Year 4 students from the Level 8 Law and Tax degree programme (TUS)

#### Key Aims of the Project

- To empower students and give them ownership over the mock trial. A moot court is a simulated appellate argument. This is different to the more widely known mock trial (Ringel, 2004).
- To embed equitable principles as students chose their role.
- To foster professional identity and values.
- To link the Graduate Attribute Framework 2022-2025 with the assessment.

#### Project Description and Methodologies

Through including Sustainable Development Goals (SDGs), SDG 4, students participated in the mock trial regardless of their backgrounds, gender or socio-economic position as all participants had access to education regardless of their stage in life. The first-year students were joined by students from the third and final year of the Level 8 Law and Tax degree programme, who acted as the judiciary in the moot court. The moot court helped create networks amongst students in and across stages of the law degree programmes.

Many law graduates become solicitors or barristers, but a significant proportion diversify into alternative careers that comprises a rigorous intellectual education, including

the practice of law and the ability to apply legal concepts to resolve difficult legal problems and find sustainable solutions and form an understanding of the relationship between law and society. Students must learn to identify and to answer key questions and understand the basis for action. Students were introduced to the complex area of sustainability reporting including the Corporate Sustainability Reporting Directive (CSRD) 2024 and the Corporate Sustainability Due Diligence Directive (CSDDD) adopted by the European Parliament and the Council requiring business partnerships to identify adverse impacts on the environment or human rights.

- Active learning -The students posted on wiki, a digital platform, the roles they wished to undertake in the mock trial affording them authority, accountability and ownership. This empowered students in the first instance and required students to work in teams and this multi-disciplinary teamwork forged networks and connections. Students actively engaged as listeners and participants in a student-centred mock trial learning environment by doing in a constructivist way developing practical and professional skills and attributes. The mock trial assessment embraced students' multiple intelligences.



- The role of the instructor in a Moot Court or Mock Trial -The instructor needs to be devil's advocate, advisor and part facilitator according to Ringel (2004) and as a facilitator of the mock trial, it afforded students to take on leadership skills.
- Teaching skills and applying knowledge – This experience reinforced skills that prepare students for the workforce and lifelong learning. For students to apply the law they must think about legal issues from different angles and perspectives. External professional bodies such as The Law Society of Ireland and Bar Association of Ireland validate the ILAC (Issue Law Application Conclusion) principles assessment



- model for legal problem-based learning.
- Assessment and attributes - All students received academic credit for participating in the mock trial that took place in week six of semester one in a fun, diverse, inclusive environment. The assessment was later measured in a separate assignment that required students to provide an individual written account identifying three of the above 'Graduate Attributes' that they identified with the most from their participation in the mock trial. This question was asked in an open-ended style to capture the broad responses from students rather than limit their answers to the skills and attributes most likely to be relevant. The examples provided were critical thinking, public speaking, communication skills, teamwork, networking, logical reasoning and preparing strong arguments and reflects the Overarching Principles of Assessment Design (VRPWA) Framework.

#### Key Outputs and Future Opportunities

- Pedagogical tool - A moot court or mock trial can be used for more than learning about law or the judicial process. It has been used in many disciplines including business, art, economics, media, political science, sociology to educate students about professional ethics and enhanced leadership experiences referred to as one of the attributes in the TUS Graduate Attribute Framework.
- A moot court or mock trial is a valuable pedagogical educational experience that encourages debating, advocacy and negotiation.

#### Student Perspective – Primary Impact of the Project

The Federal Bar Association (2024) detailed some of the advantages of a moot court or mock trial to include correlating with students' reflections many of the benefits were also noted by Knerr and Sommerman (2002) such as:

- Gaining greater self-confidence.
- Gaining knowledge about individual abilities.
- Learning about the law and the judicial process.
- Meeting and getting to know fellow first year students.
- Overcoming shyness.
- Skill development; deepening knowledge; professional networking; confidence building; and peer recognition.

The mock trial created a network between students from first year to the final year. It also motivated and engaged students. It stimulated students and helped them to reflect and form a professional identity from an early stage. Beyond the classroom students can experience active learning in moot court competitions nationally and internationally to broaden their horizons.



# 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

Claire Stack

Department of Pharmaceutical Sciences and Biotechnology

## Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 3

## Project Lead, Partners and Participants

- Project Lead - Claire Stack (TUS)
- Participants: Year 2 Pharmacy Technician students and Karen Mealiff (TUS)

## Key Aims of the Project

- Select methods and learning resources to support effective teaching of education for sustainability and antimicrobial resistance.
- Integrate a Health Promotion Day into the module to encourage engagement and collaboration with the campus and local community.
- Utilise a critical reflection template to ensure learning, research and behaviour change occurs.

