

EPA RESEARCH PROGRAMME 2021-2030

**Co-Designing for Resilience in Rural
Development through Peer to Peer learning
networks and STEAM Place-based Learning
Interventions
(2017-SE-MS-6)**

Appendix

Prepared for the Environmental Protection Agency
by Dr Anita McKeown

University College Dublin

**Authors: Dr Anita McKeown, Lucy Hunt,
James Murphy, Eleanor Turner, Rebecca White**

ENVIRONMENTAL PROTECTION AGENCY
An Ghníomhaireacht um Chaomhnú Comhshaoil
PO Box 3000, Johnstown Castle, Co. Wexford, Ireland

Telephone: +353 53 916 0600 Fax: +353 53 916 0699
Email: info@epa.ie Website: www.epa.ie

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1. Project Partnerships

Acard Development Agency Ltd e-mail: acardsiveen@gmail.com	Asana School of English e-mail: info@asanaireland.com
Cahersiveen Tidy Towns e-mail: cahersiveentidytowns@gmail.com	Caherdaniel Japanese Knotweed e-mail: caherdanielknotweedproject@gmail.com
Coláiste na Sceilge e-mail: info@colaistenasceilge.ie	Greenspace Education e-mail: greenspaceeducation@gmail.com
Iveragh Lakes and Rivers Trust (prev. Waterville Lakes and Rivers Trust) e-mail: webwlrt@gmail.com	KCC library, Cahersiveen; KCC and Skellig Cri e-mail: cahersiveen@kerrylibrary.ie
KDYS Cahersiveen e-mail: info@kdys.ie	Living Iveragh e-mail: eolas@livingiveragh.ie
NAISC e-mail: naiscdiasporanetwork@gmail.com	Portmagee Development Group Ltd. e-mail: portdeve@eircom.net
Scoil Breannaín e-mail: portmageens@gmail.com	Scoil an Gleanna e-mail: anghleanna@yahoo.com
Scoil Saidhbhín e-mail: scoilsaidhbhin@gmail.com	Sea Synergy Ltd e-mail: seasynergy@gmail.com
SMARTlab Skellig e-mail: smartlabskellig@gmail.com	Skellig Visitors Experience e-mail: skelligexperience@live.com
The Old Barracks Cultural Heritage Centre e-mail: theoldbarrackscahersiveen@gmail.com	Transition Iveragh e-mail: transitioniveragh@gmail.com
UCD School of Irish, Celtic Studies and Folklore e-mail: regina.uichollatain@ucd.ie	Udarás Na Gaelige Munster Officer e-mail: victorbayda@gmail.com Baile Seiribhíse Gaeltachta Chathair Saidhbhín e-mail bsgchathairsaidhbhin@gmail.com

Table 1 Project Partners

2. Detailed Summary of Activities

Table 2 provides details of the activities that were undertaken during the CoDesRes project. Each activity was developed using the pCr praxis then considered for its efficacy in contributing to the projects aims of raising awareness and localising the SDGs, developing transferable activities and finally their contributions to the toolkit. Due to COVID-19 a number of activities were impacted including our project’s post-dissemination and legacy work – see below. At the time of the report the Future of Work had already been re-scheduled twice, Sept. 2020 and March 2021. Currently, the hope is that it will be able to be part of the first term in the new academic year Sept. – Dec. 2021

Future of work – event targeted to parents introducing them to contemporary approaches to existing industries and the skills required. The event includes 4 speakers, exhibition of local entrepreneurs and break-out rooms for more details discussion about key issues raised

Rapid media and Makerspace – The initial training for the Media Transition cohort was completed with the Rapid Makerspace training initiated but postponed due to COVID. As part of the RRDF and Muinín Catalyst work we will be moving this on-line and setting up educational activities aligned to COVID-19 restrictions in our new space in Cahersiveen, scheduled for launch June 2021.

Post-Dissemination Local Authority Tour – Kerry, Carlow and Dublin (Rural, Peri-urban and Urban) this will take place in 2021 as soon as Covid-19 restrictions allow

The following table provides further details of the activities within CoDesRes

CDR 2018 /19 Transition Year	Spring 2018 - Classroom interventions and work experience, Sept. 2018/19, x3 double classes each week - 75 students. Developed and delivered micro-modules and lesson plans that embedded the pCr methodology: Introduction to Design Thinking; Ocean Literacy; Sustainability; Waste and Communication. Sept. - May 2019/ 20 testing and standalone projects.
2018 x 68 students, multiple occasions	
2019 x 75 students per week x 26 weeks.	2018 - Two weeks - work experience co-design / research team focused on SDGs. Through discussion with students and development of tasks, we began to develop outlines for phase 2 lesson plans.
2018 x5 students	
2019 x6 students	2019 - Developed week-long Problem-to-pitch module delivered initially as TY work experience then iterated through MARplas sister project - exploring real world solutions to marine plastic waste. Students undergo full ‘taught’ design sprint with coaching for Dragon’s Den Style pitch on completion - see appendix <i>Problem to Pitch</i> module
SEAI One big Idea - 25 students	SEAI One big Idea - media awareness campaign, SDG 7
Pecha Kucha – 18 students	3 week module for Aonad and 5 week module for CSPE action groups and
Total 186 + 787	3 events for Take One SDG Dec 2019

for 2019/20 sporadic interventions	<ul style="list-style-type: none"> • Scavenger Hunt – 75 students • Fermentation class – 75 students • Take One Presentation – whole school - 594
Launch with Hedge school / Tidy Towns 10th Feb. x88 people	Tree planting , dedications, living walls, composting, recycling, juicing, bird feeder workshops. Tidy Towns - recruitment drive and CDR launch, sharing media channels and contact details.
<i>Seactain na Gaeilge</i> 2018 - 8 students	Collaboration with local independent artist and CE scheme to focus SnG workshop around SDG 14 and 15, local marine and bio-diversity.
Climate Action workshops - 2018 1st March x 20 people	Set up Transition Iveragh – and initiated bringing climate action workshops based on community solutions to climate change, delivered by Micheal O'Coileain, Transition Kerry
St Patricks Day 2018 / 2019 x23 people x 2 sessions x 25 people x 10 sessions x700 people (floats / attendance), x55 people night-time x 900 people (floats / attendance), x85 people night-time event	<p>Re-invigoration of the festival with themed parade SDG 14 and SDG 15 and sub-themes (2018) night-time parade.</p> <p>Workshops with Puffins early years developing walking group SDG 15 - The Hungry Caterpillar: Systems, life cycles / pollination. X10 sessions with Cunamh mixed ability day centre</p> <p>Increased floats to 26 + 3 walking groups with bespoke night time event to create unique offering in Ireland and for families and teens excluded from pub-based activities.</p> <p>Year two - greater increase in attendance due to weather and more floats. In year three, Tidy Towns, who's engagement and capacity had grown since CDRs involvement. They took on the responsibility for the 2020 festival and were keen to continue with a themed parade - unfortunately this was cancelled due to Covid-19 restrictions.</p>
<i>'May the 4th be with you'</i> 2018 / 2019 Y1 x108 people Y2 x 84 people	Creation of an integrated 'mythological' story with science, design thinking and entertainment using Star Wars and tying into themes of adaptation, 2018 and pollination, 2019 and delivered at a local festival, celebrating the region's Start Wars connections. Proof of concept process utilised art-making as exploration of ideas, innovation and environmental concepts for early years.
June weekend 2018 x52 people x78 people x8 people	Working with Cahersiveen Tidy Towns, (SDG 14) CTT joined clean Coasts, undertook first collective beach clean with Tidy Towns and Asana, SDG 15 - undertook wildflower planting and held Street Feast - SDG 11
<i>Sensing the Catchment</i> 2018 x 15 people	Heritage week event 'Source to Sea' following the River catchment with sensory pCr activities and science integrated with a story
<i>StoryBank: Stories of the past told today for the people of tomorrow</i> Aug 2018 - 2019 x 83 primary x46 exhibition	Proof of Concept - StoryBank looked at the heritage of sustainable practices on the Iveragh Peninsula by gathering the innovation and the 'make-do and mend' ethos that is still within living memory. The project gathered stories on these themes through specially designed 'storybanks' that recycled plastic bottles for use in other projects but also as a way of carrying a message or story. The stories were then exhibited with a range of related imagery and workshops throughout heritage week Aug. 2019.

<p><i>Waste to Taste: Edible-Medicinal Sculpture trail</i> 2018 – 2019</p> <p>X24 x2 sessions TY Students</p> <p>x 12 media / pCr training and events 47</p>	<p>Development of a sculptural / horti-Cultural trail that runs the length of Cahersiveen town; in partnership with Cahersiveen Tidy Towns. Each node on the trail will include landscaped reclamations of wasted space in Cahersiveen, integrating low-maintenance native planting and an augmented reality layer that shares the natural and cultural heritage of the area. This is an on-going project and is including students as part of their GAISCE programme.</p> <p>Creative workshops TY students - concept development</p> <p>Used the W2T projects as a focus for teaching media skills to first cohort and also undertook pCr training and x2 events</p>
<p>Culture Night 2018 New Stories for old Rope</p>	<p>BIM launch, focused StoryBank gathering for marine stories of making mending and fixing.</p>
<p><i>Spookemon 2</i> – 31.Oct 2018</p> <p>450 people</p>	<p>Promenade theatre piece, building on 2017 pilot project using contemporary events to re-imagine and pose challenges to the town’s existing narrative. Pilot evidenced for an arts-led re-animation for Cahersiveen, EOI Towns and Villages Renewal grant, June 2019.</p>
<p>Bank of Ireland Enterprise Fair Nov 2018</p> <p>Direct engagement - 36 people</p>	<p>The annual BOI enterprise fair, Colaiste Na Sceilge, with an annual attendance of x people over the course of the evening. This was important for the team to introduce themselves to parents and other organisations as well as was also further indication of the lack of citizen awareness of the SDGs. Such events provide the team with opportunities to informally discuss issues and hear insights from community members that could be addressed if relevant through the research.</p>
<p>Recycled Grotto Dec 2018 - 275 people</p>	<p>Created the grotto using materials gathered from the community to showcase waste as resource concepts and contribute to SDG 11, 14</p>
<p><i>Media Co-op and Maker Space</i></p> <p>X12 people</p>	<p>Media training for local organisations and individuals including post training tutorials sessions (18 hours). Practical maker space and design training including 1 day workshop (6 hours) building 3D printers and extruder followed by an introduction to 3D printing and design processes - online delivery Community trainees have ongoing access to bookable equipment, with online support.</p>
<p>Waterville Lakes and Rivers Trust</p>	<p>The trust went through a major organisational change, which limited the research however, the new trustees, supported by CDR WP 3 Lead, Eleanor Turner are using the pCr methods as part of their re-visioning process.</p>
<p>Caherdaniel Japanese Knotweed group - 2019 / 20 x18 people x 4 extended sessions</p>	<p>Working with River Restoration group on to re-imagine the he Coomnahorna River as central to the village and reinvigorate the group with a view to refocusing its aims and objectives. Delivered strategy and implementation plan report.</p>

Table 2 Detailed Summary of Activities

Post-project dissemination, Conferences - We have also submitted to the following conference as part of the post-dissemination programme – see also conference list p10

- GESS, Dubai 2021

2.1. From SMART to SMARTER objectives

Table 3 presents a comparison of the project’s proposed SMART(ER) objectives (McKeown, 2015), an iteration of the more commonly known SMART objectives (Doran, 1981) to instill additional values to affect relevant change for the 21st century e.g. Sincere, Meaningful, Ambitious, Responsive, Eco-considerate, Resilient and far-Reaching.

Project’s Proposed SMART(ER) Objectives	Project’s Actual Outcomes as of Feb 2020
<p>S - Socio-culturally specific, Simple and Sincere</p> <ul style="list-style-type: none"> • Awareness of information on material and domestic footprints and consumption in relation to plastic, issues of poor land management practices and water pollution. • To facilitate citizens to become aware of the SDGs 4, 11, 14, 15 and how they themselves can contribute to co-designing innovative solutions towards creative, sustainable and resilient places and education. • To develop an awareness and culture of commons-based approaches and self-organised activity and models. • Creation of best practice guidelines, toolkit, training and training resources (education and community) SDG 4, 11 14, 15 rural context. 	<p>Learning Interventions - 68 students in Jan - May 2018 resources developed and trialled with 75 students, (2018 / 19). www.codesres.ie/resources</p> <p>Project launch (incl. local organisations, local events aligned to SDGs) shared social media and contact details to disseminate project activities and raise awareness of the SDGs and local implementation</p> <p>Policy hack workshops - developed, trialled and included in toolkit</p> <p>Transition Year and Community resources including Rapid Innovation and Media training and proof of concept templates</p>
<p>M - Meaningful, manageable and measurable</p> <ul style="list-style-type: none"> • Youth and adults with information and communication technology skills and commons-based approaches and circular economies • Local engagement with terrestrial and freshwater biodiversity issues and a series of proposed beta solutions • Additional leveraging development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems 	<p>Media training (youth and adults) toolkits (Lesson, plans, worksheets community resources within toolkits.</p> <p>Edible-medicinal trail in Cahersiveen and River Restoration project, Caherdaniel</p> <p>Leveraged additional funding to continue a number of projects that address sustainable use of biodiversity and ecosystems - MARplas, Muinín Catalyst, The Ballroom.</p>
<p>A - Appropriate, Achievable, Aspirational and Ambitious</p> <ul style="list-style-type: none"> • Creation of best practice guidelines, toolkit, training and training resources to contribute to education and community practices for SDG 4, 11, 14. • The proposed methodology has demonstrated tangible outcomes, given the additional expertise and team skills there is no reason to believe the proposed research outcomes will not be achievable. 	<p>CoDesRes’ methodology was designed for complexity and as an emergent approach with the team’s commitment meant the project achieved the proposed deliverables and more, despite 6 – 11 months delays.</p> <p>Increased ambition and skills shown in local orgs. planning and development. Cahersiveen’s submission to the Bank of Ireland competition was supported by CoDesRes’ PI (written submission / presentation) - town won 2nd place, Ireland’s most innovative town population under 2K.</p>

<p>R - Relevant, Responsive, Reviewed and Revised</p> <ul style="list-style-type: none"> As with many strategic agendas and strategies the goals are clear however, the implementation is not necessarily so – the development of the best practice guidelines, toolkit, training and training resources offers a contribution to the development of appropriate tools and processes for delivery The activities will be delivered in block formats either as bespoke modules or weekly classes depending on the participants. 	<p>The project used a proven methodology, now demonstrated as agile and transferable even in the face of extensive challenges.</p> <p>WP2’s education programme was challenged by change of principals and TY planning, which at times conflicted with the CoDesRes classes. The decision to undertake a musical in Jan, followed with 2 weeks work experience, half-term and then their Cappanlea trip significantly limited class time in Dec, Jan. and Feb. 2019</p> <p>Education and SDG reviews (2018) on Sustainable Development show there is still much work to be done. ESD reporting on the 2015 survey was not found to be consistent with the CoDesRes experience in CnS e.g.</p> <ul style="list-style-type: none"> 76% of schools reported that their students are given the relevant knowledge, skills and dispositions required to make sustainable choices. 55% of schools reported that their teachers are adequately prepared to support students in the development of the knowledge and skills required to make sustainable choices
<p>T - Timely and Time-specific</p> <ul style="list-style-type: none"> Policy developments; Project Ireland 2040, Marine Planning framework, Education Sustainable Development and Voluntary National Review - SDGs 2018, IPCC 2018 and 2019 update, Together for Design, July 2020 The research design makes the most of the team’s skills. 	<p>The CoDesRes intervention meant a significant increase in engagement in SDG activities and an interest in developing future activities in development education.</p> <p>Exploration both within the educational and community contexts facilitated the identification of areas for improvement for engagement and action on the SDGs and climate change, that was then implemented, using the teams’ skills and local expertise.</p>
<p>E - Eco-considerate and Ethical - the pCr praxis and its tools are designed in a way to embed social and environmental justice in their processes.</p>	<p>The tools ensure a systemic approach supporting citizens to read and understand a localised system, its potentialities and limitations, whether for assessing relationships, tangible resources or project aims.</p>
<p>R - Resilient, Resistant and far – Reaching</p>	<p>The legacy projects ensure that the team’s work continues and localised resilience can be further developed with potentially far-reaching impact</p>

Table 3 CoDesRes’ SMARTER objectives

3. Conference and Symposia

Royal Geographic Society Annual Conference, 2020 postponed to 2021

Dr Anita McKeown, CoDesRes overview; Rebecca White, WP4 research paper; Eleanor Turner, WP3 research paper.

Ireland's International Conference on Education (IICE) April 2021

Case study (Dr A. McKeown and Ms. R. White) and research paper, Ms. L. Hunt.

The Psychology of Place, Gener8tor Dec 2020

Virtual co-Keynote Presentation, Indiana to Tech Start-ups and Accelerator Managers (investors)

Teaching and Learning, Education Institute, Doha Nov 2020

CoDesRes place-based STEAM Teaching and learning

The 15th International conference: Arts in Society, NUIG, June, 2020

Dr Anita McKeown presenting on CoDesRes methodology and baseline for community toolkits within Advocacy in Design: Engagement Commitment and Action.

