Community Engaged Research and Learning (CERL) for Soil Health

Module for Higher Education Lecturers

Component 1/4: Introduction to CERL and Reflecting on Your Own Teaching / Curriculum

Dr Claire McDonnell, Technological University Dublin

Dr Emma McKenna, Queen's University Belfast

LOESS is an EU Mission: A Soil Deal for Europe project


THE MISSION'S OVERALL GOAL

Create a network of 100 living labs and lighthouses to lead the transition towards healthy soils by 2030
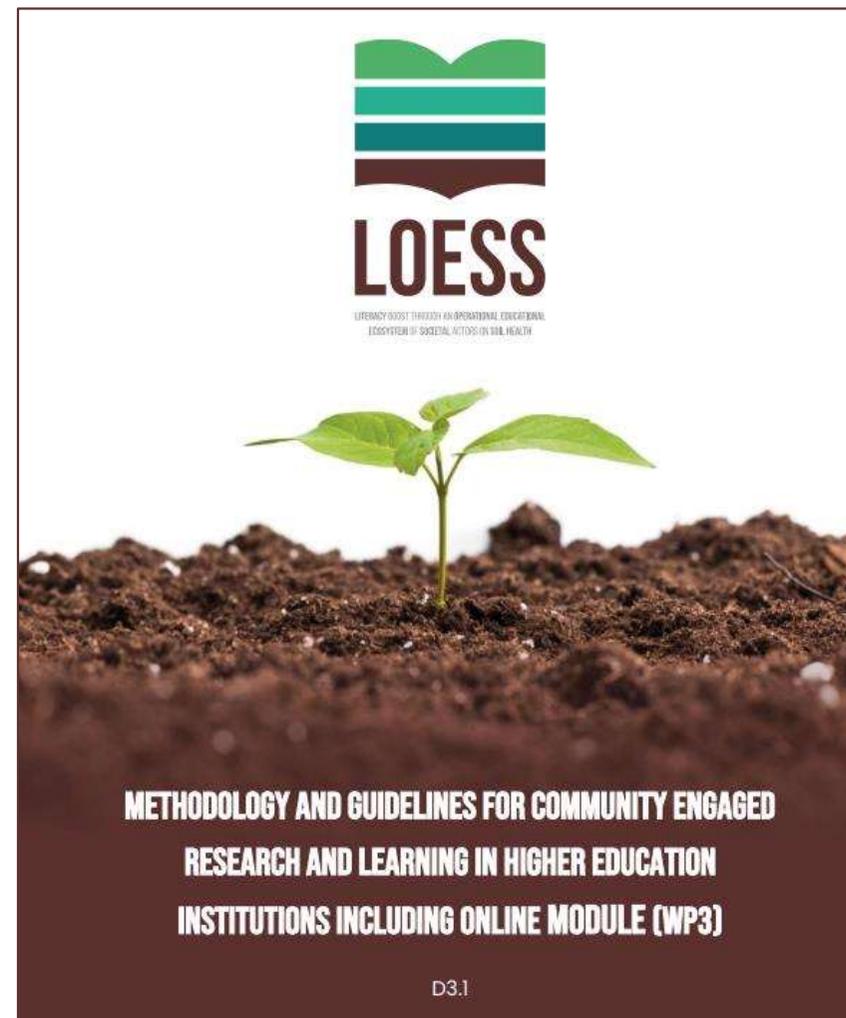
THE MISSION'S SPECIFIC OBJECTIVES

01 Reduce desertification

02 Conserve soil organic carbon stocks

03 Stop soil sealing and increase re-use of urban soils

04 Reduce soil pollution and enhance restoration

05 Prevent erosion

06 Improve soil structure to enhance soil biodiversity

07 Reduce the EU global footprint on soils

08 Improve soil literacy in society

Source: https://mission-soil-platform.ec.europa.eu/sites/default/files/2023-10/FS-Soil-Deal-for-Europe_EN_042023_0.pdf

This module is based on Deliverable Report 3.1 produced for the LOESS project by Emma McKenna and Lucas Weinberg.
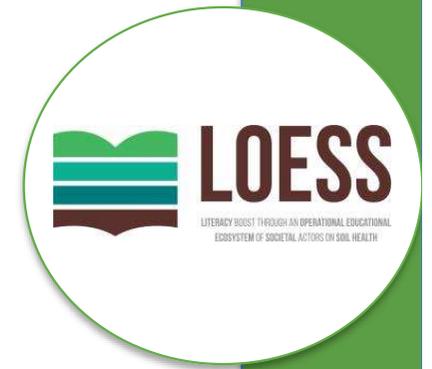
The deliverable report builds on materials produced by the Curriculum Innovation through Research with Communities: Learning circles of Educators and Technology (CIRCLET) project consortium, Bonn Science Shop, the University of Groningen Science Shop and the Living Knowledge Summer School. We would like to acknowledge partners in the CIRCLET project (2019-2022), funded by Erasmus+ Strategic Partnership Funding, and partners in the Enhancing Responsible Research and Innovation through Curricula in Higher education (EnRRICH) project (2015-2018), funded by Horizon Europe.