## Project Description and Methodologies

### Teaching Methodologies

- An e-learning module on antimicrobial stewardship was selected to educate the Year 2 Pharmacy Technician students on the sustainable use of antimicrobials and reducing the emergence of resistance. An online module was chosen because it is advocated as an effective pedagogical practice in developing sustainability competence.
- A structured practice debate on antimicrobial resistance was selected as another teaching method to support enquiry based learning and reflective learning on antimicrobial resistance.
- On 18th November 2024, the pharmacy technician students took the lead in organising a highly impactful Health Promotion Day as part of World Antimicrobial Resistance (AMR) Awareness Week on campus to raise awareness about antimicrobial resistance and promote the sustainable use of antimicrobials among students and staff.
- Student assessment methodologies – a discussion card from the National Council for Curriculum and Assessment website was selected as a suitable critical reflection template for the students to use in a critical reflective essay at the end of the semester.



pamphlets, and promotional items were distributed on antibiotic stewardship and handwashing.

- Feedback Collection: Feedback from the students using the critical reflective essay helped to inform and improve future health promotion activities.
- Networking: The veterinary nursing lecturers approached the Project Lead about liaising in future health promotion activities around antimicrobial resistance.

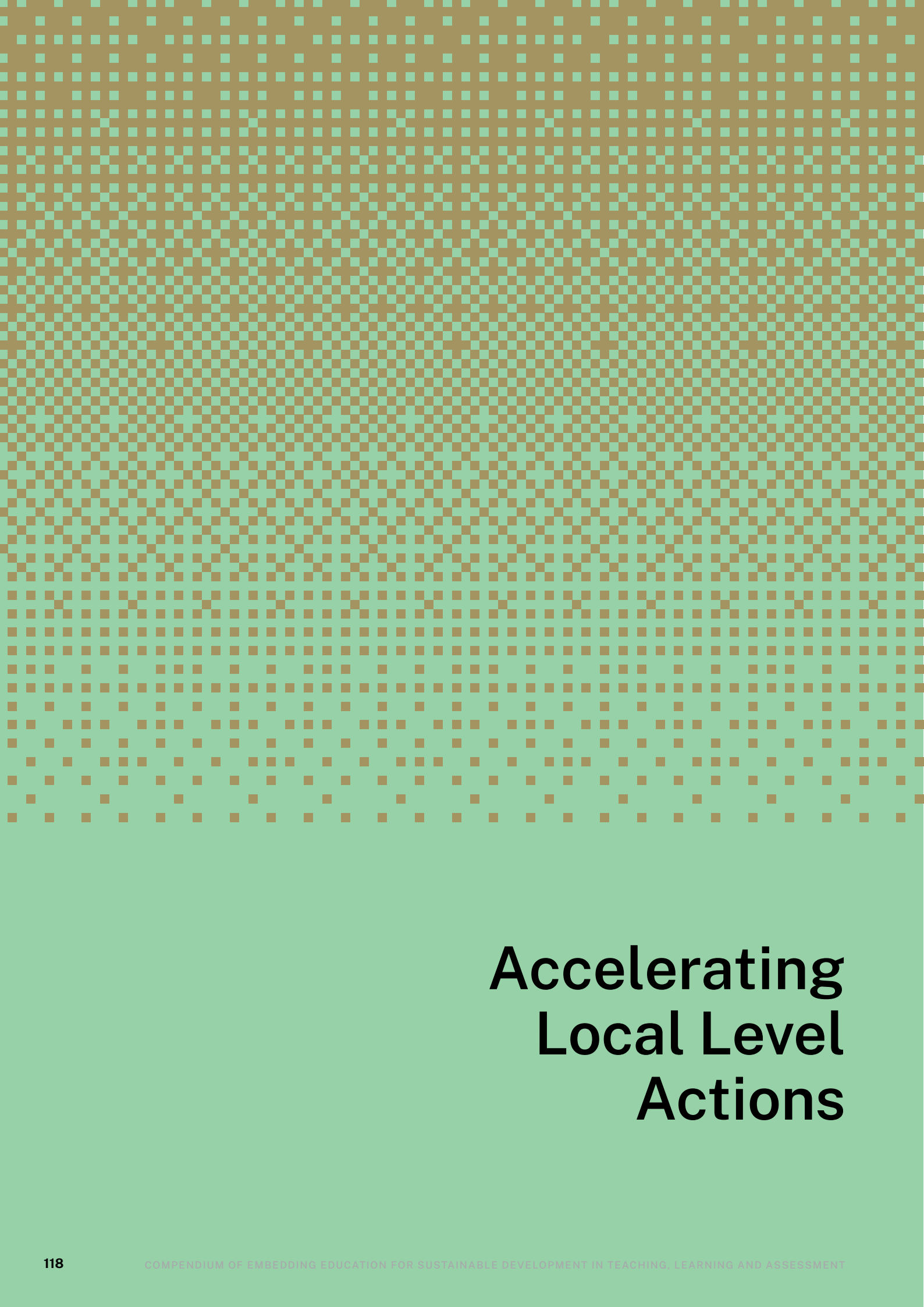
## Key Outputs and Future Opportunities

- Education: The pharmacy technician students gained the knowledge, skills, and attitudes to implement sustainable use of antimicrobials.
- Engagement: A total of 149 TUS students and staff completed the quiz on antimicrobial resistance at the Health Promotion Day. This interactive approach helped reinforce key messages about antimicrobial resistance.
- Increased Awareness: The Glogerm handwashing activity at the Health Promotion Day stand demonstrated proper handwashing techniques to participants, emphasising the importance of hygiene in preventing infections.
- Resource Distribution: HSE educational materials,



## Student Perspective – Primary Impact of the Project

From the student perspective, the primary impact of the project was that it equipped the students with the knowledge, skills, values, and attitudes needed to contribute to a more sustainable future e.g. collaboration, teamwork, critical thinking and creativity.



# Accelerating Local Level Actions

## 42. Safe Inhaler Disposal Campaign: 6th March 2024

Dr Gary Stack