The 14th International conference: Design Practices and Principles, Pratt Institute of Design, 2020

Dr Anita McKeown presenting on CoDesRes methodology and baseline for community toolkits within Advocacy in Design: Engagement Commitment and Action.

SMARTlab PhD SEMINAR Feb 2020

CoDesRes WP3 lead, Eleanor Turner will be presenting research updates and a poster

Outside the Box - Public Art Forum, British Council Qatar Feb. 2020

Dr Anita McKeown invited to speak on a panel as part of a 2-day Forum initiating conversation about art in the public realm and its role in mediating dialogue and changing perceptions of place.

Commissioned by the British Council, in partnership with Qatar Museums and Qatar Foundation

ELT Ireland Annual Conference, Feb. 2020

WP Lead Rebecca White, spoke at the ELT Ireland Annual Conference in February on utilising place in the ELT curriculum.

Soil Science Society of Ireland, Nov 2019

Dr. Anita McKeown invited as Keynote, as part of the celebrations World Soil Day, the Soil Science Society of Ireland will be hosting Ireland's inaugural soil festival, will exploring soil in our societies, culture and exhibit art and science it has inspired.

UCD Sustainable Development Goal Research Seminar SDG 14, Nov 2019

Anita McKeown, UCD School of Mechanical and Materials Engineering – SDG 14 Co-design project with fishing communities, Kerry, Cork, Donegal and Galway reducing and reusing marine waste Chair: Tasman Crowe, director, UCD Earth Institute

IRC Creative Connections workshop, UCC Oct. 2019

Invited to Irish Research Council 2-day workshop for artists/scholars/educators on peatlands and STEAM Curriculum

Iveragh Learning Landscapes Symposium Oct, 2019

Iveragh Learning Landscapes 2019, Dr. Anita McKeown invited as Keynote speaker and launch the

toolkit the team have been working on. Iveragh Learning Landscapes chose the theme for the weekend to be the SDG's, think global, act local, and as part of the opening night with an opening panel discussion to showcase locally based research.

Earth Institute, UCD Sept 2019

New member Dr. Anita McKeown invited as part to present the work of CoDesRes

European Marine Science Educators Association (EMSEA), Sept 2019

WP2 Lead Lucy Hunt accepted at EMSEA to present a paper and poster on her work with CoDesRes and the Ocean Literacy Module and her work developing the Volvo Ocean Race Primary curriculum

Geography Society of Ireland, GeoWeek, Nov 2018

CoDesRes Principal Investigator, Dr Anita McKeown presented at the 1 day conference on the Sustainable Development Goals.

Other speakers included Irene Cadogan, PRO of the GSI, Joe Gallagher, Department of Communications, Climate Action and Environment, Kevin McCormack, Central Statistics Office, Elaine Nevin, Director of Eco UNESCO, Tony Murphy Ordinance Survey, Ireland, Prof. Enda Murphy, UCD and Paul Hickey, Breadboard Labs

SMARTlab PhD SEMINAR Oct. 2018

CoDesRes WP3 lead, Eleanor Turner will be presenting her PhD project Community Engagement and Coastal Biodiversity Management at the SMARTlab PhD seminar

Iveragh Learning Landscapes Symposium Oct .2018

Iveragh Learning Landscapes is a weekend of talks, walks and workshops encompassing local natural and built heritage, outdoor education, land stewardship and well-being.

Circular Ocean, London Sept. 2018

WP2 Lead Lucy Hunt CoDesRes and Sea Synergy presentation

Royal Geographic Society Cardiff Aug. 2018

CoDesRes Special panel, Discussant, Dr Cara Courage, head of Tate Exchange, as our discussant.

The Big Meet APR 2018

Keynote: Dr Anita McKeown, introducing the pCr methodology and CoDesRes project, Big Meet 8, Artists and the Arts in Place-Making Arts & Place Working Group, UCL

4. Glossary of Projects

CoDesRes www.codesres.ie was itself a proof of concept, a rigorous trialling of an existing praxis, (the permaCultural resilience (pCr) framework and suite of tools), to consider its potential when re-focused towards localising the SDGs through an embedded interdisciplinary team of researchers, who were also local residents. The project produced and trialled a number of activities, developed as context responsive approaches to local situations and concerns.

After an initial assessment, informed by desk-based research, the researchers' fieldwork and knowledge in combination with the pCr tools e.g. the OBREDIM audit and Zoning tools, the project developed a number of activities, further proofs of concepts that created the underpinning of the resources developed. These activities offer a number of adaptable and transferable opportunities that can be utilised in other communities and contexts. The resources are developed to lead users through the process not only of adaptation of the existing projects but development towards unique solutions that are responsive to their specific context.

4.1 Building a Micro-Ecology



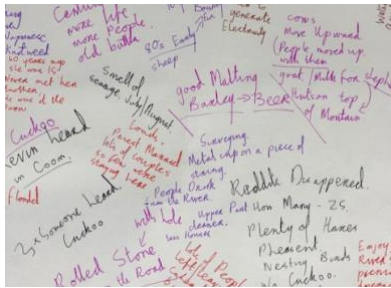
Images Rachal Rae

Figure 1 CoDesRes Launch images, Feb. 2018

To engage the local community and set the tone for the project's lifespan, CoDesRes launched with Transition Iveragh and the Asana School Garden, a weekend of activities, that set out the ethos and ways of working to develop community engagement and illustrate some of the aims of the project e.g. raising awareness and localising the SDGs (Feb.2018). Local organisations, aligned to the SDGs but not necessarily promoting the fact, were invited to share some of their activities e.g. Tidy Towns, Rocket deliveries, an organic food box delivery scheme, Ballinskelligs Environmental Action Group, Atlantic Seaweed and Hedge School, Asana School Garden. Sessions linked to local impact activities e.g. making bird feeders, tree planting, composting and growing food were delivered all conceived as practical ways to raise awareness and connect with the project. For more images please visit

<https://www.facebook.com/AsanaGarden/photos/a.327094224464977.1073741830.316786645495735/327095651131501>

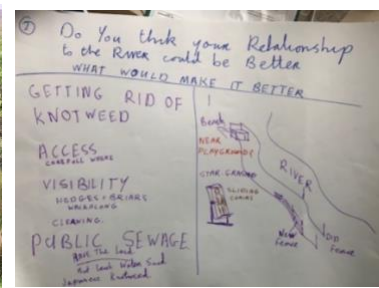
To disseminate project activities and raise awareness of the SDGs and local implementation all attendants were given an organic tomato seedlings in newspaper pots, with a cardboard tag sharing the social media and contact details. This operated as a living intervention from the project into each of the attendants' home embodied as an example of an achievable local SDG action. For more details visit - www.codesres.ie/post/building-the-codesres-community-ecology



Extract from the River Timeline
Images A.McKeown



Group observation and Mapping



World Café style discussions

Figure 3 Session 1 activities Observing the Catchment, 2019

The River Restoration project clearly shows the benefits of the pCr for the development of community projects, three 4 hr workshops, using the pCr tools, expanded the participants understanding of what was possible as well as their knowledge of policy and opportunities. Working together as teams analysing policy objectives from selected policies to align with their projects and ideas not only made the policies tangible for them but showed how they could use the policies to develop their own objectives. This process also contributed to the Rapid Governance resources and the policy hacking process and worksheet for communities.

The natural and cultural heritage strategy and implementation plan that was developed from the process had four main goals each with 4 priorities delivered over the short, medium and long-term timeline developed for the project.



Figure 4 Summary of Goals for the River Restoration Natural and Cultural Strategy

<p>Short Term: 3 months - 8 months</p> <p>Goal One: Facilitate meaningful engagement between the Coomnahorna River catchment and residents; permanent and visiting</p> <p><i>Priority One: Build capacity for the group and develop nurturing transformative relationships.</i></p> <ul style="list-style-type: none"> • Create a diverse multi-stakeholder steering committee for the group to forefront the river as a natural and cultural asset for Caherdaniel • Discuss and select your legal structure and governance policies • Begin the process of developing a Vision, Mission and Objectives for a river restoration group with local and visiting participants. • Consider areas of work and relevant of sub-committees to aid discussion that offers depth and meaning to strategic plan e.g. outreach, education, communications, activities, expanding SWOT • Creation of sub-committees that can manage a range of activities and group discussion offering depth and meaning to strategic plan <p><i>Priority Two:: Ensure a commitment to social and environmental justice, authenticity, equity and inclusion</i></p> <ul style="list-style-type: none"> • Leverage communications tools to better inform and connect stakeholders with the river and river activities. • Development of public forums to prioritise, expand and implement actions on the strategic plan • Share developments on the group's Vision and Mission statement with potential stakeholders encouraging opportunities to feedback • Consider applications to Erasmus programmes and colleges to host interns that work on the catchment and river groups projects <p><i>Priority Three: Prioritise research and evaluation to identify needs and opportunities and build evidence of effectiveness</i></p> <ul style="list-style-type: none"> • Map national university research relevant to the Coomnahorna river restoration to understand the partnership landscape e.g. ecology, community development, the arts, humanities and science • Consider the development of a series of science research partnerships based on the research mapping to encourage more activities, citizen science and enhance the river's profile • On completion of mapping and consideration of partnerships Contact potential partners to discuss opportunities for collaboration 	<p><i>Priority Four: Direct strategic investment in conjunction with regional and state agency partners</i></p> <ul style="list-style-type: none"> • Undertake an extensive mapping of river and catchment agencies, national priorities and community initiatives related to river restoration / ecological projects e.g. Magharees, Bog conservation projects e.g. • Explore inviting UCD / UCC / NUIG tutors (e.g. Engineering, Ecology, Landscape Architecture) an opportunity to engage in a real-world constructed wetlands research project as part of their final year undergrad / post-grad students' assessment. could develop an integrated plan including the rain gardens and viewing platforms. <p>Goal Two : Provide pathways to learning about and engaging with the Coomnahorna for all</p> <p><i>Priority One: Build capacity for the development and nurturing of transformative relationships.</i></p> <ul style="list-style-type: none"> • Contacting KCC and the PPN for opportunities around training or support for group development e.g. facilitation on developing vision, mission and objectives, using social media and other tools for communication and engagement. • Within the skills audit explore activities that could be presented as a series of talks or information sharing about the area by local people • Map projects and practitioners e.g. Transition Kerry, Agroforestry, Gortback Farm / Permaculture that could become part of a series of public river related learning events • Discuss the potential of an app or game that integrates education, ecology and encourages exploration of the catchment - a number of options are possible but this may not be a direction the group wishes to take <p><i>Priority Two:: Ensure a commitment to the principles of excellence, authenticity, equity and inclusion</i></p> <ul style="list-style-type: none"> • Incorporate a commitment to community engagement learning into the river restoration group's vision, mission and objectives. • Development of public forums to prioritize and expand and develop the strategic plan <p><i>Priority Three: Prioritise research and evaluation to identify needs and opportunities and build evidence of effectiveness</i></p> <ul style="list-style-type: none"> • Provide ongoing and strategic skill-building opportunities; this includes the development of opportunities for in-the-field training, capacity-building, communications and engagement work • Monitor the field's evaluation tools and processes to ensure ongoing commitment to assessment and improvement.
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Figure 5 Example of Goal 1 and Two priorities, CRR Strategy

Many of the activities that were undertaken as Strategic Intervention Tactics also sit within *Section 4.4 Re-situating Art, Design and Culture and Section 4 Toolkit Overview*. The pCr praxis underpinning the CoDesRes project is an arts-led place-based disruptive intervention, therefore the projects are developed to tactically sit in the gaps created by policy or underused or undervalued resources, to address strategic concerns, on a local scale.

4.3 Re-seeding Local Knowledge - Sister and Legacy Projects

CoDesRes worked with a number of local partners, organisations and off course the researchers, who were also local residents experts, e.g. Bold Puppy's Director was also WP4 lead. www.boldpuppy.com The CoDesRes process facilitates the re-imagining and reconfiguring of existing knowledge that was often un-recognised and therefore under-utilised. The toolkits encapsulate the processes of knowledge production and transfer, and signpost opportunities to harness local knowledge, beyond a specific geo-location. This helps to reseed local knowledge in new ways. As part of the pCr praxis, the final stage of the OBREDIM audit looks at **I**mplementation and **M**aintenance, a necessary process that helps to ensure sustainability. As part of this phase, an exit strategy is created to develop ways to continue the work through legacy projects, and with the Inclusive Fitness measure, ensure the integrated ethos is continued across organisations and projects. As part of the CoDesRes exit strategy, the Muinín legacy project enabled the project to continue its work through developing aspects of CoDesRes aims, while also contributing to the sister legacy project, MARplas, through Sea Synergy.

4.3.1 Sea Synergy

The MARplas project is a sister project of CoDesRes, sharing its methodology and some of its team and is continuing research that contributes to localising the SDGs, in this instance:

- SDG4 - Quality Education
- SDG11 - Sustainable Cities and Communities
- SDG12 - Responsible Production and Consumption
- SDG14 - Life Below water

MarPlas, emerged from a Bord Iascaigh Mhara tender won by the CoDesRes team, 2018 and is an innovative project led by the Sea Synergy research team and funded by the Environmental Protection Agency (EPA). The project is working on the full aspect of the fishing net re-use process, from collection and cleaning to reprocessing and new product creation. MarPlas uses an inclusive Design Thinking process embedded within the [pCr methodology](#) (McKeown, 2015) to encourage the circular economic approaches, which has been adapted for education and community co-design.

Using the pre-tested co-design process working within coastal communities in four of Ireland's FLAG regions the project aims to develop product prototypes from marine plastic fishing waste thus creating a resource and adding value to fishing net offcuts and old marine plastic waste material. This is being implemented to develop and demonstrate innovative and novel approaches to the re-use of the nets. MARplas has three pillars to the research; 1. materials and processes research, 2. TY design Challenge sprint and 3. Community Innovation Co-Design workshops.

2. TY Design Challenge – The *Problem to Pitch* Design Challenge emerged out of our Year 1 work experience programme – Introducing design Thinking and our Waste as Resource programme, Feb 2018. The TY placements offered an opportunity for four Student Research Assistants, a tangible understanding of potential career paths, previously unknown to the students. This is an important aspect of engaging with place-based perspectives for the SDGs and highlighting overlooked concerns and issues that will need to be addressed in the future to insure the area's resilience. In year 2 we evolved the concept into a week-long intensive delivered to 6 students and focused towards Marine Plastic Waste as part of the MARplas Project <https://www.codesres.ie/post/from-problem-to-pitch-design-challenge>

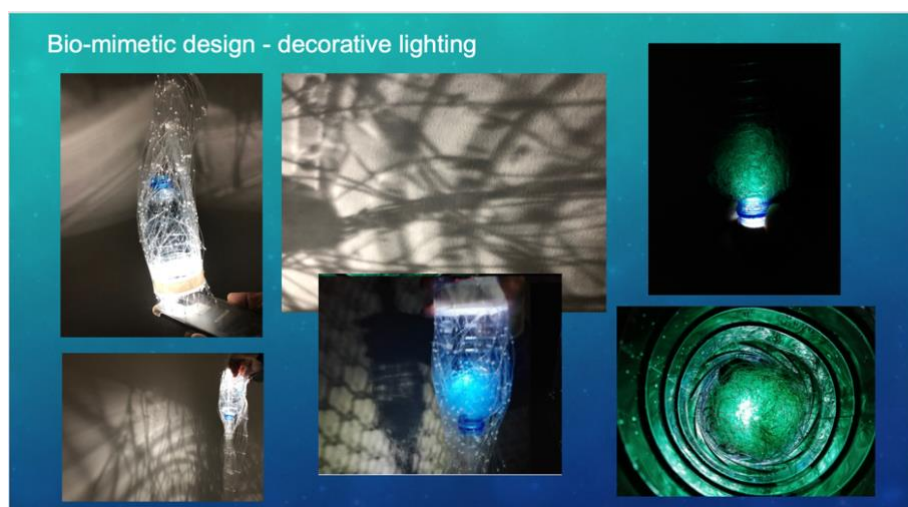


Figure 6 CnS TY Design Challenge - Feb 2019

This was then delivered in St Catherine’s Community School in Killybegs, Donegal Nov, 2019 and scheduled for delivery in St Calasanctius College, Oranmore Co. Galway and Schull Community College, Co Cork, April 2020. However, Covid-19 lockdown these last two intensives were cancelled and despite Sea Synergy’s efforts it has been impossible to reschedule them.

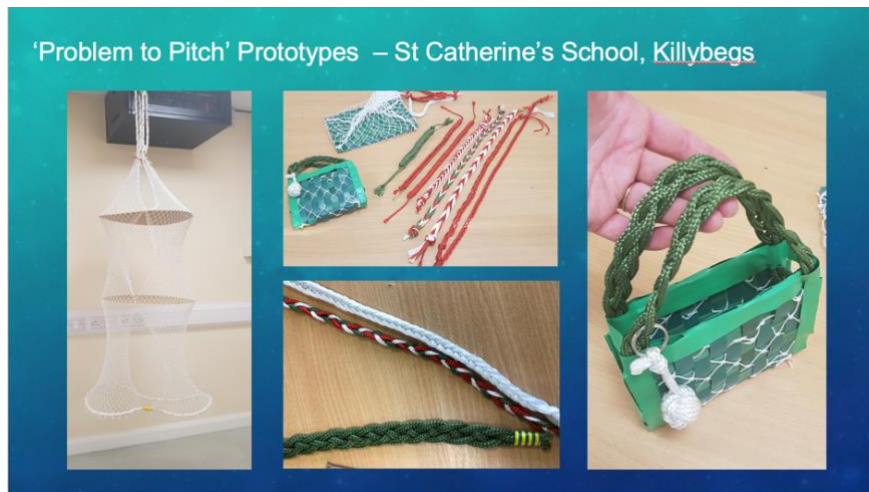


Figure 7 St Catherines, Killybegs Problem to Pitch Nov 2019

The *Problem to Pitch* in St Catherines’ contributed to the emergence of the idea to implement a TY Youth Innovation Cafe project mentored through CoDesRes / Muinín Catalyst as a TY featured project. As a legacy project, this aligned to the 2030 agenda, Single Use Plastic directive, the National and Marine Planning Framework, Fáilte Ireland and local policy documents; Profiling Educational Challenges in Donegal (2012); Donegal Local Development Strategy, (2014 - 2020); Local Economic Development plan (2016 - 2022). Covid-19 changes to the staff meant this potential was never fulfilled.