The deliverable report can be found on the LOESS project webpage: loess-project.eu

METHODOLOGY AND GUIDELINES FOR COMMUNITY ENGAGED RESEARCH AND LEARNING IN HIGHER EDUCATION INSTITUTIONS INCLUDING ONLINE MODULE (WP3)
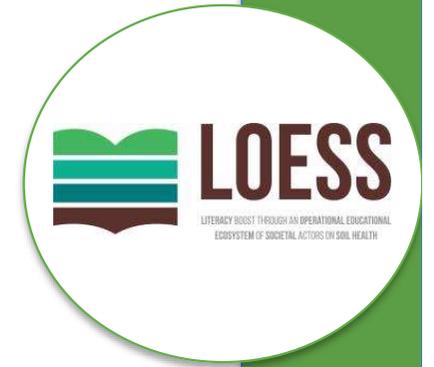
D3.1

Session Plan

1. Module information

2. Video to introduce CERL for soil health

3. Reflective exercises

4. Introduction to CERL as a strategy to address challenges within local communities

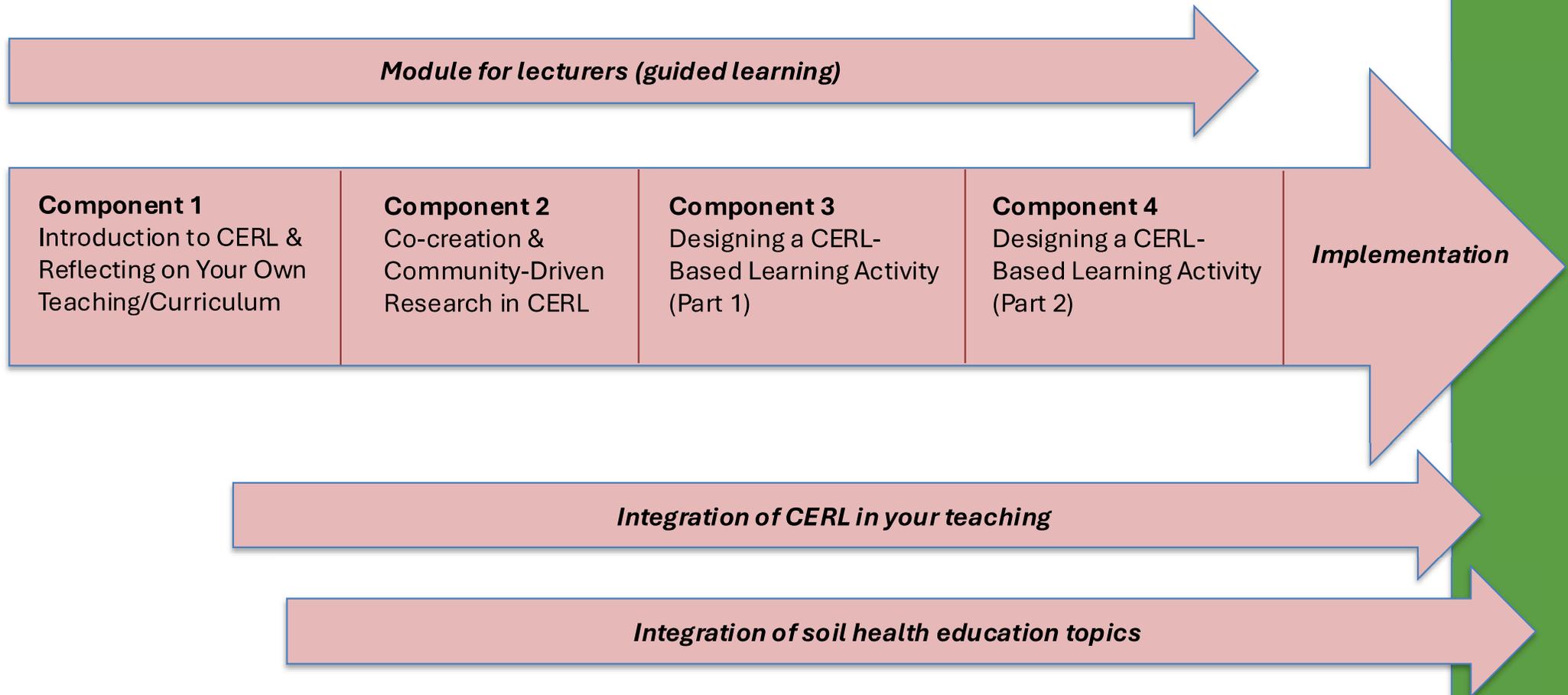5. Next steps & Tasks
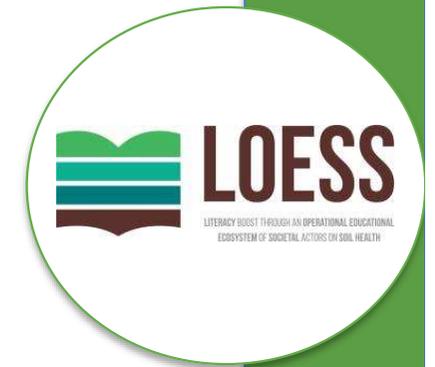
Module Information