Department of Pharmaceutical Science and Biotechnology

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 13



### Project Lead, Partners and Participants

- Project Leads - Dr Gary Stack and Karen Mealiff (TUS)
- Partners – 2023/2024 BSc Pharmacy Technician Students (Diana Akenbor, Zakaria Alahmad, Kirsty Fivey, Maria Hyde, Rahima Kalsoom, Chantelle Middleton, Sarah O'Connell and Linards Uerts) (TUS)

### Key Aims of the Project

- Educate pharmacy technician students of the climate impact of incorrect inhaler disposal.
- Raise awareness of the climate impact of incorrect inhaler disposal and correct inhaler disposal across the TUS Athlone Community and the wider community through social media.
- Collect used and expired inhalers for correct disposal.
- Empower pharmacy technician students to act as agents of change for climate action

### Project Description and Methodologies

- Pharmacy Technician students completing a medicines optimisation module (5 ECTS) were provided with background information on the climate impact of healthcare through lectures and self-directed learning.
- Focus of lecture series on inhalers and the climate impact of their incorrect disposal
- Students tasked with developing and organising an activity to raise awareness of the climate impact of incorrect inhaler disposal.
- Students identified tasks and allocated students to each activity.
- Students developed an evidence-based information sheet on the climate impact of inhaler, how to use them correctly to reduce waste and how to dispose of them correctly.

- Students developed a poster to advertise the event across the TUS Athlone Campus.
- Students designed a physical cardboard poster with important information displayed together with links to videos demonstrating correct inhaler technique produced by the Asthma Society of Ireland.
- Students lead an in-person event in the TUS Athlone main canteen on Wednesday 6th March 2025, inviting people to return used and expired inhalers.
- Students engaged with students and staff from across the campus to discuss correct inhaler technique and inhaler disposal.
- Students who engaged with the stand were entered into a draw for a McSharry Pharmacy voucher to encourage engagement.
- Correct disposal of the inhalers collected was sponsored by McSharry Pharmacy.
- Student participation in the activity was assessed by a reflective learning log (500 words) that students were required to complete following the activity.
- Many students also referenced the inhaler disposal campaign, as it relates to sustainability in pharmacy, during a viva assessment for the medicine's optimisation module.