Community Innovation Co-Design Workshops - devised by the CoDesRes’ Principal Investigator, Dr Anita McKeown and Marplas engineer Dr Colin Keogh, also CoDesRes’ external expertise, The Rapid Foundation, <https://www.therapidfoundation.com> The Design and Innovation days aim to introduce participants to the net offcut material and encourage exploration of the possibilities of reusing this material to create a useful item. <https://www.codesres.ie/post/net-re-use-with-sea-synergy> and <https://www.codesres.ie/post/ss-net-reuse-marplas-update>

4.3.2 Living Iveragh

Has been together since 2016 / 7 and working voluntarily but they established as a Designated Activity Company in March 2018. Living Iveragh is a voluntary organization whose mission is to address the problem of rural depopulation and lack of sustainable well paid employment. They promote South West Iveragh as a place of Research, Learning and Enterprise in an outstanding landscape. We believe in collaboration and co-operation. They promote the use of ecological systems design thinking as a learning methodology . We are aligned with the NAISC Diaspora network contact details kedrahderrynane@gmail.com www.iveraghinspires.com

In partnership with Living Iveragh, SMARTlab Skelligs, a satellite of SMARTlab Research Institute, UCD <https://www.ucd.ie/smartlab/> and Kerry County Council – The Ballroom Project has been

awarded Phase 1 Funding from the Rural Regeneration Development Fund, Category 2 to support a shovel-ready project for submission to CAT 1. The RRDF fund supports coordinated and integrated projects between government departments, State agencies, local authorities, other public bodies, communities and, where appropriate, philanthropic funders and/or the private sector, which will have an impact on sustainable economic and social development in rural areas.

The Ballroom builds on the work and recommendations of CoDesRes and seeks to support the establishment of a Research, Development and Innovation Centre of Excellence in place-based STEAM and Placemaking, Education and Research – **Catalysing 21st Century Education and Community Development Creatively**. The Ballroom has been developed from a field scan of the digital hubs that are emerging in South Kerry, hubs focus on, remote working, third-level or commercial training and innovation however current research shows that engaging at an earlier age – primary and post-primary is critical if Ireland is to compete and realise its ambitions. If we are to meet the the challenges of the 21st century we need to support future ready students through expanding skill sets ‘ as problem-solving, inquiry-based learning and team working to address demands and systemic understanding of upcoming challenges With ubiquitous technology, the importance of user-experience, user interfacing and the need for agile, innovative approaches means even more we need 21st century skills embedded in our education and training if we are to support the development of future-ready students.



Figure 8 The Ballroom Overview

4.3.3. Muinín Catalyst

Living Iveragh with CPL PLC, Ireland’s largest recruitment company supported an additional phase of testing the resources and development of additional resources. The Muinín Catalyst legacy programme, was developed from CoDesRes’ findings and uses the core Problem to Pitch resources developed within CoDesRes with focused supplements linked to the proposed projects developed for TY 2020 / 21. Module 1 originally the Ice Cream Olympics, was re-focused to *Seeding*

Sustainability and working with TY and their teachers to develop a 1km health and well-being trail linking a series of ‘nodes’ and wild / cultivated areas engaging students through place-based STEAM (SDG 4, 8, 10 and 12) and biodiversity activities (SDG 11, 13, 15), food sovereignty (SDG 2, 11, 12 and 13) and Climate Action (SDG 13).

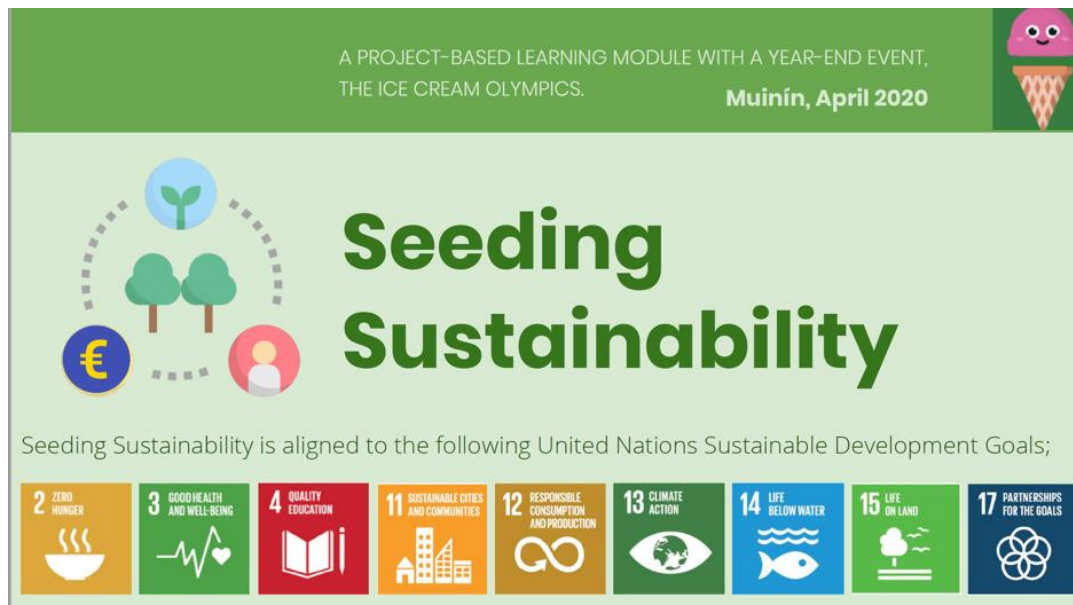


Figure 9 Seeding Sustainability Module

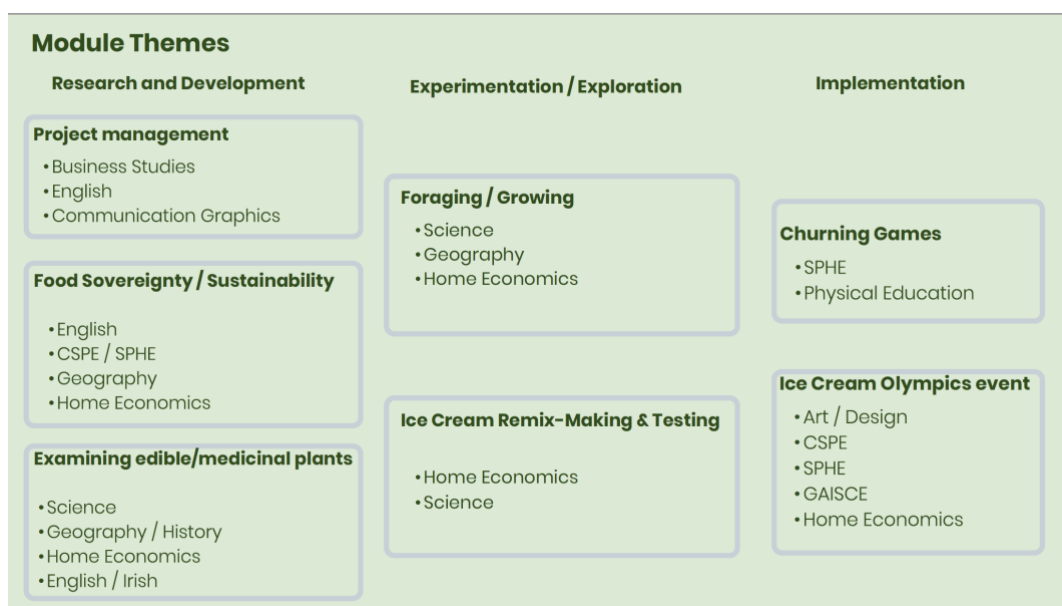


Figure 10 Seeding Sustainability Linked Learning overview

The DREAM Designs learning module also project-based module with a year-end focus to exhibit the learners’ visions for derelict buildings. It utilises their location, to enable learners to gain knowledge and skills on contemporary, sustainable development issues, project management and execution. The overarching year-end event guides lessons and related module support and encourages linked-learning. A forward-planning guide will enable teachers across subject areas to collaborate and plan in order to develop learners’ understanding and skills to complete the module.



Figure 11 Dream Designs module

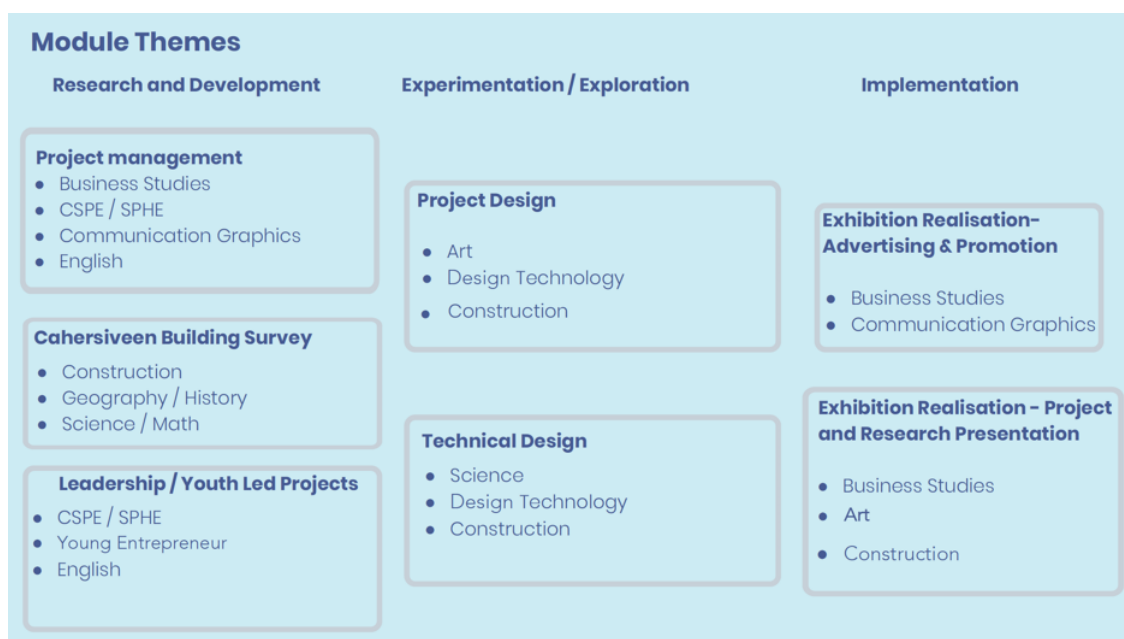


Figure 12 DREAM Designs Linked Learning overview

CoDesRes' research design and methodology enabled the team to develop what they consider to be the foundation of an on-going project, with on-going funding already secured to develop its ambitions. Although this was not as envisioned, Due to Covid-19, it has been important for developing CPD, additional resources and creating the two new modules. The relationship has also developed the foundation for exploring the school as a community hub that shares its resources e.g. gym, rooms, kitchens etc.

The longer-term vision is develop a transdisciplinary online learning platform utilising the Sustainable Development Goals as a thematic principle, hosting place-based STEAM lesson plans and

blended learning resources to augment the Irish Curriculum, 4th - 6th Year. The resources will bridge the gap between post-primary education and innovation and enterprise within industry and academia and is proposed to be scaled to earlier stages of second level education.

Members of the CoDesRes team, that worked on Muinín Catalyst, are now setting up a company to continue the education work, begun in CoDesRes

<https://www.facebook.com/search/top?q=Muinin%20Catalyst>

4.4 Re-situating Art, Design and Culture

The pCr praxis is a culturally situated approach. The team investigated how cultural activities could be explored further by looking to incorporate more of our indigenous culture (Irish language, mythology and cultural heritage) into the process of engaging with the SDGs. This enabled the knowledge from the past to be integrated and re-imagined for the 21st Century, and knowledge that CoDesRes views as important contributions to sustainable resilient communities. Ireland has a number of festivals and event days that could be used to draw attention to the SDGs and leverage actions that would localise them to a specific region or area.

4.4.1. Seachtain na Gaeilge

[Seachtain na Gaeilge](#) (Irish Language Week) is an international Irish language festival and one of the biggest celebrations of our native language and culture that takes place each year in Ireland and in many other countries. Cultural heritage is an important part of sustaining communities and has much to offer as a foundation for the Sustainable Development Goals. CoDesRes' resident Seánchai, Seán O'Laoghaire explored indigenous Irish culture for its contribution to education and empowering communities and how we can include our cultural heritage within the CoDesRes project. *This is an area that will be further explored within the legacy projects and we would hope to have the toolkit translated As Gaelige* <https://www.codesres.ie/post/conradh-na-gaeilge-uith-rathaigh>

4.4.2 St Patrick's Day 2018 / 19

The CoDesRes project explores this aspect with the need for 'culturally situated local approaches that include multiple worldviews and a systemic design thinking perspective that integrates science' and technology (Mckeown, 2018). Community events like the [St Patrick's Day parade](#) offer a great opportunity for engagement, particularly with SDG 11, and other themes, depending on the context. SDG 14 and 15 were obvious themes to explore. Kerry has the longest coastline in Ireland; there are issues that the Iveragh Peninsula communities are dealing with daily that sit within these goals' landscape.

Puffins Nursery walking group's entry for SDG 15 Life on Land with the Hungry Caterpillar, including the full life cycle. Some of the team dropped in a few times to help them with their costumes and heard how much they knew about the caterpillar's life cycle. The night-time event involved putting the 30ft snake puppet, made from old coal bags, old piping and willow, that led the parade, to bed. The night time parade, enabled those who don't or can't continue the celebrations in local pubs to join in a community event. Mostly families with small children, who brought their pots, pans and

wooden spoons, as requested, to form the [Domestic Percussion Ensemble](#), formed a temporary community to escort the snake through the High St to the Fair Green, while older children and teenagers animated the puppet.

Sustainability starts, by building an interest and enjoyment through education about the physical world early on. This provides the foundation enabling an awareness of our place in the planetary ecosystem to grow. Others, who experienced the festival reported that they want to get more involved in local events, inclusion in community events not only contributes to social resilience it can also enable the development of more tangible skills e.g. project management and production skills. Self-organisation, or the ability for a system to change through new structures and behaviours, is one of the strongest forms of resilience. A resilient system portraying adaptive behaviour has the potential to evolve new responses that will influence the system and enable it to sustain aspects it has never encountered before. <https://www.codesres.ie/post/st-patrick-and-the-sdgs>

In 2019, CoDesRes worked with Coláiste na Sceilge, included input from Transition Years, Leaving Certificate Applied (LCA) and Junior years. The project became the focus of the LCA's final year project which includes all aspects from Project Management to execution and report. The float won second prize.



Image K.Ware

Figure 13 Colaiste Na Sceilge float

We also undertook the night time event again - putting our 30ft snake puppet, that leads the parade, to bed, which is a unique night-time event that can be built on in future years. In 2020, Cahersiveen Tidy Towns had proposed to take over the organisation of the parade, which CoDesRes felt demonstrated a positive evolution, benefitting their organisation of the parade in 2018 / 19. Both 2020 and 2021, was cancelled and it will be interesting to see how this will evolve post Covid-19.

4.4.3 May the 4th

In 2018 / 19 the team created two workshops, at The Skellig Experience, as part of the May the 4th Festival, promoted by Fáilte Ireland and the Wild Atlantic Way. In 2018, as a team, we wove together our interdisciplinary skills around Seán O'Laoghair, our local Seanchai's story of Aine's attempts to save the ocean from plastic pollution to create an engaging arts and crafts workshop for children 2 – 12 years old – with approx. 75 children and their parents over the 2 days. The workshop was

designed to reflect the idea of the possible adaptation of puffins, which could easily be turned into *adaptation of ourselves and other parts of the natural world*. So, after hearing the story, the group began chatting with Eleanor Turner-our Marine Biologist about how could/should/ would puffins need to adapt and started thinking of reasons why puffins might need to adapt and how this adaptation might manifest itself.