Total learning time: 22 hours (including four guided learning components and reflective tasks).
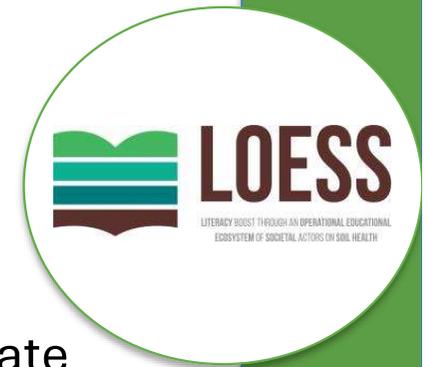
Guided learning components:

1. Introduction to CERL and Reflecting on Your Own Teaching / Curriculum

2. Co-Creation and Community-Driven Research in CERL

3. Designing a CERL-Based Learning Activity (Part 1)

4. Designing a CERL-Based Learning Activity (Part 2)

Graphical Overview of the Module

LOESS
LITERACY BOOST THROUGH AN OPERATIONAL EDUCATIONAL ECOSYSTEM OF SOCIETAL ACTORS ON SOIL HEALTH

Module for lecturers (guided learning)

Component 1
Introduction to CERL & Reflecting on Your Own Teaching/Curriculum

Component 2
Co-creation & Community-Driven Research in CERL

Component 3
Designing a CERL-Based Learning Activity (Part 1)

Component 4
Designing a CERL-Based Learning Activity (Part 2)

Implementation

Integration of CERL in your teaching

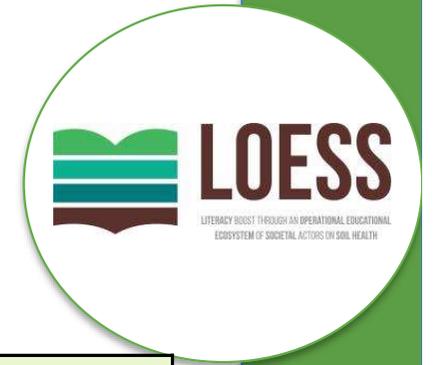**Integration of soil health education topics**

Module Aim

To support lecturers in exploring and reimagining their teaching to integrate Community-Engaged Research and Learning in the context of soil health education and awareness.

*Photographs by Claire McDonnell, Technological University Dublin*

Learning Outcomes

| On Completion of this module, the participant will be able to:	
1	Evaluate relevant sources on Community Engaged Research and Learning (CERL), and particularly on embedding CERL methodology into the higher education curriculum.
2	Identify and evaluate pedagogies, methods and opportunities for integrating soil (health) education and awareness into CERL projects.
3	Design and plan the implementation of a CERL project within a module or course that fosters meaningful and respectful stakeholder engagement, aligns with student learning outcomes, and integrates opportunities for learner reflection.
4	Apply common principles of science communication and ethical consideration when working collaboratively with community members.
5	Critically reflect on the learning content and their professional experiences.

Module Materials and Tasks
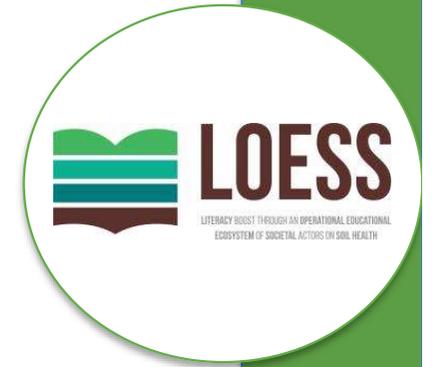
All module materials, including 4 sets of slides for guided learning, complimentary task worksheets and supporting tools and resources can be accessed via the LOESS project website:

https://loess-project.eu/cerl-module-for-lecturers/

Case Study on CERL for Soil Health – short video
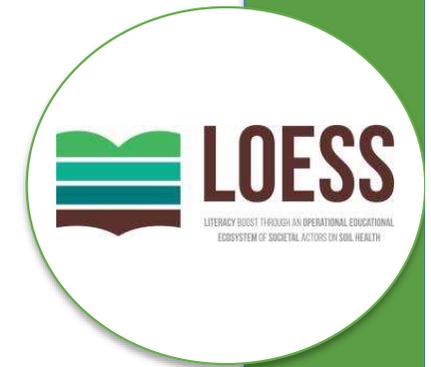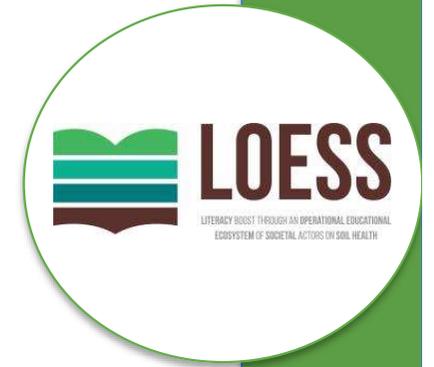
Watch this short video on University College Cork's School of Microbiology's CERL-based collaboration with Green Campus