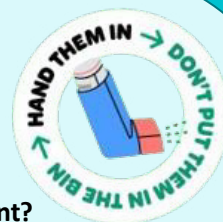
A colorful poster for the 'INHALER Recycling &amp; disposal Event'. The title is in large, bold, pink and yellow letters. Below it, it says 'In partnership with McSharry Pharmacy'. The date and time are 'MARCH 6TH 10AM - 1PM'. There are three bullet points: 'Bring your used and expired inhalers for safe disposal', 'Advice on inhaler technique, recycling and disposal', and 'Competition to win voucher from McSharry pharmacy'. A cartoon character of a blue inhaler with a face and arms is at the bottom right, holding a sign that says 'Recycle inhalers, be the breath of fresh air for the planet!'. There is also a circular logo with the text 'HAND THEM IN - DON'T PUT THEM IN THE BIN' and an image of a bin.



# Inhaler Disposal & Recycling

**Location: Canteen, Main Campus**

**Date and time: Wednesday March 6th, 10am to 1pm**



## What makes incorrectly disposed of inhalers harmful to the environment?

- Metered- dose inhalers (MDIs) like Ventolin depend on propellants to deliver a dose and have a much larger carbon footprint than other inhalers.
- Each Salamol/Ventolin inhaler emits 10kg of carbon dioxide emissions which is the same amount a car emits in a 53km journey. A car travels approximately 17,000km annually in Ireland.
- Therefore recycling 320 inhalers in a year would save the same number of emissions a car expels in a year!

## What can I do to reduce my carbon footprint?

Do not put inhalers into the household bin, instead:

- Return your used and expired inhalers to your pharmacy.

## Make sure you are taking your inhalers properly:

- Using inhalers with the correct technique will help you get the most out of the treatment and better control your symptoms.
- Ask your doctor, nurse or pharmacist to check how you are using inhalers, even if you've been on them for a long time.
- The Asthma Society of Ireland has video guides on inhaler technique for all inhalers licensed in Ireland. Scan the QR code below to access inhaler technique videos!

Recycle inhalers,  
be the breath of  
fresh air for the  
planet!



## Key Outputs and Future Opportunities

- Created information sheet describing the importance of correct inhaler disposal in pharmacy.
- Raised awareness of correct inhaler disposal among TUS Athlone community
- Provided opportunity for BSc Pharmacy Technician students to run a successful climate action event relating to their professional practice.
- This activity has provided a template for how to roll out a subject specific, student led climate action campaign.

## Student Perspective – Primary Impact of the Project

- Improved confidence in planning, organising and running an information campaign.
- Increased their awareness of the importance of correct inhaler disposal in pharmacy practice.
- Demonstrated to students that meaningful climate action can be taken within their own scope of professional practice.
- Brought student learning out of the lecture theatre and into their wider campus community.

## 43. Optimising Digital Presence – Review of Industry Website

Dr. Emma Carroll

Department of Business and Financial Services

### Primary Focus of the Project – United Nations Sustainable Development Goals (SDGs)

SDG 9



### Project Lead, Partners and Participants

- Project Lead - Dr Emma Carroll (TUS)
- Partners - Evolve Mental Health, Year 4 Business and Year 4 Business with Computing students (TUS)

### Key Aims of the Project

- Support a local start-up, Evolve Mental Health, in enhancing their digital presence, fostering community-level economic and social sustainability.
- Empower students to contribute to local business development by applying digital marketing skills to real-world challenges.
- Provide students with hands-on experience in website analysis, fostering practical skills to create impactful improvements for community-based organisations.
- Strengthen academia-industry partnerships for local innovation and sustainable growth.
- Promote digital accessibility and inclusivity in mental health resources.
- Inspire students to use their expertise to create actionable solutions, directly contributing to the resilience and success of local businesses in the digital economy.

### Project Description and Methodologies

- Final-year students partnered with Evolve Mental Health, a Limerick-based start-up, to review and improve its website.
- Analysis covered design, content, Search Engine Optimisation (SEO), user experience, and digital marketing integration.
- Students applied theory to practice, identifying challenges and opportunities for website enhancement.
- The assessment was divided into two components:
  - » Written report (80%): A 3,500 report with

recommendations.

- » Organisation presentation (20%): Formal group presentation to Evolve Mental Health, outlining key findings and actionable recommendations.
- The project emphasised teamwork, practical application of skills and engagement with a community-based organisation, aligning with local-level sustainable development goals.

### Key Outputs and Future Opportunities

- Comprehensive website review report - Each group produced a 3,500-word report with actionable recommendations.
- Organisation presentation - presented findings and solutions to Evolve Mental Health, fostering real-world communication and consultancy skills.
- Improved local business awareness - Evolve Mental Health gained insights to improve website performance and reach.
- Student skills development - Enhanced analytical, research and teamwork skills in a real-world setting.
- Longitudinal impact study - Access website performance and engagement post-implementation
- Community-centric digital marketing models - Explore student-business collaborations for sustainable growth.
- Accessibility in digital marketing - Investigate digital accessibility improvements for mental health services.