By linking questions to real issues that Atlantic puffins are experiencing due to human-driven climate change. e.g. changes to food sources and changes to location of food, we were able to gently begin a conversation in a way that small children could understand without fear. This approach created the foundation for our participants to create the puffins of the future; a fun way for them to start to use their imagination and creativity to explore environmental adaptation and raise awareness of concerns that can be overwhelming or frightening. We evolved this concept in 2019 to focus on one of the SDG 15 targets:

- *by 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services.*

Unlike many of the other goals which have a target year of 2030, this goal, due to importance and urgency, has a target year of 2020. We decided that our theme for our 'May The 4th Be With Them' workshop would be pollinators and their importance for biodiversity. The workshops focuses on aspects of pollination and types of pollinators then the children (4-11yrs) integrate this information into making their own pollinators. <https://www.codesres.ie/post/pollinators-may-the-4th-be-with-them>



Figure 14 May the 4th Be with Them - Pollinators

4.4. 4 Streetfeast

Streetfeast was part of a weekend of events that included beach cleans, wildflower planting and a celebratory shared food event in collaboration with Tidy Towns. Streetfeast's core aims are to celebrate and strengthen community. The CoDesRes team began working with Cahersiveen Tidy Towns to develop aspects of the group's activities and the Tidy Town's assessment criteria:

- Community involvement and planning,
- Wildlife habitats and natural amenities
- Sustainable waste and resource management

These areas align well with CoDesRes's focus on the SDG goals 11, 14 and 15 have enabled us to develop good working relationships and contribute to the local Tidy Town's activities as well as increasing group membership. In collaboration with Tidy Towns, [Asana School of English](#) and other local residents, we initiated and co-organised the first Cahersiveen Clean Coasts beach clean, and the town's first Street Feast.



Image A.McKeown

Figure 15 June SDG 11,14 and 15 Activity Weekend

CoDesRes also worked with Tidy Town's chair, Lisa O'Shea and new member James McCarthy, a landscape architect, to collate and submit this year's Tidy Town's application.

4.4.5 Sensing the Cumeragh Catchment

The theme for Heritage week in 2018 was *Share a story and make a connection* an ideal opportunity to explore the natural heritage of the local lakes, rivers and coastal areas. This will take the form of a sensory conversation and you can read a short article in July's South Kerry Advertiser, on our publication's page. https://56b52511-c5a5-4cf3-88d4-076130fb81cb.filesusr.com/ugd/92a067_9c51889dc86a4708a6f38a0c2fa3322a.pdf

4.4.6 Spookemon 2

Spookemon is a human spooky pokemón that adapts the idea of a treasure hunt, with clues leading you to a character. Each character contributes to a story that is only complete once you complete the treasure hunt. The treasure in this instance is a performer. Spookemon requires the audience to move around and actively follow the action to discover performers that reveal the whole story while becoming participants in the co-creation of the story. The performers told parts of a story that played with local contexts and concerns creatively confronting the town with its own demons and fears.

Each performer interpreted a theme that linked into the bigger story of rural depopulation, the post-industrial and post 'boom' landscape and the impact of these factors on a community. Over-stretched parents, lonely musicians, bogus bankers, demon chefs, GAA teams pulling from six parishes and more all had a playfully frightening story to tell. The performers have some insights into their characters with the creative team casting and writing the characters specifically for them.

<https://www.codesres.ie/post/spookemon-2>



Images A.McKeown

Figure 16 Preparation for Spookemon 2

4.4.7 Christmas Grotto

After Spookemon, we were asked to create the grotto by the Cahersiveen Traders' Association, which we agreed to if we could use recycled / up-cycled materials. The event took place in the Community Centre, the old Carnegie library, and with at least 200 children and their families visiting Santa we thought this was a great opportunity to draw attention to the potential of re-using waste materials and raise awareness of the issues surrounding plastic and creating waste at Christmas.

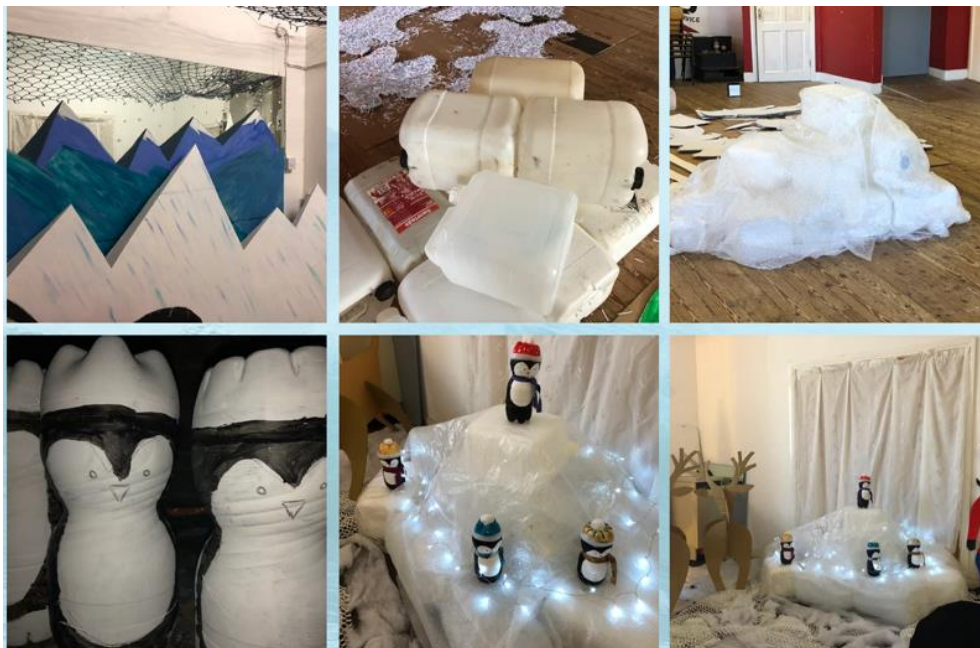


Image A. McKeown, Corrugated plastic mountains, plastic containers, bubble wrap, bottles

Figure 17 Santy's Grotto - Christmas 2018

CoDesRes began gathering materials from local businesses; cardboard from Casey's Cycles, plastic containers and fishing net from Iveragh Fisherman's Co-Op, plastic bottles and milk cartons and even shredded paper from Siopashoo all contributed. <https://www.codesres.ie/post/it-s-a-wonderful-time-of-the-year>

4.4.8 Edible Medicinal Landscape Project

Waste2Taste: is the development of an edible / medicinal horticultural sculpture trail that integrates augmented reality to share the story of natural and cultural heritage of the area. proposes the development of a sculptural / horticultural trail that runs the length of Cahersiveen town starting and finishing with two landmarks: Coláiste na Sceilge to the newly reconstructed Saidhbh's Fort, behind the Old Barracks Cultural Centre.

The project included additional activities The Incredible Edibles, a edible-medicinal walk along the route with Niall Hogan a Medical Herbalist and Botanist and a Seaweed Information and Tasting event both, integrating local expertise into the project and generating additional income for those delivering the events.

<https://www.codesres.ie/post/from-waste-to-taste-enacting-the-sdgs-in-a-local-context>

To read S.Kerry Advertiser article: https://56b52511-c5a5-4cf3-88d4-076130fb81cb.filesusr.com/ugd/92a067_b7104dd20a4048a1b5ae028a5077aa32.pdf



Figure 18 Waste 2 Taste proposed trail

4.4.9 StoryBank – Stories of the past, told today for the people of tomorrow

StoryBank was a year-long project that aims to connect with the need to move towards a more

sustainable future and consider how the past could help us towards such a future, by looking at the heritage of sustainable practices on the Iveragh Peninsula. StoryBank will save the knowledge of the past's making and mending, sharing the skills and knowledge that could contribute to a more sustainable future. StoryBank looks at the heritage of sustainable practices on the Iveragh Peninsula by gathering the innovation and the 'make-do and mend' ethos that is still within living memory. The project will gather stories on these themes through specially designed 'storybanks' that recycle plastic bottles that carry a message or story. These formed the basis of an exhibition and digitally archive, as part of Heritage Week, 2019.

<https://www.codesres.ie/post/storybank-saving-the-past-for-tomorrow>



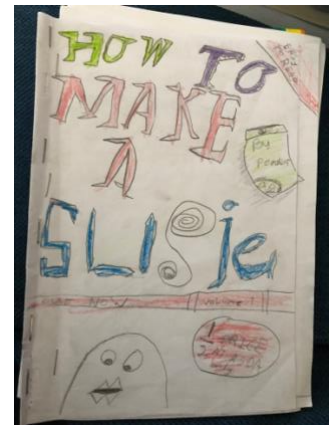
Image A. McKeown Making a crúcán, (croakeen or thraw hook) used for making straw rope for tying the hay bales and Súgán chairs

Figure 19 StoryBank - Making a crúcán



Figure 20 Grandparents Day - Scoil Saidbhín, Stories of Fixing and Mending

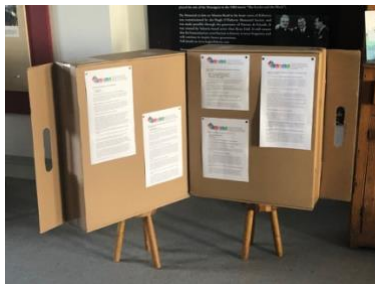
Grandparents day shared the children's' reports from interviews with their grandparents about making, fixing and mending.



Images Seán O'Laoghaire

Figure 21 How to Manuals made for StoryBank

StoryBank was also an exhibition, a showcase for local makers using local, natural and up / recycled materials and a weekend of workshops during Heritage Week 2019 in the Old Barracks. The exhibition, shared the heritage of the 'make do and mend' ethos of the Iveragh Peninsula, that is still within living memory through stories of sustainable practices, gathered through the 'storybanks' and the educational workshops that produced manuals and books.



Local makers' showcases



Kitchen sink cleaning recipes.



Upcycled patio set and manuals



Net-making



Kitchen sink cleaning products



3D printing recycled filament

Figure 22 StoryBank Exhibition - Heritage Week, 2019

Visitors to the exhibition were also encouraged to share their stories of making and mending, try some of the activities and make their own cleaning products to take home in recycled jars. One young participant, was going to ask in school, if they could make the cleaning products to sell as a Green School activity to raise money for a school garden – embedding circular economic principals early!

4.5 CoDesRes Project Posters

<https://www.codesres.ie/projects>

WATER HERITAGE DAY

MAKING SENSE OF THE

WATERVILLE CATCHMENT

SUNDAY 26TH AUGUST 2018

10:00 AM - 17:00 PM

1 SALT MARSHES

2 STREAM

3 HATCHERY

4 LOUGH DERRIANA

Join us on a 4-stop bus tour of the catchment;
weaving fact, fiction, history and lived experience. Learn about
the unique story of the catchment from multiple perspectives.

Car park, IRD Waterville Co. Kerry 9:45 am

Book online at [codesres.ie/events](https://www.codesres.ie/events)
Places limited to 15 people
Suitable for Children under 12
Suggested Donation €5 to Waterville Lakes & River Trust

Further Information
codesres@gmail.com | facebook.com/codesres | twitter.com/codesres



Figure 23 Sensing the Catchment

NAISC KERRY DIASPORA NETWORK AND ACARD PRESENTS

SPOOKEMON 2 WE'RE BACK

- Story Hunt

- Party and
Games

- Prizes for best
costumes

THE OLD BARRACKS

CAHERSIVEEN, CO. KERRY

Arrive 5.45pm Wed, 31st Oct

€5 per person / 'Family' of 4 €15

Children **MUST** be
accompanied by an
adult at all times

Early arrival is advised
due to opening
performance at 6.15pm

Enquiries t:066 4010430

Figure 24 Spookemon 2

WASTE 2 TASTE



Do you want to learn a unique design approach while contributing to the design and creation of an edible-medicinal sculpture trail for Caherciveen?



Working collaboratively, you will learn a design method that integrates design thinking, permaculture and social and environmental justice within project development, management and implementation.



For more information contact Anita - codesres@gmail.com
www.codesres.ie/projects

If you are working or interested in the arts, community development, landscaping, architecture or planning, why not get involved we'd love to hear from you



Figure 25 Waste 2 Taste

July 2018 - Sept 2019

STORY BANK

Stories from yesterday,
told today, for the
people of tomorrow.

Do you have a story
to share about making
and mending, old or new?
We want to hear from you!

01 >

Get a plastic bottle
- 500mls are best

02 >

Wash and Dry

03 >

Put story in bottle

04 >

Deposit in Storybank
for more venues please visit
www.codesres.ie/projects

Figure 26 StoryBank

5. Toolkit Overview

CoDesRes developed and trialled proof of concept projects that embedded the pCr methods and ethos and the toolkits share these methods, through an open source approach, targeted towards community and education networks. The project used a tested methodology that had been shown to encourage resilient practices, systemic thinking and integrate an eco-social economic approach that acknowledged the need for social, environmental and economic justice. The education programme sought to consider how best to augment formal and informal education to ensure learners are able to keep pace with the dynamic changes and pace of a contemporary technologized society. CoDesRes explored how to embed ways of thinking that involved creative and critical approaches to problem-solving and decision making, with new ways of working that require communication and collaboration.

The toolkits aim to teach and embed the pCr tools, place-based STEAM approaches to education and community resilience and continue to localise the SDGs for sustainability after the project has completed. The objective of localising the SDGs is implemented through new approaches to building capacity and transforming threats to opportunities. This work was initiated and will be continued through the project’s legacy work, the Muinín Catalyst and the Rapid Transition Media and Maker space now in Cahersiveen; a direct outcome of the CoDesRes project. The following overview gives insight into the initial beta toolkits that through legacy work and funding will continue to evolve to incorporate all 17 goals and will be available online at www.codesres.ie/resources

5.1 Community Toolkit

The Community programme worked initially with three groups; The Waterville Lakes and Rivers Trust, The Caherdaniel Japanese Knotweed group and Acard Development Ltd / Cahersiveen Tidy Towns. The engagement varied and is documented within the report including the challenges and dynamics that meant continuous changes to the proposed programme of work. The project developed various partnerships and in the end operated across a number of organisations and initiatives, gaining insight into areas for capacity building and raising awareness about the SDGs and contemporary approaches to resilience including enterprise and innovation. WP3 and 4 focused on community education and upskilling while developing projects that intervened in the ‘predominant narrative’ – there’s nothing here or you have to leave. The community resources produced introduce contemporary technology and skills through the Rapid Media and Innovation resources and organisational support through the Rapid Governance resources. The full Community toolkit includes:

SDG Aligned Resource	Project Resource
SDG 4 - Early Years and Primary	<ul style="list-style-type: none"> • Adaptors – SDG 15 • Pollinators – SDG 15 • StoryBank – SDG 11
SDG 11	<ul style="list-style-type: none"> • Rapid Media • Rapid Engineering • Rapid Governance
SDG 15	<ul style="list-style-type: none"> • Waste to Taste

Table 4 Community Toolkit overview

5.1.1 Media Module description

The Community Media Cohort toolkit has been designed for people who are involved in community-based projects and events. Participants will be trained in production and post-production methodologies, which they will apply to assist in the development of a digital piece on the Edible Medicinal Trail around Caherciveen. The skills learnt during the training can be applied to promoting their own work, and developing a team approach to arts-based projects, promoting the targets of SDG11: Sustainable Cities and Communities.

Overarching Aims

Participants will.....

- Develop skills to operate camera and audio equipment
- Learn how to transfer audio/footage to a computer
- Develop use of editing software to complete basic post production
- Become familiar with storyboarding, saving assets, copyright/ownership, open source

<https://www.codesres.ie/post/community-media-cohort-training>

5.1.2 Innovation Module description

The Rapid Innovation Prototyping Resource has been designed for community participants to gain an introductory awareness of how engineering and innovation can be applied to the Sustainable Development Goals. The skills learnt promote the targets of SDG11; Sustainable Cities and Communities as they pertain to waste as resource and innovation. The initial aim was to support the development of a local Makerspace and upskill local residents. Unfortunately, although training began it was never completed due to Covid. We have a new space and are awaiting Covid-19 restrictions to lift.



Images A.McKeown

Figure 27 Community 3D Printing Training

Overarching Aims

There are four sessions in the Rapid Prototyping toolkit: Engineering a Better World, 3D Printing, Innovation and Waste Recycling. The following is a sample from the Rapid Innovation module Session 1 Engineering a Better World



Session 01

Engineering a Better World

SESSION TIME
60 MINUTES

SDG 11 - (targets 11.2, 11A)
Science, Engineering, Technology



4 QUALITY EDUCATION



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Lesson Title & Summary: Engineering a Better World

Engineering a Better World introduces learners to the concept of Engineering and how it can be used to help meet the SDG targets. It develops problem-solving skills through a design challenge, applying principles of Engineering.

The learner will.....

- develop their understanding of Engineering in general and the different fields of study
- develop their understanding of how engineering can be used to help meet the SDG's
- learn the concept behind and utilise the idea of the engineering design process
- work collaboratively with peers on an engineering related problem
- plan, design, sketch and improve a design prototype

Resources

- "Engineering a Better World" presentation
- CoDesRes SDG Cards
- Notebooks, Pen/Pencil
- 4 Index Cards
- 2 Pieces of Paper (A4)
- 4 Pieces of Newspaper
- 10 Craft/Lollipop Sticks
- Graph paper (roughly 91 sq. cm)
- Ruler
- 10 Pieces of Masking Tape (8 cm long)
- 4 Straws
- Hair Dryer (Permission required)

Figure 28 Rapid Innovation Module - Session 1 Engineering a Better World

Session 01

STAGE 1

10 Minutes

Resources

Presentation: Part 1
Engineering a Better World

“Engineering a Better World” Presentation Part 1

1. Show the PowerPoint presentation for the class (or give a printed copy).
2. Use the question slides to engage and assess their prior knowledge
3. Review the concept of Engineering and the different types of Engineering that exist.