https://youtu.be/sNILQ-9ieKU?feature=shared
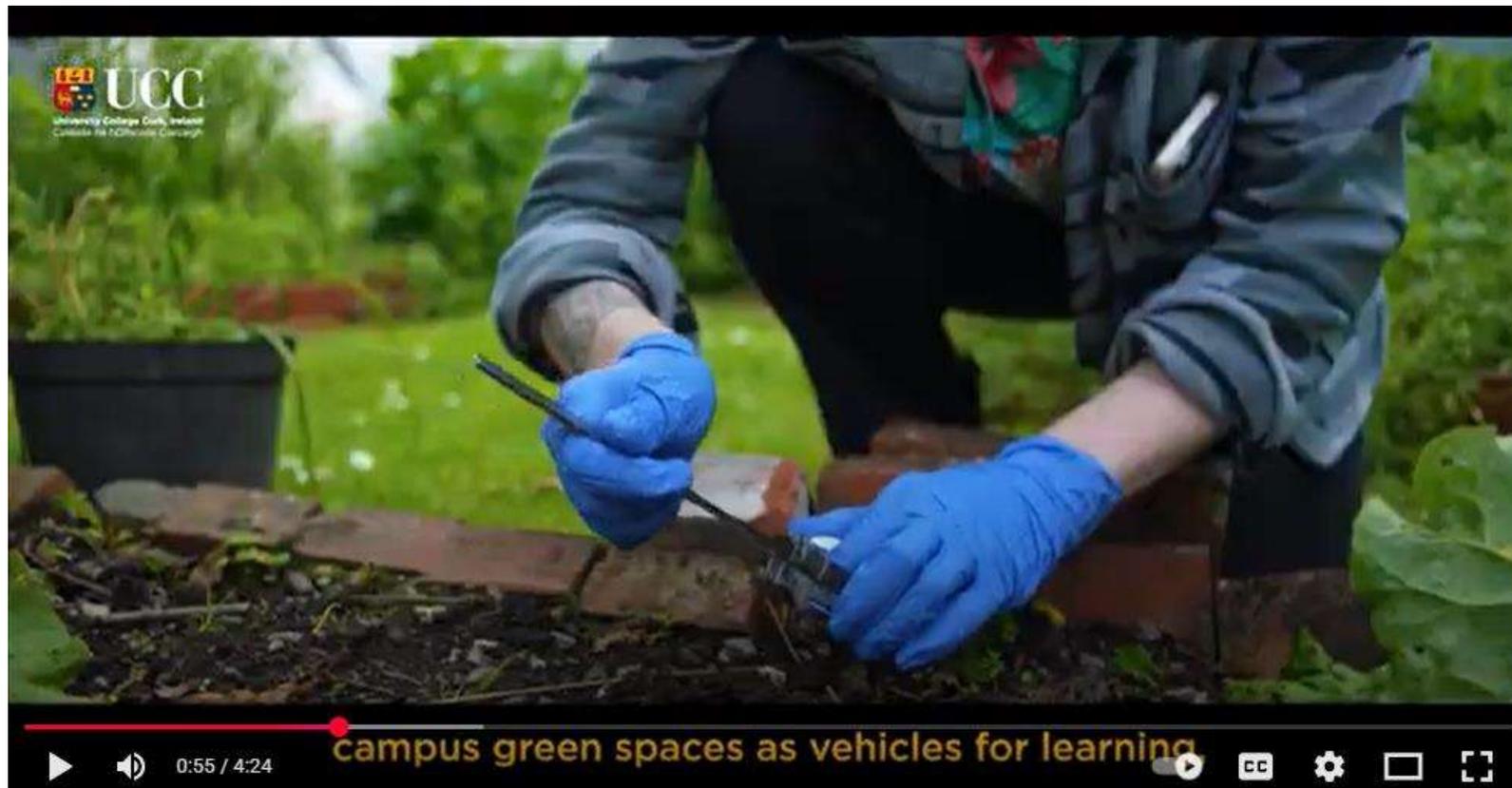
Quick reflection

How important do you think it is to incorporate community engagement in the curriculum? If you were to apply a number between 1 (not required) and 5 (essential), what would it be?

Consider your reasoning and make some brief notes about why you come to that conclusion.

Exercise

Take some time to think and make notes about your responses to the following questions (approximately 6 minutes):

- What initial questions or ideas do you have about CERL after watching the video?

- What is your biggest concern in relation to this module?

- What are you most excited about in relation to this module?

If you are working through this module with colleagues, take some time to share and discuss your responses with each other.

Community Engaged Research and Learning (CERL):

## A strategy to address challenges within local communities
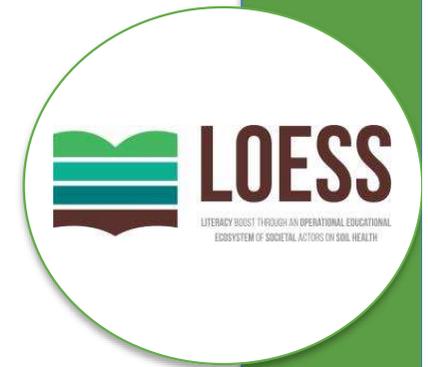
- Community Engaged Research and Learning is an approach which involves **university students working with community partners on collaboratively designed real-life projects**.

- The goal is **mutual benefit** – enhancing student learning whilst carrying out a project or piece of research which benefits the community.

- CERL emphasises collaboration, co-creation, and reflective practice.

- There is a focus on enhancing soil health literacy and civic competence.