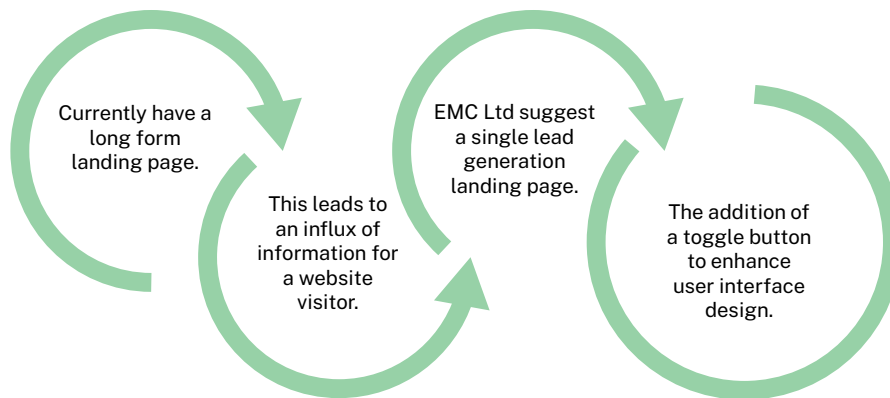
### Student Perspective – Primary Impact of the Project

The assessment provided students with practical skills and real-world experience while supporting local sustainability. By analysing a start-up's website, they gained hands-on expertise in website evaluation, Search Engine Optimisation (SEO) and digital marketing, bridging the gap between theory and practice.

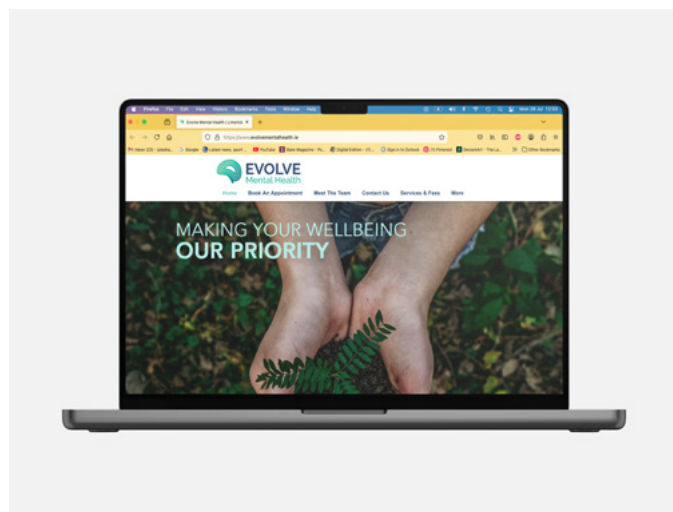
Collaborating with a local start-up empowered students to address community needs, developing a sense of responsibility and real-world impact. Presenting their findings to Evolve Mental Health not only boosted their confidence and professionalism but also highlighted how their skills could contribute to sustainable growth for small businesses.

Furthermore, the assessment aligned with ESD principles by encouraging students to consider ethical, inclusive and accessible solutions in their digital marketing recommendations. Supporting a mental health organisation deepened students' understanding of their work's social and community impact. It also provided valuable real-world experience for their Curriculum Vitae, demonstrating practical skills, teamwork, and contributions to local sustainability.