STAGE 2

10 Minutes

Resources

- Notebooks
- Pen/Pencil
- Paper
- SDG Cards

Ideation: What SDG'S do you think Engineering can help meet?

1. Divide learners into small groups (2-3).
2. Display the SDG cards on the screen or give each group a copy.
3. Ask groups to discuss which SDG's Engineering can help meet. Encourage them to think about what engineering solutions may help tackle each SDG identified.
4. Nominate a spokesperson per group and summarise key ideas with the whole class.

STAGE 3

10 Minutes

Resources

Presentation: Part 2
Engineering a Better World

“Engineering a Better World” Presentation Part 2

1. Continue running through the PowerPoint presentation to introduce learners to the ways Engineering is helping to tackle the SDG's.
2. Discuss the examples as they will prepare learners for Stage 4.

Session 01

STAGE 4

25 Minutes

Resources

- Pen / Pencil
- 4 Index Cards
- 2 Pieces of Construction Paper (A4)
- 4 Pieces of Newspaper
- 10 Craft / Lollipop Sticks
- Graph paper (roughly 91 sq. cm)
- Ruler
- 10 Pieces of Masking Tape (8 cm long)
- 4 Straws
- Hair Dryer

Activity: Desert Island Survival

1. Divide learners into groups of 4.
2. Explain the list of supplies and constraints.
3. Groups chose 2 random SDG cards from their pile.
4. Explain the challenge: build a hut no bigger than the graph paper sheet (91 sq. cm) that is at least 10cm high with a working door. It must withstand a wind storm (generated by the hair dryer on full power) of more than 10 seconds. If it doesn't collapse or blow away, they have succeeded.
5. Explain that the hut cannot be taped to the table or graph paper
6. Learners use the Engineering Design Process presented to plan their design. Once they have a plan and drawing, they can start building.
7. Set a 20-minute timer for groups to build.
8. After the time is up, conduct a test with the hair dryer on each design.

10 Minutes

STAGE 5

Resources

- Notebooks
- Pen/Pencil
- Paper
- SDG Cards

Reflective Practice

Give learners five minutes to reflect on the lesson in their notebooks, using the following prompts;

- Three things they feel they have learnt from the lesson and tasks
- Two things they found the most interesting and would like to learn more about
- One piece of feedback on the lesson and the tasks

You can use the information in their reflections to plan and modify the accompanying lessons, create projects or share with another teacher to implement cross curricular tasks

Please encourage your learners to reflect honestly on the lesson, including positive and negative opinions. If they give negative feedback, explain and make a suggestion that could improve the lesson.

5.2 Transition Year

In September, 2018 we met the three classes we would be working with and were delighted to get started. We are focussed on integrating inclusive design into our programme; to meet SDG 4- Quality Education. <https://www.codesres.ie/post/and-we-re-off-transition-year-at-colaiste-na-sceilge> The toolkit emerged out of this process. The toolkit embedded Design Thinking; cognitive, strategic and practical processes by which design concepts are developed, with an existing arts-led place based praxis to create an approach to place-based STEAM (Science, Technology, Engineering, the Arts and Mathematics) as access points for supporting student-led inquiry, dialogue, and critical thinking. Together this approach encourages the 21st Century Skills – the 4Cs, communication, critical thinking, collaboration and creativity. The education resources include

- SDG goal Introduction lessons
- Module Intros – overview content / key skills / learning outcomes
- Activities and lesson plans across all modules including links to other resources
- Global Goals Art and Design case studies

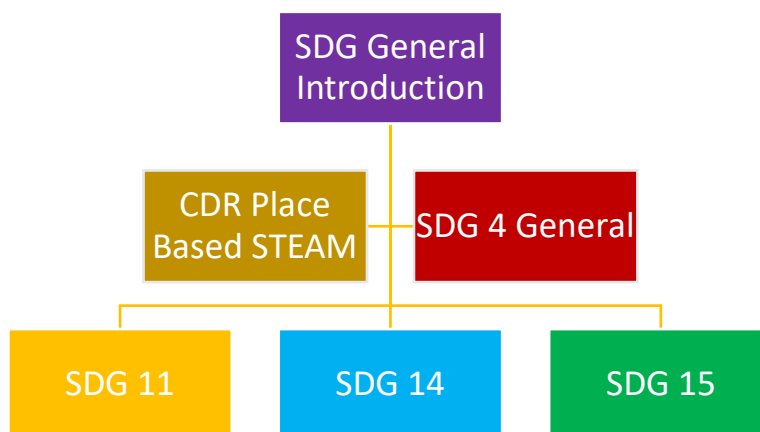


Figure 29 Education Toolkit Overview

SDG Aligned Resource	Project Resource
SDG 4	<ul style="list-style-type: none"> • Problem to Pitch – 8 lessons and resources • Supporting Skills - <ul style="list-style-type: none"> ○ Report Writing ○ Media – 15 lessons and resources ○ Youth Leadership ○ Enterprise and Innovation
SDG 14	<ul style="list-style-type: none"> • Ocean Literacy – 10 lessons and resources • Problem to Pitch – Marine Plastic waste – 8 lessons and resources
SDG 15	<ul style="list-style-type: none"> • What is your waste – 1 lesson • Know your river – 1 lesson

Table 5 Overview of Education Resources

TERM 1 Sept – Dec 2018	TERM 2 Jan – April 2018 Jan and Feb. minimal contact	TERM 3 April – May 2018
1. Learning to Lead – 1 (Icebreakers, lead be led, Design Challenge)	1. SDG 14	1. SDG Poster Introduction
2. . Learning to Lead – 1 - Code of Conduct / Dealing with change	2. SDG 14	2. SDG Poster Development
3. . Learning to Lead – 1 Goals / Targets - effectiveness	3. SDG 14	Easter
4. Observation 1 – Research (recherché (fr) – look and look again)	4. Musical	Easter
5. Observation 2 - SDG web Quest	5. Work Placement – CDR P2P trials – 40 hr. module Design thinking / Circular Economy and Innovation / Entrepreneurship -	3. SDG Poster completion
6. Observation 2 - SDG scavenger hunt	6. Work Placement	4. Poster completion and display
7. Pecha Kucha SDG - Introduction	7. Half Term – 1 week	
8. SDG 14	8. Capanlea – 1 week	TY ends mid-May and the last week is given over to the student’s preparation for their graduation ceremony.
Half / Term	9. World Café SDG review	
9. SDG 14	10. Waste as resource 1 – SDG 14 St. Patricks’ Day SDG 14	
10. SDG 14	11. SDG 15 Recycling, Composting	
11 - 13. Pecha Kucha SDG	12. SDG 15 Recycling, Composting	Focus group evaluation last week of TY

Table 6 Transition year resource trials

The Media Communication module for TY evolved from our work with a group on the SEAI’s One Good Idea project. <https://www.seai.ie/community-energy/schools/one-good-idea/> Students and teacher were struggling with aspects of the project, the production of a video and awareness campaign. Although there are project resources provided, they highlighted what the CoDesRes team have experienced: more scaffolding is needed if they are to be a truly student-centred learning process. Working with the students to develop a storyboard, understand an awareness campaign formed the basis of the micro-module, which has since been built out as part of the SDG 4 resources. The Media Communication forms part of the toolkits SDG 4 general skills module and has 4 micro-modules offering an introduction to the following areas:

- Moving Image
- Audio
- Presentation
- Graphic Communication

This module supports students and teachers to include media into their projects by covering the basics of audio-visual communication so that even without media training they can create content confidently and competently. Sample - Media Communication 01, Introduction to Video Pre and Post Production.

Media Communication



Media Communication

CURRICULUM AREAS

Design
English
Technology
Environment
Sustainability

4 QUALITY
EDUCATION



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



Media communication is a supporting micro-module that links into project-based learning modules that use local places to enable learners to gain knowledge and skills around contemporary issues of sustainable development.

The micro-module has three aspects, moving image (video), graphic (poster) and presentation, the Pecha Kucha method.

In this media communication micro-module, the learner will

- develop skills of organising, planning and producing media outputs
- develop an awareness of the basics of media production
- develop an awareness of audience and messaging
- practice problem solving and critical thinking skills as individuals and part of a group
- be introduced to tools and methods for media production

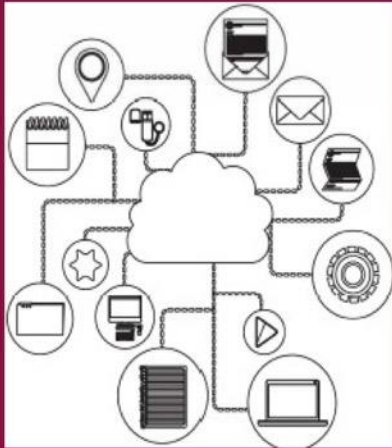
This micro-module includes:

- Lesson plans
- Accompanying resources
- Optional assessments
- Skill support resources

Figure 30 Sample of Media Communication - 1

Media Communication 1

Introduction to video pre - production lesson 1



Lesson Title and Summary: From Idea to Story

In this lesson students will gain awareness of Basic video production planning and learning core elements of idea / story development.

In this lesson the learner will

- summarise work done (to date)
- collaborate and share ideas, both written and orally
- begin to develop an awareness of storytelling and being able to engage an audience in a short amount of time
- actively watch and listen to summarise key ideas
- analyse videos for learning skills
- develop their tourism video Idea, based on how to tell a story and engage an audience
- begin to develop an understanding on how to storyboard an idea for video
- develop their storyboard

CURRICULUM AREAS

Design
English
Technology
Environment
Sustainability

4 QUALITY EDUCATION



8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Materials:

- Internet access
- Video Analysis Worksheet 1
- Idea Development Worksheet 2
- Story boarding Worksheet 1
- Story boarding Worksheet 2
- Paper
- Pens, pencils or markers

Introduction to video pre - production lesson 1



Activity Instructions

Activity 1 Active Viewing Task: Video Analysis worksheet - 3 short tourism videos (25 mins)

1. Complete task Video Analysis worksheet
2. Analyse answers, share opinions on videos as a group, as a class

Activity 2 Idea Development worksheet (20 mins) Class share 10 mins)

1. Complete idea development worksheet
2. Discuss as a group some of the ideas that have come up
3. Sharing ideas:
 - What is your video about?
 - Who else have you talked to about your video?
 - What research have you done?
 - Where have you found it?
 - What have you come up with so far?

One representative from each team shares their ideas. Elicit suggestions from other groups to feed into each other's ideas.

EXTENSION / REDUCTION ACTIVITIES:

See media section:

- Encourage students to explore the different platforms and tools for making videos
- See the media section – Flipped classroom Get the students to watch the two storyboarding videos and begin to create a storyboard of their video using post-its – this will help with class 2

REFLECTIVE EXERCISE: 3-2-1 using coloured post-its

- Three things they feel they have learnt from the exercise
- Two things they found most interesting and would like to explore more
- One – their opinion they have about the site / exercises

The Ocean Literacy Module – overview sample is a self-contained module that can also be delivered with the Problem to Pitch (P2P) module and the Marine Plastic waste supplement.

<https://www.codesres.ie/post/preparing-the-next-generation>



Ocean Literacy

SDG 14 14.1



Module includes

- 10 lesson plans
- Teaching and Learning Resources
- Media Links
- Links to Expertise

Figure 31 Ocean Literacy Module Overview

Ocean Literacy



Module Description: The Ocean is the blue heart of planet Earth and what allows us to survive on this planet. Having a better understanding of how important the Ocean is in our daily lives help us as humans to understand how we need to take care of it better. The module can be delivered as a whole over ten 1 hour lessons, combination with the Problem to Pitch Marine Plastic Waste module or as individual lesson plans to augment existing programmes of study.

Lesson 1: Introduction to Ocean Literacy – Understanding our connection with the ocean is vital to create strong links and passion for environmental stewardship. This lesson aims to increase the awareness of the ocean’s impact on us, and our impact on the ocean.

Lesson Resources include: Active listening task ‘Sea change – Increasing Ocean Literacy; Pre-task Quiz Connections; Pre Task Quiz cards; Video Link

Lesson 2: Ocean Connection and Positive Action - It is staggering to think about how our actions impact the ocean everyday. This lesson aims to show learners the direct consequence that a simple negative action can have on the the ocean and the life that exists in it, and the positive actions that can be taken to support the health of the ocean.

Lesson Resources include: Presentation; Scenario Game and Cards 1 – 14; Micro-beads in prawn images.

Lesson 3: Interconnectedness 1 - To encourage students to use observation skills to understand the interconnections between the land and ocean interface and human and ocean interface and further understand our influence on the ocean. Using inquiry based learning techniques the students will become more ocean literate. Understand the ocean network more and the importance of knowing the interconnections between land and sea and the ocean network.

Lesson Resources include: Interconnectedness presentation; Marine Food web image

Lesson 4: Interconnectedness 2 - In this lesson, students build on their observation observation to understand the interconnections between the land and ocean interface and human and ocean interface and further understand our influence on the ocean. Using inquiry-based learning techniques, the students will become more ocean literate, as they understand the ocean network and the importance of knowing the interconnections between land and sea, and the ocean network.

Lesson Resources: Quiz A – D

Lesson 5: Introduction to Ocean Pollution. This class considers different sources of pollution with a focus on plastic pollution; how it reaches the ocean, where it comes from and how we can all be a positive intervention. Building on previous lessons students will have an increased understanding of how inextricably interconnected we are and our positive and detrimental effects on the ocean. We will re-introduce the idea of mindfulness – how we can be mindful in certain moments and understand how it can influence our choices and how we can help stop pollution. Students will understand SDG 14.1 target better and how they can contribute.

Lesson Resources include: Pollution Presentation; Walking Debate resource



Lesson 6: Introduction to local coastal pollution 2. Students continue their consideration of different sources of pollution and how they can contribute to SDG target 14.1. By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution. Students will undertake a beach clean and through structured observation, data gathering and analysis will begin to understand the extent of the problem and upload their findings to the Litterati App. An indoor / non- beach accessible alternative lesson is also offered.

Lesson resources include: Clean coasts data observation sheets

Lesson 7: Ocean Communication

In this lesson students will learn to understand how our actions can influence Ocean health and cause pollution. Mindful observation and evaluation and solution based thinking students can imagine what we can do to stop ocean pollution in the ocean.

Lesson resources include: Video links

Lesson 8 and 9 Bio-mimicry: Biomimicry is the science and art of imitating nature/life. In these lessons students will focus on how we learn from nature, how nature influences design and how we can continue to learn from nature if we take the time to observe and understand. Students are encouraged to understand the importance of the ocean and nature and how it inspires solutions to serious problems. The lesson promotes an understanding of nature's influences on our lives and how inextricably interconnected we are with nature, how we are part of nature and not 'apart' from nature. Using nature-based mindfulness, students will experience mindful moments that can enable us to be more creative, help memory and reduce stress especially if and when practiced in nature. In combination with creative and solution based thinking students will explore how nature can inspire design. Students will build on previous skills learnt e.g. eco-design thinking to ideate a creation based on what they have learnt in class inspired by the nature items available.

Lesson resources include: Biomimicry presentation; worksheets; video links

Lesson 10: For students to reflect on what they have learnt on SDG 14 module over past 6 lessons. Where our place is as ocean citizens. Ocean optimism. Observation and evaluation. Using solution based thinking and creative thinking students can commit to helping the ocean and pledge to help ocean health.