(McKenna and Weinberg, 2025)

Photograph by Emma McKenna, Queen's University Belfast

CERL in the Curriculum
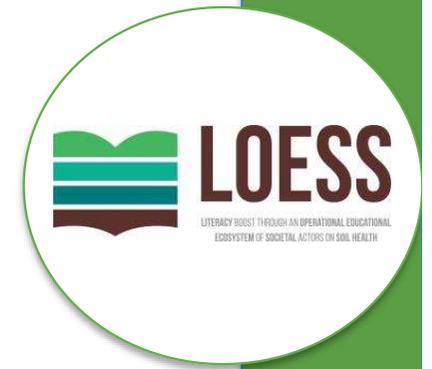
CERL projects are usually associated with **course credit**.
The academic supervision of projects leads to higher quality outcomes for Civil Society Organisations and better learning experiences for students.
They may be individual dissertation topics, group projects, or whole-cohort projects. They can also be compulsory or optional.
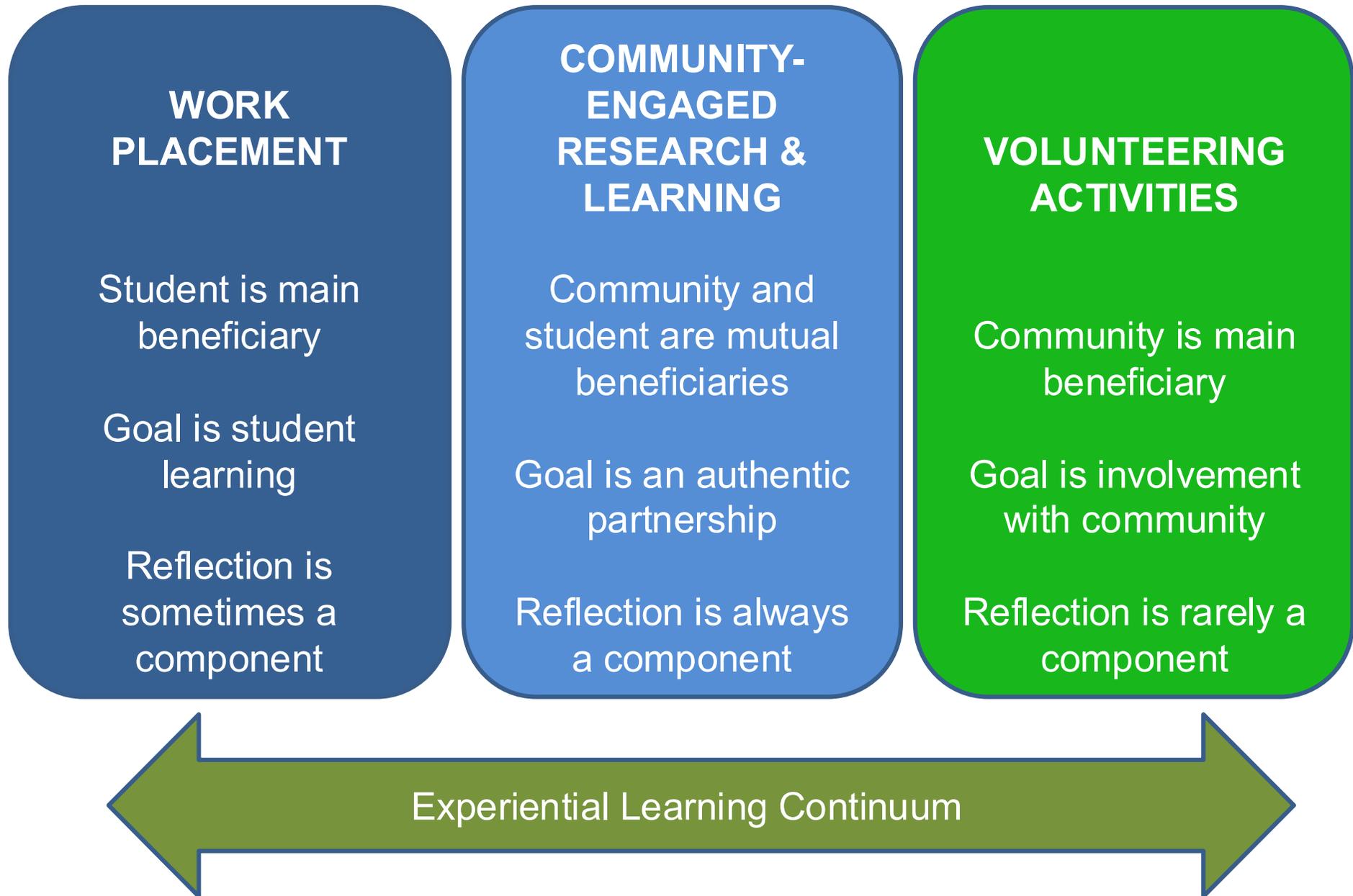
Lecturer will supervise, support, and (as much as possible) quality-assure the end outputs