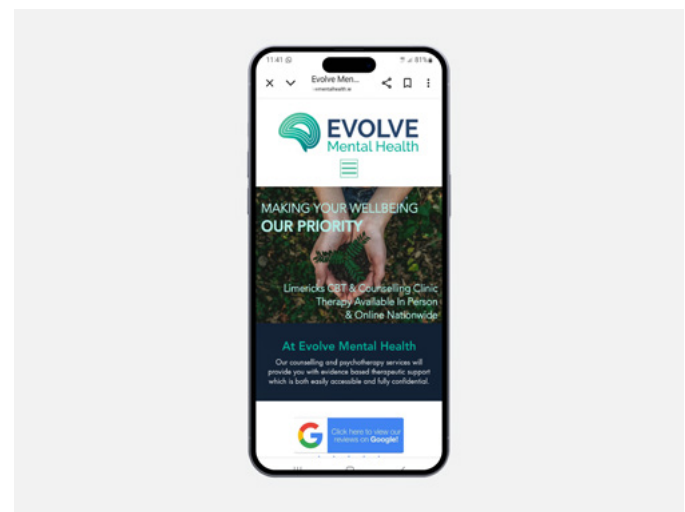
## Design and User Interface Analysis



Website View on a 13" laptop screen

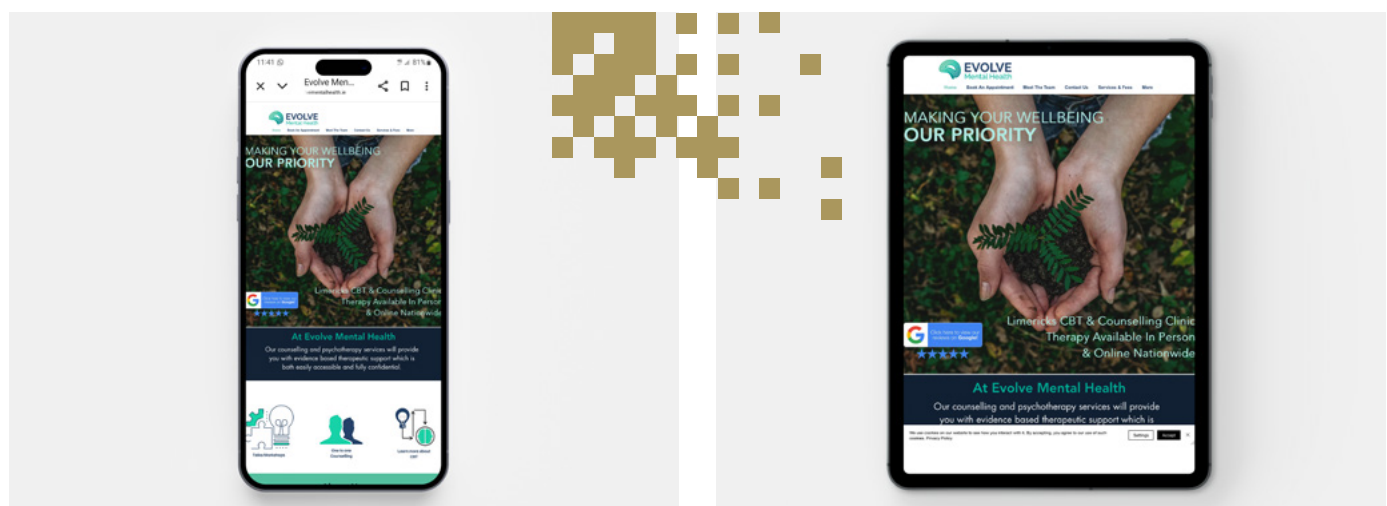


Website View on a 6" phone screen



## Device Rendering

This check visually demonstrates how your page renders on different devices. It is important that your page is optimised for mobile and tablet experiences as today the majority of web traffic comes from these sources.



## Search Engine Optimisation

- For Evolve Mental Health, a simple analysis of the website and the google search page, will provide improvements that can be acted on now to improve the website's SEO.
- From doing a quick analysis, a few quick observations have been made.
- This page in general is hard to find, lack of backlinks from different websites are not available anywhere online, which could be a great outlet for customers.
- Webwiki is a platform that Evolve Mental Health's Website should be on to gain more traction.
- From just this quick SEO check, Evolve's website needs to be optimised. Will be discussed further in the recommendations.





Build

▲ BETTER

▲ Future

### Imperative to embed the Sustainable Development Goals in Higher Education programmes in Ireland



**T**he scientific evidence is unequivocal that unsustainable activities by human civilisation are placing all global species (plants and animals, which includes humanity) on a trajectory of planetary destruction. Our Greenhouse Gas Emissions (GGE) are grievously

altering the chemical composition of Earth's atmosphere, climate system, cryosphere, hydrosphere, and biosphere. We have exceeded the safe limits of Earth's planetary regulating systems and the previous 11,700 years of the Holocene epoch's stable climate system, before pre-industrial times, when stable climatic conditions enabled homo sapiens to flourish and build civilisations and increase in its population, estimated at 1 to 5million of hunter-gatherer people during the Neolithic era to now 8.3 billion (an 1,600 to 8,000-fold increase).