Lesson resources include: Quiz worksheet; Web and video links

Linked learning:

- SDG 4 Quality Education Problem to Pitch generic project management module with supporting resources.
- SDG 14 Life Below Water Problem to Pitch Fishing Net and Peripherals focus

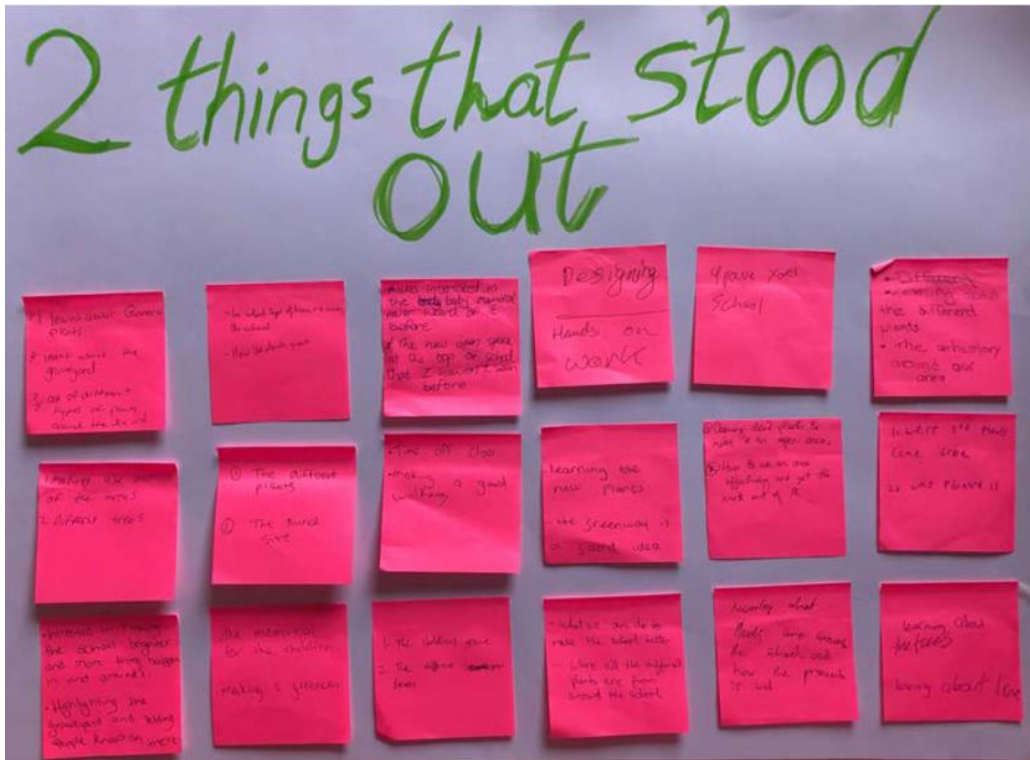


Figure 33 Sample of Student Feedback – 2

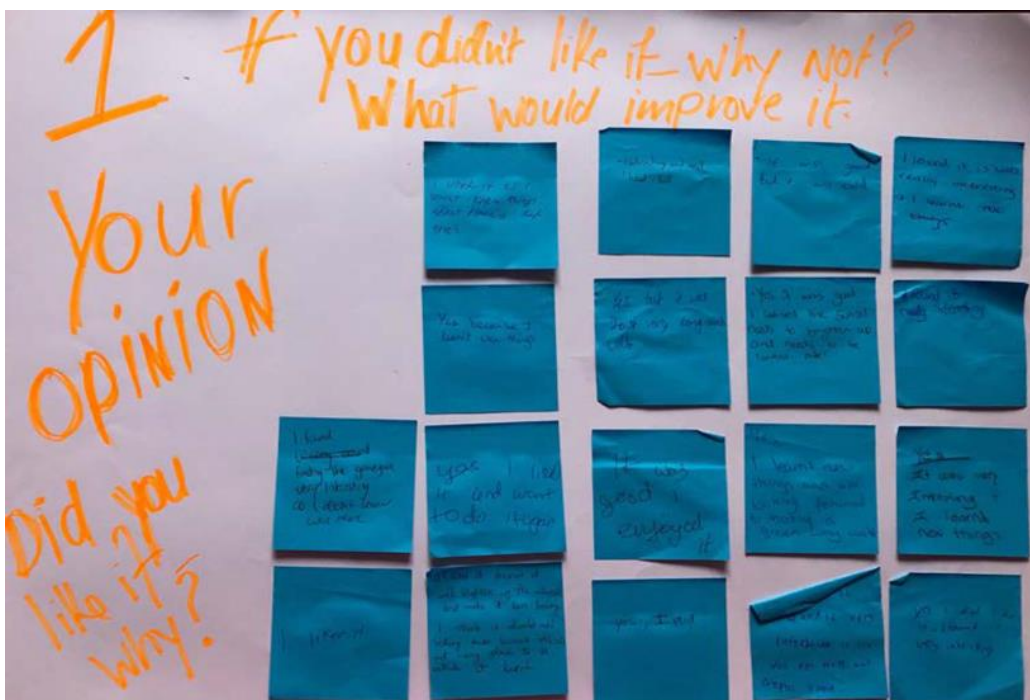


Figure 34 Sample of Student Feedback - 1

- It was very interesting and I learnt new things.
- Yes, it was good. I realised the school needs to brighten up and needs to be looked after
- I loved it, it was really interesting and I learnt new thing

Problem to Pitch

Over the course of 5 days, 9.30 - 5.30p.m. the TY students were introduced to real-world problems, through an in-depth practical analysis of the issues using the pCr methods and design thinking. Through the structured deep audit of the problem, the students and team members amassed knowledge about the problem from multiple perspectives. Then through consideration and discussion they began to drill into the various aspects of the issue, analysing their findings and undertaking a life cycle analysis of the problem; considering inputs processes and outputs to see where there may be opportunities for additional design solutions. *For an overview please visit <https://www.codesres.ie/post/from-problem-to-pitch-design-challenge>*

...I especially like the slide about the benefits of participation, one of the benefits I found during the week was I learned how to identify and understand problems that affect me in my day to day life. Thank you so much for organising certificates and for such an incredible week!

Extract from Student - Problem to Pitch week-long intensive

Extracts from Teacher Feedback

... as a science teacher I am used to teaching subject matter and getting students to learn the important points as they might come up in the test but I think using the different methods and resources aids teaching and learning in a number of different ways and affords opportunity for all types of learners to engage and contribute.

... I have learned lots of new methodologies. It's much more rewarding when the students are interested and engaged and it really helps to have resources to put this scaffolding in place. It allows them freedom to explore their idea while also keeping them on task.

Extract from TY Science Teacher feedback, Coláiste na Sceilge

...I have found working with Anita and the team to be extremely resourceful throughout our process of engaging with my TY Geography students. They have a modernised viewpoint which helps connect with the thoughts and feelings of the students when working with them. It was great to see the level of detail included within their lesson plans and the outline of the SDG's within each micro-module makes it much easier for us as a school to reach our targets in teaching students about these factors.

...It has added something different to my student's current daily timetable and allows them to be creative and imaginative. The approach has been very well accepted by the students and I hope to work on many more projects with Anita and her team going forward.'

TY Geography Teacher Feedback, Coláiste na Sceilge

Once again, this year Anita I'd like to take this opportunity to thank you for your support and guidance and indeed invaluable expertise in your work with our college. Our shared interest in promoting community health and resilience and educational strengths and opportunities was never more important than the challenging times we now find ourselves in...

Principal, Coláiste na Sceilge

What does student-led learning look like?

- group work
- Visualisation
- Computer quizzes
- get other students in the class to do the teaching
- making it as practical as possible.

What motivates you to learn? What encourages you to get involved in an activity?

- Groupwork
- No pressure
- Interesting
- Not boring
- Quizzes
- Nice teachers
- Going Outside.
- Fun
- Interactive

We also undertook a World Café session with each of our classes and a focus group at the end of the year with twenty student participants.

What are barriers to your learning?

- During the school day?
 - At home?
 - getting tired
 - bored
 - Cold in school
 - lack of energy to keep focused
 - bad explaining - teachers
 - moves onto next topic too fast
 - don't understand homework because the topic wasn't taught properly in school.
- both due to low motivation
→ tired all the time*

Why did you decide to do TY? Is the year what you thought it would be? Why/why not?

- Break from Study
- Thought there would be more activities
- To do work experience
- Go on trips
- No homework
- Not as much stress

Figure 35 World Café interim assessment sample

5.2.2 Place-based collaboration

CoDesRes' was positioned across education and community, which facilitated the potential to trial collaborations and partnerships, particularly across areas of shared interests. CoDesRes brokered a partnership with Cahersiveen Tidy Town's and Colaiste na Sceilge's. However, the ambition to work together was thwarted due to Covid-19. It is hoped that the proposal below can be co-delivered through the school's Green School team, staff and students, Cahersiveen Tidy Town's and the Muinín Catalyst's ongoing programme. Some of the campaigns were built into the Green School's programme and plans. Through the legacy project, Muinín Catalyst's proposed development of in-service learning, in combination with the school's ambitions to operate as a community well-being hub: avenues for this to be delivered are ensured.

Horticulture

1. CTT can donate a 200 L rotary composter and 100L water butt – or the approximate - around EUR 150 worth
2. CTT could donate the cost of building a wormery out of marine ply, which could be a project for a woodworking class. CTT can share designs.
3. CTT interested in working with <https://stopfoodwaste.ie/resources/composting> and the school to support the creation of a composting section in your horticultural area – highlighting as an educational tool the different ways to home compost – and could contribute to the cost of materials to do this. Leaf Moulds, Palleted Turning Systems, Holding Systems, Compost bins etc with good quality robust signage in quite a tidy space

Stop food waste can give talks about composting, both garden and food waste including food waste in the home. CTT could sponsor hiring 'Stop Food Waste' for a day so that they could address a few classes. Within this organisation there is scope for a class to do a food waste challenge where they monitor their food waste at home (workbooks etc). This could build on the school's own composting including a series of talks on food waste. Stop Food Waste provides lots of resources on these issues online and in print that could be used.

<http://stopfoodwaste.ie/resources-download/composting/all/all/date>

4. CTT can donate trees for areas where you can increase your tree or native shrub cover.
5. CTT could provide materials to enrich a plot for horticulture classes for a school community garden plot. CTT could support a system of raised beds – tyre planters – with a reusing / repurposing materials theme. Seeds/plants can also be subsidised.
6. Dedicated areas for pollinator planting – wildflower patches – perhaps areas of the lawn to be used and signposted along the lines of 'what you can do with your lawn' – to move away from lawn monoculture – would donate perennial indigenous flowers/ herbs/shrubs to increase the habitat for native bees/butterflies/birds – perhaps creating a little enclave/installation – with insect hotels, bird feeders, planting for pollinators – all using repurposed materials – would donate signage as well.
7. Raw materials for a pilot project on organic pesticides (vinegar etc) and fertilisers (seaweed/nettle soup barrels etc).
8. Promoting Grass-cycling – in certain areas of lawn

Events

1. Hosting a Swap Shop and Sustainable Fashion Event. Open with a short film and talk by people in the fashion industry while students swap their own donated clothes and pick out 4-5 to take home – it could be done in school time or made into an evening event and

include parents and members of the public. CTT could do the bulk of the organising or maybe students would like to collaborate and get some event organising experience. We would subsidise the cost of bringing the guest participants and on the entry price.

2. St Patricks Day Event
3. Biodiversity Week (in May)
4. Beach Cleans or Litter Blitzes around the town – CTT could subsidise refreshments at the end of them.

Campaigns

1. Recycling Crisp and Sweet Packets. The school can create an account with Terracycle <https://www.terracycle.com/en-IE/> We donated a bin last summer to the school to start a crisp package scheme but we are not sure that took off. Terra cycle has now started a sweet packet scheme as well – these are great projects for year groups to take responsibility for – but failing that TT's could come and monitor and collect from the bins. The school builds up points that it can cash in. Crisp packets are sent in 2KG + packages and sweet packets are in 1 KG + packets. Walsh's Supervalu is already participating and it has been going quite well.
2. Say no to plastic campaigns - <https://www.foe.ie/takeaction/break-free-from-plastic/> working with businesses in the town to highlight alternatives to plastic bags – perhaps smaller 6-8 week campaigns such as encouraging 3 pizza operators in the town to reduce the use of plastic plug in pizza take-outs. This could be class based projects planned and finished within that timeframe, to take in consumer surveys, information leaflets to put up at counters etc. <https://www.saynotoplastics.com/> <https://www.foe.ie/sickofplastic>
3. Campaigns around water usage – think before you flush www.thinkbeforeyouflush.org
Greener Cleaning, Greener Gardening

5.2.3 Problem to Pitch

What is the 5 Day Problem to Pitch design Challenge

Over 5 days students are taken through the Design Thinking process through practical activities focused on a real world problem in this instance – Marine Plastic Waste. Problem to Pitch has been structured to lead students through the process of identifying the problem, working through the problem and developing ideas presented in a Dragon's Den Style pitch.

The Design Thinking Process



Students will gain

- experience working with an interdisciplinary research team
- hands' on Design thinking experience
- learn about Cradle-to-Cradle design, Circular economy and Biomimicry
- contribute to real-world solutions
- gain experience in presenting ideas and pitching products
- 3D printing / prototyping experience

Problem to Pitch Overview – this can be adapted to suit context

Monday - Day 1 - Empathise and Define

- 9.30 am x 30 min Introduction: intro to week
- 10am Intro to the problem - brief group discussion input from all present - to define problem
- 10.30 - 12.30 (break at 11.30ish) OBR worksheets - defining problem landscape
- 12.30 - 1pm 'What's out there' pinterest review, R & D quest / analysis
- 2 - 3.45 pm OBR worksheets - continue defining problem landscape
- 4 - 5pm 'Worst idea ever' activity

Tuesday - Day 2 - Ideate

- 9.30 am 30 mins quick fire share each group of previous day - see summary sheets
- 10am - 11 15 - Bio-mimicry intro - use worksheets (Anita) - R & D quest / analysis
- 11.30 – 1pm Cradle to Cradle / Circular Economy intro (All) and start task using OBR, Zoning and life cycle analysis - worksheets)
- 2 - 4pm pm Continue Cradle to Cradle / Circular Economy task using OBR
- 4.30 - 5.pm - Introduction to Pecha Kucha pitch task for end of the week – incl. LEAN canvas and task management

Wednesday - Day 3 Evaluate

- 9.30-11am development documentation ideas
- 11 15 quick fire share review of Tues trip / visit context dependent
- 11.30 - 12 use feedback and group analysis to select ideas for all team members to work on in small groups - teams / students mix
- 12 - 1pm The Remix incl Biomimetic remix - Anita to introduce the remix 'game' each group work on 3 - 4 versions for paper designs / ideas /
- 2 - 3.45 pm continue The Remix - x4 on paper designs / ideas
- 4 - 5pm - Group Problem-Solving / feedback on designs

Thursday - Day 4 Prototype - work on prototype and develop pitch

- 9.30 am 30 mins quick fire share - each group presents selected designs to prototype
- 10am - 5pm - spend the day prototyping breaks as standard
- throughout document the day for pitch and Q/A for pitch

Friday - Day 5 Test - test idea with Team through presentation

- 9.30 am 30 mins Review of Pitch task
- 10 - 3.45 pm Dragon's Den Pitch prep, breaks as standard
- 4 - 5 pm Dragon's Den Pitch x15 mins per group including feedback
- Week round up



Figure 36 Blank Design Challenge Certificate

DESIGN CHALLENGE 'PROBLEM TO PITCH'

Local Work Experience Opportunity



Dates: tba

To be delivered either as a week intensive or 3 day with follow up ses-



Work with artists, engineers, marine biologists, sustainability experts to gain experience in Design Thinking and creative approaches to problem-solving

COLLABORATION AND TEAM WORK

RESEARCH AND DEVELOPMENT

PRODUCT DESIGN, PROTOTYPING AND 3D PRINTING

Using the real world problem of synthetic net waste in the fishing industry you will work through the full design process; considering the problems, looking at solutions and creating prototypes.



If you have questions or want to apply contact:
ss.netreuse@gmail.com (Eleanor Turner)
a.mcKeown@ucd.ie (Dr Anita McKeown)

**To find out about the whole project visit:
www.seasynergy.org/ssnetreuse/**



Figure 37 Transition Year Problem to Pitch Students' Information

TY Work Experience 2019 - STEAM Design Challenge with MARplas Sea Synergy team



5 day STEAM Design Challenge

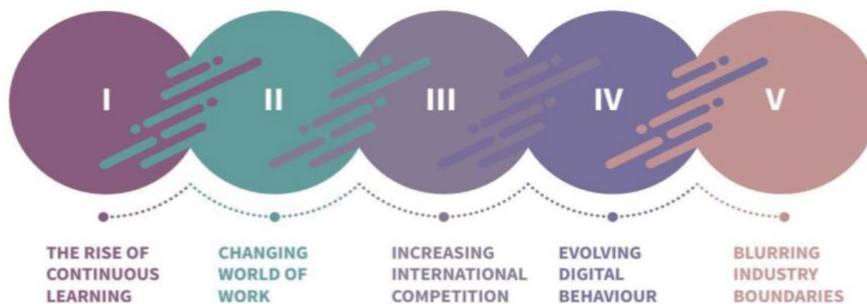
We are pleased to offer a specially designed week for TY students as a local work experience option. Students will work as interdisciplinary Research Assistants, experience the full process from 'problem to pitch' and while learning key future-ready skills.

Why does this matter?

Creativity will become one of the top three skills workers will need. With the avalanche of new products, new technologies and new ways of working, workers are going to have to become more creative in order to benefit from these changes. Future of Jobs, World Economic Forum report, Davos 2017

100% of jobs are no longer done the way they were done five years ago. This transformation is rapidly increasing with new previously unimaginable jobs emerging and the increase in Robotics and Artificial Intelligence. We are on the cusp of the Fourth Industrial revolution characterised by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres. This will impact on how we live, work and relate to one another and we want to insure students are future ready, as a range of new skills are necessary.

A recent report from the government advisory Expert Group on Future Skills Needs <https://enterprise.gov.ie/en/Publications/Together-for-Design.html> has shown that Digital, Product and Strategic design skills will be in high demand in the future.



Problem to Pitch leads students through the process of design thinking introducing students to real-world problem-solving, moving from STEM to STEAM by encouraging critical thinking, applied knowledge, adaptive skills and innovation. Transferable skills that will help students be future-ready, for their future life and career, whatever they choose! Students will work with artists, engineers, marine biologists, sustainability experts, and local fishing communities. All experts in their field who are excited about passing on these skills to the youth of South West Kerry.