Starting point is the community need. Then, in collaboration with the community partner, the lecturer frames the project to be suitable for the discipline, academic schedule, level, and abilities of their students.
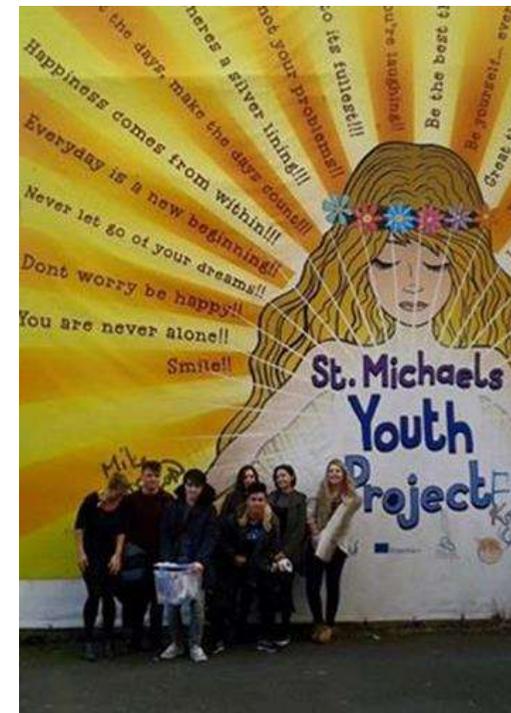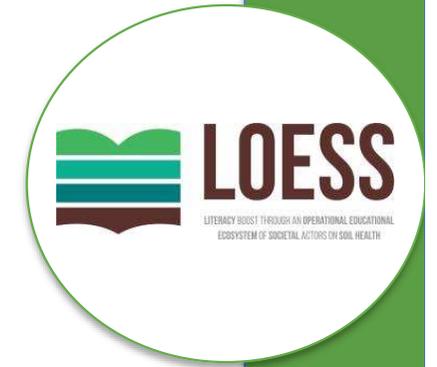

Photograph by Claire McDonnell, Technological University Dublin)

Relationship between Community-based Learning, Volunteering and Work Placement*

WORK PLACEMENT	COMMUNITY-ENGAGED RESEARCH & LEARNING	VOLUNTEERING ACTIVITIES
Student is main beneficiary	Community and student are mutual beneficiaries	Community is main beneficiary
Goal is student learning	Goal is an authentic partnership	Goal is involvement with community
Reflection is sometimes a component	Reflection is always a component	Reflection is rarely a component

← Experiential Learning Continuum →

** Adapted from Furco, 1996; Kenworthy-U'Ren et al., 2006 and O'Connor et al., 2011*

CERL Pedagogy

Community Engaged Research and Learning:

- 'involves authentic, experiential learning, and authentic assessment, driven by collaboration and engaged participation, and underpinned by reflection' (Bates et al., 2022:11).

- Is identified as a 'High impact Practice' by Kuh (Stewart et al., 2018)

- Takes a constructivist, emancipatory approach, as described by Tassone and Eppink (2016:19), where '**teachers** act more as **facilitators**, or they even **co-learn with students and possibly with other societal actors**. Students are actively meant to engage in questioning and developing designs, practices, and solutions to societal challenges and to experiment with them'.

What are the benefits of CERL?
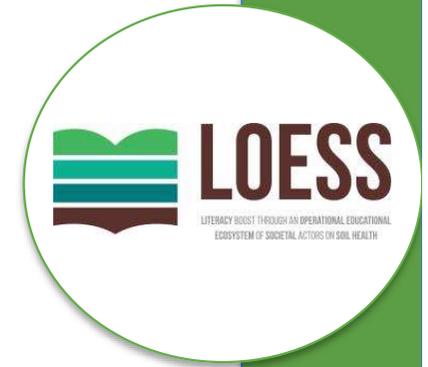
Students

- Gain subject-specific skills as well as transferable skills.

- Learn about the importance of system thinking, critical thinking and co-creative working.

- Put theory into practice through real-world hands-on activities.

- Experience how their own discipline-specific knowledge and skills can contribute to enhancing soil health.

- Gain insights into how soil is valued in local communities and into the deep knowledge base that local communities have about their own context.

Photograph by Claire McDonnell, Technological University Dublin

What are the benefits of CERL?
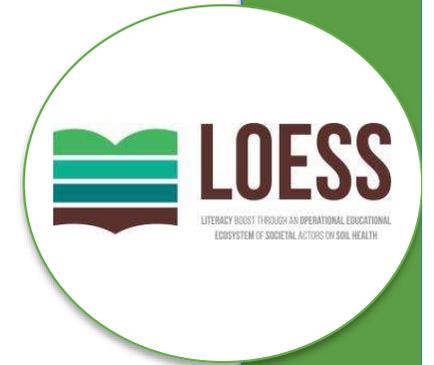
Civil Society

- Gains the opportunity to benefit from additional research resources, e.g. technical expertise, equipment and facilities beyond what they have in-house and/or someone who has the time to carry out the research, bring fresh ideas and approaches.

- Building awareness among the students (future professionals) of the issues they are campaigning on.

- Broadens out the concept of community and builds wider, good neighbourhoods through collaborative working between community and university.

Photograph by Claire McDonnell, Technological University Dublin)

What are the benefits of CERL?

Educators

- Fresh insights and enrichment of working lives from working with partners.
- Deeper student learning and better student engagement.
- Opportunities for 'hands on' activities and physical sites for research.
- These are also valuable sites of learning for educators themselves.
- Many educators report a sense of doing meaningful work.