Human activity is clearly over-exploiting Earth's natural resources and habitats, which has already caused global and Ireland's populations of most lifeforms (wildlife and insects) to plummet, and to exacerbate the rate of species extinctions, at over 1,000 times the natural background rate without human interference. Humanity has now forced the entry of a new geological time, the Anthropocene, which casts an ominous and perilous shadow over all species, which clearly includes our younger generation's future lives. We clearly are heading towards a perilous precipice. Our unsustainable actions today are stealing our children's future.

With a global population of 8.3 billion people and still increasing, we must fundamentally transform onto a sustainable course before it is too late to contain the current accelerating level of damage we create. We cannot reverse the damage we have already locked in by our GGE to climate change in a human timeframe, but it is still not too late to contain the worst of the damage within levels that we can adapt to and sustainably transform to a new paradigm.

Ireland is performing poorly in our mitigation efforts when compared to the transformation that is unfolding across Europe. Our society tends to be poorly informed, while many of our politicians fail to grasp the severity and urgency of the predicament we face, or are not sufficiently informed to lead by effective policy measures to mainstream remedial actions, or are unwilling to promote strong, effective policy measures that may prove unpopular in the short timeframe between elections. Our electorate tends to be deficient in

its knowledge of these grievous looming impacts.

Our society also requires guidance and greater knowledge, understanding, and skills of practical mitigation methods, where many sustainable changes are likely to induce new opportunities and careers over the coming years. Our third-level students tend to graduate, unprepared to face these future grievous impacts, where they enter a wide diversity of careers that tend to further embed the unsustainable, monetary-driven, and exploitative ethos of the current status quo behavioural system. For these and many other reasons, I fear for the future demise of our current younger generation.

It is also clear that billions of vulnerable people in the developing world, without the capacity to cope and adapt, will have no choice but to abandon their severe climate and resource-stressed territory and to migrate on mass, or starve. Without support and capacity building from the developed nations, these billions of humans will either perish or overwhelm us in the coming decades. The only chance for our society and our governance structures to mitigate these accelerating environmental impacts requires a well-informed electorate that understands the grievous state we have created, which will inevitably manifest over the coming decades unless we expeditiously transform. They must be equipped with sufficient knowledge of the sustainable options they can transform into.

The only sector of Ireland's society that has the capability and capacity to lead this transformation is our Higher Education (HE) sector. If all Higher Education Institutions (HEIs) were to embrace this challenge, by well-informing all undergraduate students, in all disciplines, to prepare and enable them to lead this essential transformation. HEIs such as TUS have already embraced environmental themes and are currently embedding key knowledge on climate science and its mitigation, protection of nature, and circular economy in many of their programmes. Likewise, in valuable post-graduate research. However, to address Ireland's pressing societal challenge, it will require all lecturers and researchers to be sufficiently informed about environmental education and the United Nations's Sustainable Development Goals (SDGs) that must be achieved by 2030, which were adopted in 2015, where most of their implementation time has already been consumed, but has shown little change in our society's sustainable actions.

Ireland is way off track to meet its 51% reduction in GHG emissions by 2030, and the European Commission's proposed 90% reduction required by 2040. Our GHG emissions per capita are currently at 50% above the European Union (EU) average. The Irish Fiscal Advisory Council and our Climate Change Advisory Council

have warned that we face an €8 to 26 billion in costs for non-compliance with our mandatory 2030 targets. Current Environmental Protection Agency, Organisation for Economic Cooperation and Development, and EU projections place Ireland at the upper limit of this cost range. If we fail to address this challenge by 2030, we will then have to face a massive challenge to get out of the deep hole we have dug to meet our 2040 targets. Besides mitigating our GHGs, the damage to nature, river catchments, micro-plastics, water pollution, and waste are all on an unsustainable trajectory. On top of this, impacts from climate change will require costly adaptation measures to be implemented across Ireland. This challenge will also require environmental education to be embedded in the curriculum of all secondary schools. This will require HEIs to provide Continuous Professional Development Programmes for secondary school teachers on the challenges their teenage school students are likely to face in their future lives, with a focus on practical solutions that are within their grasp to achieve.

Key lecturers at TUS possess the knowledge, commitment, and capability to lead by embedding Education for Sustainable Development (ESD) into all undergraduate programmes. I am very inspired and supportive of this Compendium that Dr Noelle O'Connor, Mr Sean Connell, and Ms Nicola Ryan have developed. I believe this could form a template for all lecturers in all disciplines for all programmes to adopt and develop to suit their students' needs, and to be relevant to their students' future careers.