Spaces are limited so early sign up is necessary. if you have any questions or to sign up please contact **Dr Anita McKeown - ss.marplas@gmail.com**

Figure 38 Problem to Pitch Parents' Information

6. Work Package 2 Vital Signs Matrix Evaluation

The following table presents the breakdown of the Vital Signs Matrix and the project’s indicators of success as it pertained to WP2. These include

- Building a Micro-ecology
- Strategic Intervention Tactics
- Re-seeding Local Knowledge
- Re-situating Art, Design and Culture

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
<p>Building a Micro-Ecology</p> <p>SDG 4 – quality education TY and Early learning that can be scaled up for other levels or community</p>	<p>The team began to build on professional relationships with the staff and map local organisations and practitioners that could contribute to learning as local faculty.</p> <p>CDR took over responsibility for the Green School programme and developed a committee and 4 action plans - Litter and Waste, Marine Citizenship, Energy and Water</p> <p>Increased SDG engagement within CnS with other teachers / subjects (7) and with 2 more schools.</p> <p>In year 2 including x3 Fermentation classes, embedding an SDG scavenger hunt within science week and sharing 34 bespoke SDG slides within ETB Take One week, shared via central screen for the whole week</p>	<p>Contributing to the St Patrick’s day parade, by developing a float that had involvement from three years, 5th year - Leaving Cert Applied (LCA), Transition Year (TY) décor and performers, First years, performers.</p> <p>Staff and school engagement has increased year on year with the SDG projects. Projects that integrated different school years with Tidy Towns were proposed for the spring term but these were cancelled due to COVID-19</p> <p>Increased knowledge and understanding from those we worked with evidencing the key aim of the pCr methodology - seeding the inclusive fitness metric into work we have undertaken with the groups and individual s we have worked with. This enabled the team to reduce the level of intervention towards a more supportive role rather than initiatory role, sustaining the overarching objectives beyond the project’s original end date.</p>	<p>The Leaving Cert. Applied cohort created a float themed to SDG 14 and used this as their year one project. This included project development, management and implementation, budgeting and fiscal awareness.</p> <p>Confirmed Additional Funding raised:</p> <p>50K CPL / Living Iveragh to develop CDR work academic year 2019 / 20</p> <p>Ongoing conversations with the Irish Language Officer is exploring future funding for translation of the beta toolkit.</p>

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Strategic Intervention Tactics	SDG Curriculum Development / Work Experience	Work experience offers insights into progression routes to employment and academia – 1 student is looking at Marine Biology at UCC or Ecology at IT Tralee, 1 student at illustration and 1 student at Design – branding and graphics.	Educational programme - devised to contribute long-term to the national TY programme and building students' capacities to enable them to impact on the economic future of the region by challenging perceptions and showing tangible opportunities and developing 21st century skills.
SDG 4 – Quality education TY and Early learning that can be scaled up for other levels	Increased engagement within CnS with other teachers / subjects		
Future of Work	The FOW symposium sought to show areas of growth within STEAM fields including sustainable development and climate concerns.	The FOW aimed to showcase local exemplars of sustainable practice and innovation and speakers were sought to highlight and affirm the challenges as well as show possible areas for solution and growth.	Although the FOW was not to generate tangible revenue, the value of the event - a unique knowledge sharing event from industry and education, was able to leverage the CDR partnerships and local resources to create a quality event within a context that would never normally be achieved or delivered
Problem to Pitch	<p>The Design Thinking and Marine / Ocean Literacy modules has developed the students' awareness and capacity around environmental issues including their responsibility and opportunities for agency e.g. 2 class beach cleans gathered 42KG and showed them how to manage the plastic through the local council's collection processes</p> <p>The Problem to Pitch, Design Communication module and the StoryBank series developed students' awareness and capacity around environmental issues including opportunities for agency and a foundation to integrate 21st Century learning methods</p>	The impact on the students and the location came through their awareness of what's possible in the area as well as what's missing and what / how they can change this. More exchanges happening across disciplines and contexts including the awareness of the potential of place-based STEAM education to engage local expertise in new contexts and practical collaborative approaches to learning and development.	<p>The programme has aided the embedding of STEAM in the school and the 2020 year-end awards were organised by STEAM subjects https://www.facebook.com/watch/?v=890160568169619</p> <p>Successfully developed, trialled and iterated a series of modules, activities and teacher resources for the toolkit. Now developing this with coherent design. Longer-term impact on the students and the location could be seen in the broader consideration of subjects for Leaving Cert and college courses particularly a STEAM pathway with discussions on VR, AR and Robotics and the impacts on the future of work.</p>

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Re-Seeding Local Knowledge	<p>The CDR programme introduced environmental issues more in depth than lessons many of the students had previously had. The Design Thinking programme, incl. presentation skills, graphic communication and Problem to Pitch brought 21st Century skills and design thinking into post-primary education. The modules we devised and tested with the teachers have supported them to integrate the SDGs into their subject areas,</p> <p>Also, the PI met with a group of students (2nd years) who were choosing to teach their class about the SDGs as their assessment project</p>	<p>We were able to place 2 TY students through CDR networks; Red Dog Design / CTT and 4 students have selected Leaving Cert. subjects based on their work placements with the CDR team and two of the students from year one were accepted to Limerick IT- Art and design.</p> <p>Integration into other aspects of the school and subjects beyond the TY programme have given tangible examples of collaborative linked learning. Collaborative processes that offer opportunities to create new relationships with the school and the town are in place.</p>	<p>The St Patrick's Day LCA float won second place winning €300 euros. This was a big achievement and challenged the students own perception of themselves and the potential of Art and Design.</p> <p>Input from Kerry Energy Co-op included a PhD student working for Fexco, a large local employer on sustainability. This expanded the students' understanding of localised employment opportunities.</p> <p>The SEAI cohort had the benefit of Portmagee-based James Murphy's knowledge - Director of a Dublin based media production company through his role with CDR as WP4 co-lead.</p>
Re-Situating Art and Design / Culture	<p>SEAI One big Idea competition - 25 students took part in the competition using the media resources developed.</p> <p>Problem to Pitch, has been delivered in Donegal and soon to be Cork / Galway through MARplas.</p> <p>Impact on the schools' outlook by integrating into other aspects e.g. Green Team, Green School</p>	<p>Opportunities to work across all years in the school and with different subjects e.g. construction and the arts. Further, ongoing module development and teachers' delivery is encouraging teachers to reach out to us to support them to integrate the SDGs into their subject areas e.g. Home Economics, Irish and Horticulture.</p>	<p>The group selected for SEAI regional finals received intensive training in media production, project planning, scheduling, filming, editing and social media campaigning.</p> <p>They have gained important marketable and transferable 21st century skills that include Art, Design and Technology through the media production process and developing and implementing an awareness campaign</p>

Table 7 Work Package 2 VSM Evaluation

7. Work Package 3 - Vital Signs Matrix Evaluation

The following tables (7.1 – 7.4) presents the breakdown of the Vital Signs Matrix and the project’s indicators of success as it pertained to WP3

7.1 The Vital Signs Evaluation Matrix – Building a Micro-Ecology

Core VSM Indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
<p>Building a Micro-Ecology</p> <p>SDG 11, 14 and 15 Jan – June 2018</p> <p>Phase 2 July 2018 – Aug 2020</p>	<p>Developing key partnerships to encourage them to work more sustainably and investing volunteer time to expand their activities e.g. developing Conscious Cup and Last straw campaigns, wildflower planting, Beach Cleans, Grow your own / hedge school and street feast.</p> <p>Initiated Transition Iveragh and Transition Skellig Coast group - co-hosted launch / open day Feb 10 with Asana, local GIY group - Hedge School launch as well as tree--planting for national tree week and launch of CDR and dissemination of CDR contact details and social media. This further Identified new pathways in existing networks that increased engagement with local issues around sustainability. Also introduced new contacts e.g. Atlantic Seaweed later included in the edible-medicinal trail.</p> <p>Developing additional partnerships for youth and education work e.g. CTT.</p> <p>Supported UCC student to undertake biodiversity and sustainability report for CTT.</p>	<p>Increase in engagement to activities bringing social interaction and an Increase in group numbers encouraging self-organisation and alleviating burn out.</p> <p>Initiated Transition Iveragh and Skellig Coast: 8 people</p> <p>Climate action workshops: 20</p> <p>CTT: 3 people and created a Clean Coasts group Beach Clean: 52 Street Feast:78</p> <p>Wildflower planting: 8</p> <p>Community Launch: 88</p> <p>Increase in engagement to activities bringing social interaction and increased group numbers for self-organisation and alleviating burn out.</p> <p>CTT: 2 new members who also got involved in Spookemon and the Grotto.</p> <p>Increased knowledge and understanding from those we worked with evidencing the key aim of the pCr methodology - seeding the inclusive fitness metric into work we have undertaken with the groups and individuals we have worked with. This enabled the team to reduce the level of intervention towards a</p>	<p>€29K Additional Funding raised linked to project team expertise</p> <p>BIM Tender 24.7K Waste 2 Taste – €2K Living Iveragh - 2K Water / Communities €300</p> <p>In Kind support – approx.: €13.9K</p> <p>NAISC PI in residence - €10k</p> <p>€2.1K dedicated Office / Media Space, Cahersiveen Library</p> <p>€1.8K p.a. Press and promo x2 regular features in South Kerry Advertiser distribution -- 6000 copies per month for 1 year</p> <p>MARplas – EPA Green Enterprise €75K additional funding raised and placed in Sea Synergy</p> <p>€200K Ballroom Project, RRDF placed in Living Iveragh</p> <p>In Kind support – approx.: €9K</p> <p>€1.3K Studio space Acard LTD / Old Barracks Cahersiveen</p> <p>€2.1K dedicated Office / Media Space, Cahersiveen Library</p> <p>€2.1K Portmagee Development Group, CE Community artist to implement CDR in</p>

	<p>Developing and expanding partnerships supporting youth and community education - Living lveragh, CPL recruitment and KCC libraries</p> <p>On- going developments with opportunities for interdisciplinary research and education / community activity</p>	<p>more supportive role rather than initiatory role enabling the overarching objectives to extend beyond the original project e.g. CTT.</p> <p>The team's level of intervention is reduced with residents initiating events e.g. CTTs increased engagement with the SDGs included Love the Earth, St Valentine's day masked / costume ball Caherdaniel River Project and the school's increased activities.</p>	<p>Portmagee village and in Cahersiveen 1 day per week.</p> <p>€3K - NAISC Skellig Diaspora Network – additional admin / project support</p> <p>St Patrick's day - €500 and €2.3K additional funding to support development of CRR's natural and cultural heritage strategy.</p> <p>In Kind support – approx.: €12K; €6K - Year 2 continued in Kind office / utilities and</p> <p>€3506 - 16 days state of the art video conferencing equipment and room KCC</p> <p>€1.5K - Portmagee Development Group, CE Community artist to implement CDR</p> <p>€1K Press and promo regular features in South Kerry Advertiser distribution 6000 copies per month;</p>
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Table 8 Work Package 3 VSM - Building a Micro-ecology

7.2 The Vital Signs Evaluation Matrix – Strategic Intervention Tactics

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
<p>Strategic Intervention Tactics Jan- June 2018</p> <p>SDG 14 and 15 in the parade SDG11 - community participation</p> <p>SDG 4 – quality education Early learning that can be scaled up for other levels</p>	<p>St Patrick's day STEAM community curriculum -- SDG 15 Life on land, Life cycle, Systems, bio-diversity using the Hungry caterpillar.</p>	<p>Puffins nursery sessions -- 22 people 4 Early Learning educators and 18 children. Puffins children, family and educators entered a large walking group into the parade and won first prize</p> <p>Parade figures; 350 (26 floats + 3 walking groups Attendance: approx. 700 also created night-time parade that enabled teens and families to take part</p>	<p>Puffins donated their prize €1000 to the Community Centre</p> <p>An additional €500 for parade musician</p> <p>An additional €2000 for the Seanchaí included</p>

		<p>when usual offerings are pub-based</p> <p>X10 sessions 25 people – core group 9 people for 10 sessions + 1 session, 15 people at Cunamh, a local mixed ability day centre</p>	<p>parade development, MC'ing, snake building and event co-coordination. Also themed workshops due to parade SDG themes with Cunamh Iveragh provided local artist with additional income. In year 2 Cunamh won first prize €500</p>
	<p>May the 4th Be With you Educational 2018</p>	<p>Arts-led adaptation and mitigation workshops for 2 - 11 years old</p>	
<p>Strategic Intervention Tactics Jul - Dec 2018</p> <p>Using local festivals to develop community participation with SDG 11</p>	<p>Culture Night: Launch of BIM project and used this to gather stories from audience for StoryBank - New Stories for Old Rope</p> <p>Spookemon 2 SDG 11 – Jack Shadow Inc also SWFRC window display</p> <p>Re / Upcycled Santa's Grotto</p>	<p>Increased the story trail sites from six to thirteen locations with a linked story and performers that utilised the location and a bespoke narrative to encourage the audience to confront their own monsters / demons – issues around economic decline, depopulation and employment opportunities.</p>	<p>€400 in local support and with ticket sales and further in-kind support from the venue and CE scheme, the project was self-sustaining and in addition was able to pay 15 community performers €50 each. About 50% of the performers donated this money back for ongoing education and engagement.</p> <p>Cahersiveen trader's paid €800, co-lead artist's fee which was further subsidised by CDR PI and donations from Spookemon.</p>
<p>Strategic Intervention Tactics Jan - Jul 2019</p>	<p>Piloting methods integrating SDG and environmental themes and activities for festivals that engaged children and adults in fun, accessible, yet impactful ways</p>	<p>St Patrick's Day / May 4th thematic intervention within local festivals as a means to engage with SDG 4, 11,14,15 community participation and creativity develops a foundation for knowledge exchange, interaction and networking.</p> <p>Hosting the StoryBank exhibition during Heritage week trialled a second intervention as a means to engage with SDG 4, 11,14,15 community participation and creativity to develop a foundation for interaction knowledge exchange and networking.</p> <p>Through the Earth</p>	<p>Additional independent revenue for artists - €500 for Seanchaí developing workshop and €500 for musician Performance fees at the St. Patrick's day parade</p>

	The PI is the first artist to be invited to join within UCDs Earth Institute and has presented twice within this context increasing visibility for exchanges across disciplines and contexts including the awareness of the potential of place-based STEAM education to offer new contexts for research expertise and practical collaborative approaches to learning and development.	Institute the PI has worked with a number of UCD colleagues forming cross / transdisciplinary collaborations. This included a successful SDG 11 / SDG 13 inter-disciplinary project, proposed by architects, ecologists and artists with TY education in Dublin schools, on hold due to ongoing COVID-19 restrictions	Also, through the PIs engagement with the Earth Institute and the Irish Soil Society there has been invitations to develop research bids and UCD seed funding applied for. This was successful but was also delayed due to Covid-19 and was put permanently on hold due to ongoing restrictions.
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Table 9 Work Package 3 VSM - Strategic Intervention Tactics

7.3 The Vital Signs Evaluation Matrix – Re-seeding Local Knowledge

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Re-Seeding local Knowledge SDG 11, 14 and 15 Phase 1 Jan 2018 - June 2018	Engagement with landscape architect, computer technician and our partners, Acard Ltd., Portmagee Development Ltd and Cahersiveen Tidy Towns and Traders has expanded the potential and capacity of CDR and the projects it can develop.	Extending reach through Portmagee partnership -- STEAM projects March 2018 ongoing; Local Nature Encyclopedia and Portmagee School garden PI attendance at the community SDG public stakeholder forum developing contacts within the national SDG ecology .	Seactáin na Gaeilge - Scoil an Gleanna independent paid work for Irish speaking artist and STEAM curriculum, SDG14 Life below water Community Artist on CE scheme adds approx. €2.1K in-kind increasing capacity of project and brought skills in to the project that vastly exceed this value
Re-Seeding Local Knowledge Jul - Dec 2018 SDG 4,11,14 and 15	Team members leading on other projects through the development of their skills and mentorship within the project – MARPlas and SME visible as a research organisation. The knowledge of the team, who were already living in the region was embedded in the local landscape through projects and the education programme and has impacted upon the existing behaviour of our partners’ actions e.g.	We have increased the efficacy of the projects and research through engagement and integration of local residents existing capacity. This in turn enabled the team to support ideas that might encourage behaviour change and new ventures e.g. discussion with local resident about setting up a Library of Things to compliment the equipment library. We also incorporated local	BIM tender – state agency funded project management experience and local SME’s potential as a researcher partner increased through tangible success Spookemon’s core creative and management team was increased with the addition of Liz McGuire, a CE scheme employee at the Old Barracks bringing in additional expertise of local contacts to the project. Working with the team added creative placemaking

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Re-Seeding Local Knowledge Jan - July 2019 SDG 4,11,14 and 15	<p>collecting materials for the grotto, saving the grotto for the following year, impacting on buying decisions by the traders in relation to the event</p> <p>Embedding local natural heritage through plant-lore enabled residents to explore natural low-impact alternatives to a range of projects; cleaning, medicinal, edible, pest-control, cosmetic and well-being. This develops an appreciation for a broader understanding of plants often considered weeds and encouraged additional support for preservation and creation of locally biodiverse areas</p> <p>Data from the walks e.g. species we discovered was uploaded to the Biodiversity website</p>	<p>knowledge into Spookemon's story, both in the development of the overarching SDG 11 aims and what each performed brought to the part or their performance location.</p> <p>Both the edible-medicinal walk and the Seaweed tasting event formed the foundation of a number of new social relationships and encouraged new initiatives around sustainable food and green spaces with attendees from Valentia, Waterville, Portmagee as well as Cahersiveen.</p>	<p>project experience to Ms. McGuire's CV increasing her experience that could contribute to additional work.</p> <p>Working with Atlantic Seaweed and Niall Hogan, herbalist has expanded CDRs knowledge network while increasing opportunities for revenue generation through the edible medicinal sculpture trail project and an engagement with the SDGs.</p> <p>Attendees at the Seaweed tasting event booked walks with Atlantic Seaweed as well as integrating them into a local food night in Waterville and stocking and selling their food products. The walk with the herbalist also brought new clients to him.</p>
Re-Seeding local Knowledge	<p>We have also engaged Fr. Patsy in the CTT ball to present the 'Thumbprint Campaign for Climate Justice' https://sma.ie/tag/thumbprint-campaign-for-climate-justice/ encouraging witnessed to sign-up to green initiatives. This will enable us to engage a different demographic with the SDGs and Climate action. Bringing in a new demographic from the church community offered opportunities to develop in kind support through volunteering.</p>		<p>The diocese has access to both in-kind and cash support that was utilised within community activities e.g. Cahersiveen Tidy Town ball Since Pope Francis' publication of the Laudato Si facilitates a new conversation for the SDGs with the religious community</p>