Higher Education Institutions

- Students and academic staff professional development through co-working with, and learning from, community partners.
- Can lead to collaborative research relationships with communities.

> '*CERL contributes to all three university missions – teaching, research, and engagement – in a cost-effective way, since it reuses resources that already exist (teaching and studying time) to benefit all partners*.'
>
> (McKenna and Weinberg, 2025)

Ethical Considerations
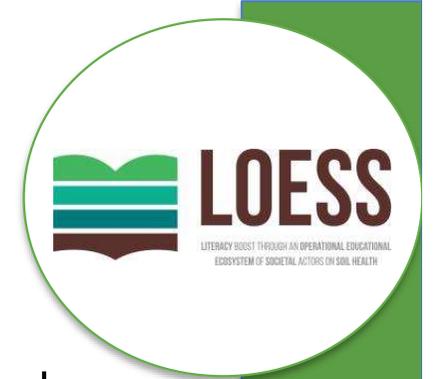
- Ensure there is rigour, responsibility and respect.

- Consider how power and control are negotiated, how people's personal experiences are shared, and how the different needs and expectations of participants are balanced in designing the research process.

- (Centre for Social Justice and Community Action et al., 2012)

- Flexible process of participation and exchange that encourages participation from different types of citizen groups/different capacities/under-resourced.

- Ensure that outputs will be in a format that is useful to the community partner.

- Also, Health and Safety, Child Protection, Data Protection considerations.

- (Ethics are further considered in Webinar 2)

Further Reading

Centre for Social Justice and Community Action, Durham University (UK) and National Co coordinating Centre for Public Engagement (UK) (2012). A guide to ethical principles and practice. Available at: cbpr_ethics_guide_web_november_2012.pdf. Date Accessed: 22/01/2025

Ross, L. F., Loup, A., Nelson, R. M., Botkin, J. R., Kost, R., Smith, G. R., and Gehlert, S. (2010). The Challenges of Collaboration for Academic and Community Partners in a Research Partnership: Points to Consider. Journal of Empirical Research on Human Research Ethics, 5(1), 19–31. Available at: https://www.researchgate.net/publication/42253923. Date accessed: 14/03/2025

Effective Science Communication in CERL
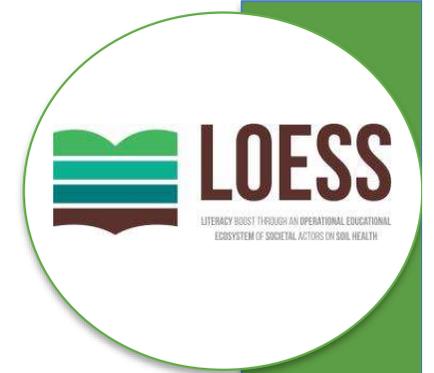
Communicating about risk (e.g. from factory emissions and from pesticides)

Mulder, H.A.J. and DeBok, C.F.M. (2006). 'Science Shops as University-Community Interfaces: An interactive approach in science communication' in Cheng, D., Metcalfe, J., and Schiele, B., (eds.) *At the Human Scale – International Practices in Science Communication*. Science Press, Beijing. [Science shops as university-society interfaces: an interactive approach in science communication - the University of Groningen research portal](#)

Developing empathetic skills to engage an audience as well as a broad understanding of the scientific and social issues

Bray, B., France, B., & Gilbert, J. K. (2012). Identifying the essential elements of effective science communication: What do the experts say?. International Journal of Science Education, Part B, 2(1), 23-41. https://www.researchgate.net/publication/254360536_Identifying_the_Essential_Elements_of_Effective_Science_Communication_What_do_the_experts_say

Using Social Media Effectively

What Works, Engaging the public through social media, A guide from the NCCPE and network contributors (2018) https://www.publicengagement.ac.uk/sites/default/files/2023-07/what_works_engaging_the_public_through_social_media_november_2018.pdf

Other sources

- Mason, S., & Merga, M. (2022). Communicating research in academia and beyond: Sources of self-efficacy for early career researchers. Higher Education Research & Development, 41(6), 2006-2019. https://www.tandfonline.com/doi/abs/10.1080/07294360.2021.1945545
- Besley, J. C., & Dudo, A. (2022). Strategic science communication: a guide to setting the right objectives for more effective public engagement. JHU Press.

Next Steps:
Module Tasks / Activities
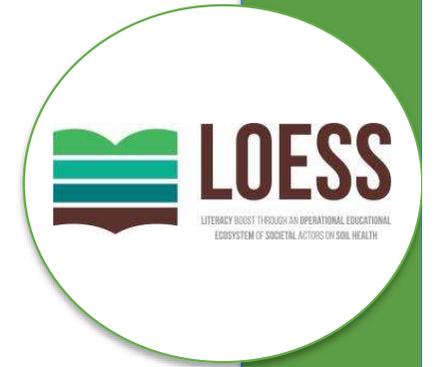
The accompanying task worksheets for each of the four module components are accessible via the LOESS project website: https://loess-project.eu/cerl-module-for-lecturers/

By completing these tasks in sequence and with reference to the learning materials, you will build a practical foundation for integrating CERL for soil health activities into your teaching and curriculum.