I believe this HE compendium could act as the 'catalyst' to greatly prepare and reshape Ireland's society for the severe challenges we now face in the future. I believe that embedding the SDGs could rapidly be mainstreamed in the HE sector across Ireland, and to likely spread worldwide.

Therefore, I greatly welcome and support this compendium.

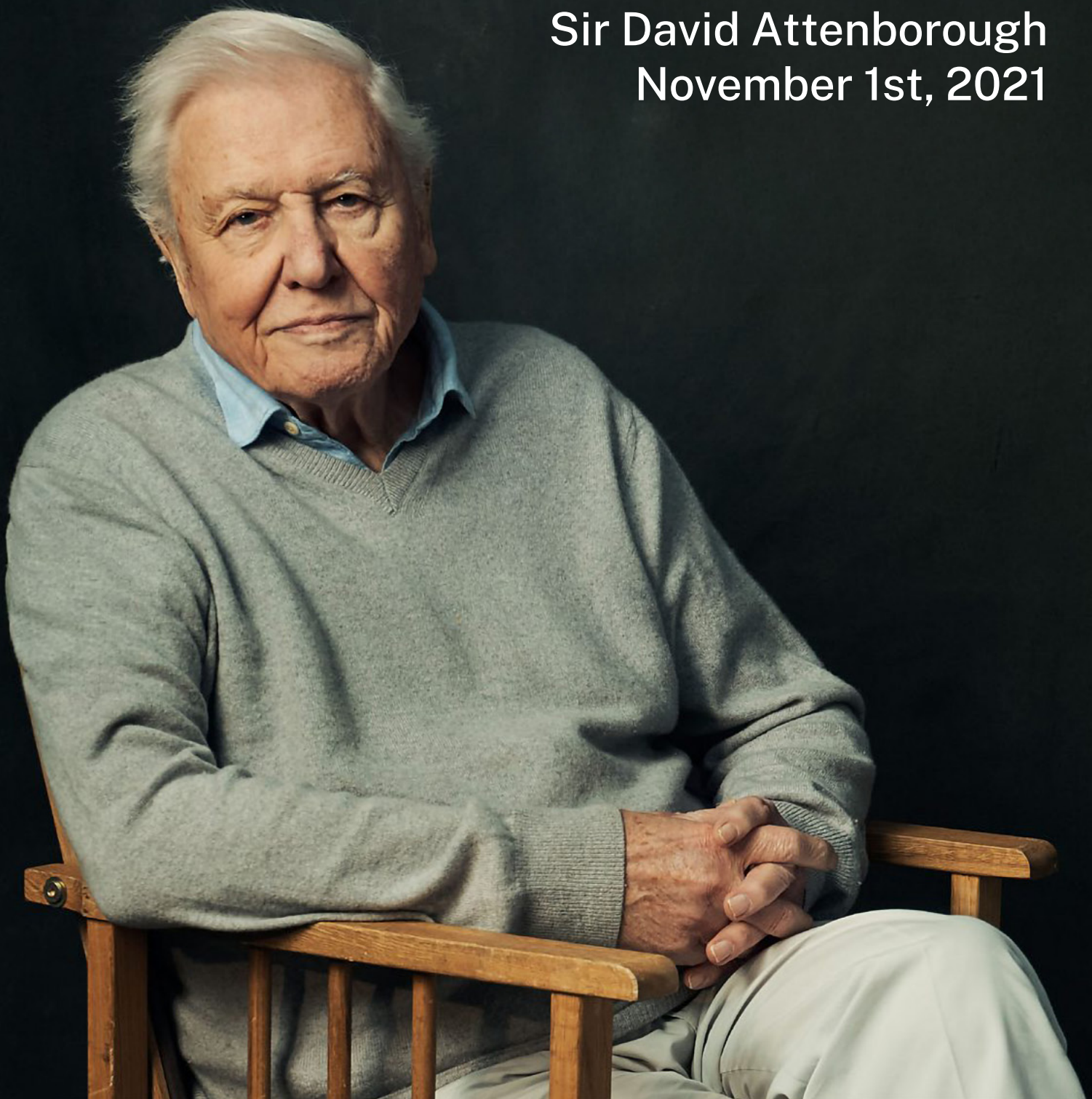
**Duncan Stewart**

**'Eco Eye' TV documentary series on RTE  
Earth Horizon Productions**



*"If working apart, we are a  
force powerful enough to  
destabilise our planet, surely  
working together, we are  
powerful enough to save it"*

Sir David Attenborough  
November 1st, 2021





**CPID**

Centre for Pedagogical  
Innovation and Development