Table 10 Work Package 3 VSM - Re-Seeding Local Knowledge

7.4 The Vital Signs Evaluation Matrix – Re-Situating Art, Culture and Design

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Re-Situating Art and Design / Culture Jan - Jul 2018	<p>May the 4th Festival -- 6x STEAM Narrative, Design thinking and adaptation sessions / curriculum trial sessions.</p>	<p>May the 4th Intergenerational engagement -- ave. 13 per x 6 sessions Total 78 over two days. Year 2 - 39 over 1 day</p>	<p>Fáilte Ireland paid for additional artist (€500) and they and Skellig experience have</p>

<p>SDG 4 – quality education for intergenerational SDG 14 learning that can be scaled up for other levels</p>	<p>Seanchaí / Artist implementing knowledge of SDGs and pCr through the CE scheme contribution to CDR</p>		<p>requested we take part again next year. The project in year two was part of a much bigger event that included a number of activities running simultaneously with the pollinators workshop budgeted for within the programme, providing local artists with additional income opportunities</p>
<p>Re-Situating Art and Design / Culture Jul - Dec 2018</p>	<p>The Grotto challenged many of the conventional practices at Christmas and engaged the community through collection of materials and re-imagining the potential to celebrate the festival in more sustainable ways.</p>	<p>Spookemon increased performers from 6 to 15, all local residents and contributions from other local organisations enabling participation within their delivery and existing programmes. This increased the confidence to try new things in supported ways as well as encouraged organisations to re-consider new ways of working.</p>	<p>Spookemon participation was increased in the following ways: In Kind Funding - €1250 1. including a flash mob from the Ina O'Dwyer School of Dancing 2. Video projection project with KDYS as an education opportunity. 3. Fancy dress party hosted by Sean Constable.</p>
<p>Re-Situating Art and Design / Culture Jul - Dec 2018</p>	<p>St Patrick's Day parade / May 4th - encouraging discussion and consideration of ecological matters through arts and creativity within community and educational contexts.</p> <p>Caherdaniel River Restoration project</p> <p>Living Iveragh CATALYST project coalition</p>	<p>The uptake of the themes within the parade was greater this year and the number of floats increased. There was increased effort and confidence in being creative and organisations are now engaging more with an arts-led / creative approach and starting to develop their own initiatives and themes.</p> <p>Development of CATALYST project proposal that brings together a group of related entities to create a centre of excellence for place-based STEAM education and placemaking for early years to 4th level education, teacher training and research</p>	<p>There was increased understanding of the importance and potential of the arts, design and culture within community resilience, design and development evidenced by the increased financial and in-kind support we have achieved for place-based STEAM and arts-led regeneration.</p> <p>The value of CDR's work at a strategic level can be seen in the successful confirmation of a large space (a disused ballroom) in the centre of Cahersiveen at a peppercorn rent for 15 years to develop the CATALYST project - €225K this enables the team with the help of the community to create a large-scale arts / design, culture and education led capital</p>

			project that could generate a range of sustainable development activities in a rural community.
Re-Situating Arts Culture and Design	<p>Engagement with the Caherdaniel River Restoration project showed the local community how the SDGs were localised within their project and encouraged them to re-engage with the project and consider the goals, targets and policies.</p> <p>Our work with Acard and St Patrick's day, has encouraged Tidy Towns to host a SDG Love the earth, Love our Town, St Valentine's day masked ball as a fundraiser</p>	<p>The river restoration project engaged residents using pCr methods, which facilitated the sharing of knowledge that might usually seem irrelevant yet provided.</p> <p>They appreciated how the pCr approach re-invigorated the process and excited them about the potential of the group's activities by encouraging them to think differently and start to develop their own initiatives, with the support of the CDR team.</p> <p>For the CTT Ball we worked with Scoil Sadbhín to create masks for the ball using recycled materials and a Love the earth / Love your town Climate action theme</p>	<p>Additional revenue €4500 was secured for the CRR which supported the production of the report and artist fees, also through the Caherdaniel pilot project will increase employment of a local artist within a new context.</p> <p>There is increased understanding of the importance and potential of the arts, design and culture within community resilience, design and development evidenced by the increased financial and in-kind support agreed by the funders within the Caherdaniel pilot project to begin on completion of the strategy process.</p>

Table 11 Work Package 3 VSM - Re-Situating Arts, Culture and Design

8. Work Package 4 - Vital Signs Matrix Evaluation

The following table presents the breakdown of the Vital Signs Matrix and the project's indicators of success as it pertained to WP4

Core VSM indicator	Ecological (Earth Care)	Sociological (People Care)	Economic (Fair Share)
Building a Micro-Ecology	Utilised the concept of the edible-medicinal sculpture trail to focus the media cohort and mixed reality training	Seeded relationships that can be evolved to co-develop and support local projects	Developed a peer-to-peer network of local arts / artisanal producers through engagement with the CDR project. This will be further developed through the co-op housed within our new space.
Strategic Intervention Tactics	Initiated discussions on local representation of natural heritage and how media and technology can contribute to environmental awareness and representing local knowledge	The intervention and the partnerships created established foundations for future work and development of more sustainable use of resources.	Initiated the learning of new and transferable skills in media and rapid prototyping, which utilised the equipment booking system by community membership of the co-op's equipment library. The potential of this has yet to be met due to COVID-19 19 restrictions
Re-Seeding local Knowledge	Encouraged new relationships and opportunities and introduction to new possibilities for local representation	Integrated local knowledge and values into the project that will contribute to the AR content of the edible medicinal trail.	Increased appreciation and understanding of community knowledge assets as peer-2-peer skill-share network. CDR enabled access to media and engineering experts free of charge
Re-Situating Arts Culture and Design	Created a foundation and network to develop sustainable creative practices Expanded creative approaches to placemaking in the region	Extended knowledge of media and rapid prototyping through a localised network Incorporating localised knowledge in new and creative ways	Utilised existing resources to maximise potential e.g. Library facilities. Maximised the value of public sector funding for place-based STEAM educational opportunities.

Table 12 Work Package 4 VSM

9. Further Opportunities for Rural Development

9.1 Opportunities for Further Research and Development

Table 13 below offers potential opportunities for future research to contribute towards the strategic objectives of Project Ireland 2040, The National Marine Planning Framework and the National Rural Development Plan. The toolkits have been developed to enable the research's pCr praxis to be transferred to other locations, through place-based processes and global examples; the Global Goals project resources and the support for embedding arts / cultural-led approaches and research for creating new ways of thinking and doing about a problem. The aim is that these will be utilised and applied within community contexts to support some of the suggestions within the table below. Not all the suggestions will be viable however, the pCr tools support users to consider and develop SMARTER (McKeown, 2015) context-responsive solutions to local concerns.

Strategic Objective	Using Project Ireland 2040 and the National Rural Development Plan Strategic Objectives
<p>SDG 11 Compact Growth</p> <p>Target - 11.A Support positive economic, social and environmental links between urban, suburban and rural areas by strengthening national and regional development planning</p> <p>SDG 11 Strengthened Rural Economies and Communities</p>	<p>Update communications infrastructure e.g. reliable access (broadband and mobile coverage) to avail of clear examples and precedents of national remote working now established post Covid-19.</p> <ul style="list-style-type: none"> • Develop quadruple-helix (Local authority academic community and industry, partnerships to ensure that latest thinking on sustainability is integrated into development plans and task forces. Academic institutions delivering CPD to local authority departments and community organisations could ensure latest thinking e.g. Eco-brokers @ UCD Earth Institute, CoDesRes toolkit • Community organisation mentoring programme - developing ambition, confidence and competence on a local scale through skill shares with Institutions and harnessing Corporate Social Responsibility programmes in more structured ways aligned to the SDGs and climate action. Diversify the local economic base, through fostering entrepreneurship, providing training and up-skilling for entrepreneurs, supporting SMEs with embedded researchers and artists • In line with SDG 11 targets and concepts of degrowth, Consolidate opportunities for rural development that support a sensitive increase to capacity on a year-round basis, rather than the standard tourism model. Re-imagine sustainable tourism that brings people to the area for longer e.g. education and continuing professional development and experience tourism • Develop collaboration opportunities with the Tascfhórsa Uíbh Ráthaigh initiative (Iveragh Task Force Task Force, a strategic initiative to assist migration from the city. Plans include heritage and cultural experiences, particularly those associated with its Gaeltacht status with music, storytelling, crafts, landscape has much to offer within experience and education tourism. https://www.liveworkiveragh.ie/live-in-iveragh

<p>SDG 11 Enhanced Regional Accessibility</p> <p>11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons</p> <p>SDG 11.2 Sustainable Mobility</p>	<p>The EPA 2020 report – Ireland’s Environment – An Integrated plan Chapter 11 proposes an Avoid-Shift-Improve (2020, p297) hierarchy. On a practical level rural regions will need specific considerations, particularly infrastructure and creative methods. Covid-19 has brought alternatives into focus showing ways to minimise travel through virtual and decentralised systems. The CoDesRes project has shown this through its satellite status with UCD and by developing related employment opportunities new to the region e.g. embedded research. In situ two years before Covid-19 and the successful implementation of seemingly radical and untried alternatives e.g. national remote working; augmented online teaching. CoDesRes set out to consider how this might be feasible by considering a number of opportunities to develop new employment and tourism activities in line with national policies. This also applies to the next Strategic objective - Strengthened Rural Economies and Communities</p> <p>While greenways and the National Broadband plan are important infrastructure projects e.g. a national high-speed rail network is critical. Ireland is so small that an hours travel at high speed should cover most journeys and enable a national employment plan.</p> <p>Scheduled connections enabling links to national travel e.g. via rail and Bus Éireann, needs more consideration as rural communities often lack access to transport hubs. More connected timetables enabling them to avail of the tax saver commuter scheme, could encourage migration from the cities and in turn ease many of the issues cities are facing, as well as contribute to climate neutrality</p> <p>Creative and Imaginative solutions to rural transport issues e.g. car-sharing, car-pooling and a more connected service with incentives to leave cars behind e.g. tiered car tax rates and insurance discounts related to mileage.</p>
<p>SDG 11 A Strong Economy supported by Enterprise, Innovation and Skills</p> <p>11.A Support positive economic, social and environmental links between urban, suburban and rural areas by strengthening national and regional development planning</p>	<p>There are many enterprise and innovation opportunities as well as contemporary skills training that could be developed but this will need greater public awareness. Some examples to be explored are as follows:</p> <ul style="list-style-type: none"> • Provide and promote collaborative enterprise forums and spaces that facilitate and support local innovation and enterprise and draw on contemporary research on innovation and enterprise. • Invest in community businesses and the social economy, including community shops and markets through regular speakers and active forums that properly support contemporary approaches to innovation and enterprise e.g. exploring open source blockchain or co-operative models. • Increase the opportunities to consolidate and expand outreach links with third-level colleges and the localised delivery of ETB courses and programmes that are relevant to local eco-social development.
<p>SDG 11 Enhanced Amenity and Heritage</p> <p>11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage</p>	<ul style="list-style-type: none"> • Develop a national place-based STEAM / Placemaking centre of excellence that delivers an integrated approach across the SDG agenda and Project Ireland 2040, within research, education and community development. This would include exhibition and learning spaces – operating on eco-socio-economic principles to support and align with existing community, education and enterprise activities. • Create a national creative agency / team for Ireland that aligns with the Sustainable Development Goals and delivers on Project Ireland 2040 and National Climate Action plans. This could sit across, Creative Ireland, EPA, National Climate Dialogue / DCCAE.

	<ul style="list-style-type: none"> • Create a National Network of trans. and interdisciplinary creative practitioners as consultants, that are working with sustainability across Social, Environmental and Economics issues. <p>1.</p> <ul style="list-style-type: none"> • Employ Artist Scholar team to advise local authorities and government departments (Creative Ireland, EPA National Climate Dialogue / DCCAIE) to increase knowledge and develop creative solutions. This could be embedded within the Creative Ireland Network.
<p>Transition to a Low Carbon and Climate Resilient Society</p> <p>SDG11</p>	<p>Carbon Reduction through reduced travel - see sustainable mobility</p> <ul style="list-style-type: none"> • Encouraging working from home incentives to businesses - post COVID-19 solutions. High-quality ICT infrastructure will be necessary as many experience issues with cellular networks in the region. Importantly, developing the concept of remote working and new opportunities for such working practices needs to be grounded in the region – although there has been progression in this area due to Covid-19 restrictions and adaptations • Investigate the local potential of mixed energy solutions e.g. district heating, solar energy co-operatives e.g. the Kerry Energy Co-op, also Deelis Power station. The potential of decentralised energy options for rural coastal communities is necessary with some nascent local initiatives e.g. the hydro-electric co-op on Valentia Island, the Kerry Energy Co-op and other sustainable energy developments on islands in Scotland Scoraig, Skye and Eigg, Scotland • Examine the potential of rural retro-fitting of passive solar housing schemes, could create training and employment. High-level skills development in the regions would enable increased populations and alleviate the weight on cities through viable opportunities for rural living. This will need investment to change mind-sets and behaviour.
<p>SDG 14</p> <ul style="list-style-type: none"> • 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution <p>14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans</p>	<p>As a small island nation, Ireland's relationship with the ocean impacts every aspect of life and global systems this can be felt tangibly; water, climate, oxygen production, weather, our coastline with much of our actions impacting on the ocean, acidification, loss of biodiversity, marine pollution.</p> <ul style="list-style-type: none"> • Integrate Ocean Literacy into the curriculum • Encourage connection beyond 'a day at the beach' through a national focus and ocean literacy - this could be promoted further through FLAG funding and LA 21 funding. With the push for 30% Ocean protection by 2030, there are also opportunities for coastal communities to push for special areas of conservation, marine protected areas and engagement with campaigns e.g. Sylvia Earle's Hope Spots and the 30x30 blueprint for ocean protection • Encourage marine operators' to align to SDG 14 development of opportunities to increase their provision and their sustainability as well as impacting on their aims and increased promotion of the SDGs to citizens through their on- and offline audiences. • Develop incentives that encourage marine operators to promote ocean literacy and develop education programmes and • promote ocean literacy and develop education programmes and awareness campaigns for teens and adults. This could be in

	<p>collaboration with MAREi or Science Foundation Ireland</p> <ul style="list-style-type: none"> • Initiate promotion of MAREi through public engagement initiatives to encourage more public engagement programmes with institutions and researchers. Science communication and public engagement requires specific skills that not all researchers have or are trained in • Develop and promote of eco-tourism opportunities around sustainable fisheries and marine food production including inshore fisheries • Grow It Yourself garden aquaculture - individual and small scale integrated community co-operative initiatives research could be supported to develop models and ensure alignment to existing legislation and policy e.g. Natura 2000
<p>SDG 15</p> <p>15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species</p>	<ul style="list-style-type: none"> • Explore the development of continuous cover forestry at a local scale e.g. the Hollywood Forest - https://hollywoodforest.com or Akira Miyawaki's micro-forests https://bit.ly/31EkqWQ compact, 'pocket' forests planting native trees close together creating quick grow small-scale, biodiverse woodlands characterised by hardwoods / native species, accessible to recreational users. • Consider areas for rewilding • Explore viable farming incentives - carbon sinks and transition for the preservation of all boglands as carbon sinks, with appropriate payments to farmers for performing ecological systems services. There are native planting incentives from the National Forest Service, that could perhaps incorporate a micro-forest scheme.

Table 13 Opportunities for Further Research and Development

9.2 National Showcase for community groups - The Angelus SDG reflections

During discussion around national promotion on localising the SDGs (SDG forum, 31st Jan 2019), and with the DCCA, Dr McKeown proposed leveraging The Angelus reflections. As a platform, a focused national reflection could serve to embed the concept of the SDGs and show ease of implementation, while leveraging the weight of the Laudato Si (2015), to increase SDG engagement. The Laudato Si is the second encyclical of Pope Francis - the subtitle "on care for our common home" is an important message around for the current context of climate crisis, calling on the global population "swift and unified global action". <https://www.trocaire.org/our-work/working-in-ireland/parishes/laudato-si/>

Encouraging communities to contribute through promoting their SDG work e.g. 1 min presentations by Tidy Towns / PPN presentation would showcase their efforts and encourage others to take part. As with the link to the Public Participatory Network registration and local authority funding, tying the presentation into the PPN and State, Local Authority and Tidy Town funding or reporting requirements with a simple presentation template / resource for effective presentation shared through the DCCA would facilitate ease of participation.