Tasks for module component 1:

Task 1.1   (40 minutes)
Using the LOESS Crowd Mapping Tool
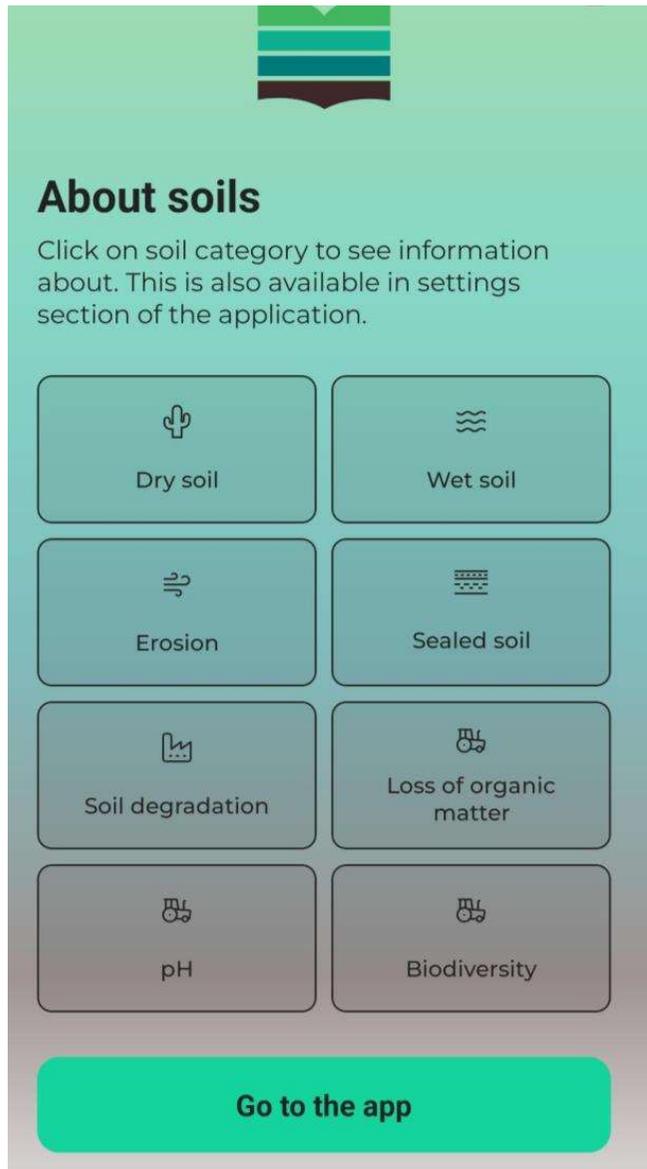
Task 1.2   (60 minutes)
Brief research to identify potential community partners

Task 1.3   (40 minutes)
Review of some CERL resources (videos and a few pages from CERL Guidelines)

Task 1.4   (40 minutes) Short reflection on where CERL for Soil Health Fits into your Curriculum

LOESS Soil Map:
Crowd Mapping Tool (Task 1.1)

About soils

Click on soil category to see information about. This is also available in settings section of the application.

Dry soil	Wet soil
Erosion	Sealed soil
Soil degradation	Loss of organic matter
pH	Biodiversity

Go to the app

How to use the app

Find soil that seem unhealthy

You can use samples provided by our team, to see what type of soil your'e dealing with.

Add report in located place

Include all the information that you gathered for the quality of the report, that will help the researchers trying to solve the problem.

Wait for confirmation

Every report has to be verified by our team, to avoid harmful content.

Add point in my location

Filters

References
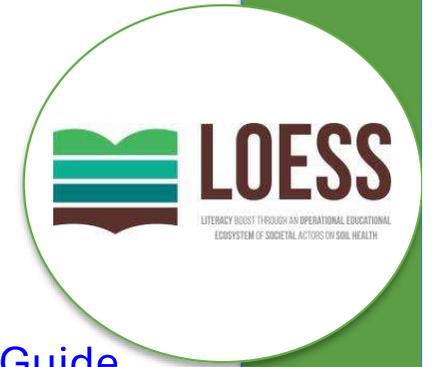
Bates, C., McCann, S., and McGowan, C. (2022). CIRCLET Online Continuing Professional Development Module Guide for Facilitators. Available at: "CIRCLET Guide for Facilitators: Online Continuing Professional Develop" by Catherine Bates, Sinead McCann et al. Accessed 02/10/2025.

McKenna, E. and Weinberg, L. (2025). LOESS Deliverable document 'D3.1: Methodology and Guidelines for Community Engaged Research and Learning in HEIs and online module'. Available at: https://loess-project.eu/wp-content/uploads/2025/05/D3.1-LOESS-Guidelines-for-CERL-in-HE.pdf) Accessed 02/10/2025.

Stewart, C., Skene, A.& Kustra, E. (2018) Kuh's High Impact Practices. Available at: https://www.uwindsor.ca/ctl/sites/uwindsor.ca.ctl/files/high-impact-practices-final.pdf Accessed 03/10/2025.

Tassone, V., and Eppink, H., (2014). The EnRRICH Tool for Lecturers - Re-Designing curricula in higher education from a "Responsible Research and Innovation" perspective. Available at: https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5aa8f7b6b&appId=PPGMS Accessed: 22/01/2025

THANK YOU

loess-project.eu