

A Handbook for Monitoring and Evaluating Education for Sustainable Development in Universities

Rehema M. White, Kathrin Möbius, Betsy King, Kirsten Leask,
Sonya Peres, Justin Walker and Peter Higgins



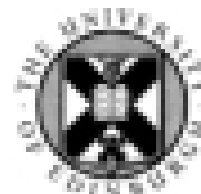
QAA



University of
St Andrews



STUDENTS
ORGANISING FOR
SUSTAINABILITY
UNITED KINGDOM



Contents

Project partners	3
Executive summary.....	3
Introduction.....	5
Aim, Objectives and Methods	8
The Framework: a learning spiral.....	10
Introduction to the learning spiral	11
1 Discuss: What is ESD for us?.....	13
2 Scope: How much ESD are we already achieving?	21
3 Plan: How do we create goals and an action plan for ESD?	31
4 Support: How do we enhance and deepen the provision of ESD?.....	38
5 Evaluate: How do we evaluate impacts of ESD?	50
6 Reflect: How do we learn from evaluation to modify future ESD plans?.....	54
Conclusions	58
Acknowledgements	59
References	60

Project partners

This Handbook is an output from a Collaborative Enhancement Project supported and funded by UK Quality Assurance Agency. Project partners were:

University of St Andrews (lead partner)

Rehema M. White rehema.white@st-andrews.ac.uk

EAUC Scotland

Kathrin Möbius

Learning for Sustainability Scotland

Betsy King, Kirsten Leask, Rehema M. White, Peter Higgins

Students Organising for Sustainability (SOS) UK

Sonya Peres

sparqs

Justin Walker

University of Edinburgh

Peter Higgins

Executive summary

Global challenges, such as the climate and nature crises, social inequality, and conflict, are provoking questions around the purpose and form of education in the higher education sector. Education for sustainable development (ESD) *“is an educational change agenda grounded in transformative learning and critical pedagogy. It can be understood as a lens that permits us to look critically at how the world is and to envision how it might be and equips us to deliver that vision”* (QAA / Advance HE ESD Guidance, 2021). Whilst the need for ESD is now widely acknowledged, many institutions are just beginning this journey. Monitoring and evaluation are required to assess progress and evaluate quality.

The aim of this Handbook is to support a reflective, collaborative approach to monitoring and evaluation to strengthen the quality of education for sustainable development in universities. We present a framework, tools, and case studies to offer practical support underpinned by theory.

Framework to Monitor and Evaluate Education for Sustainable Development

- 1 Discuss** Debate the meanings and definitions of ESD in a particular institution and context, raising awareness amongst staff, students and other stakeholders
- 2 Scope** Scope existing ESD themes and approaches, mapping curricular and extra-curricular activity and considering topics (e.g. against the SDGs), pedagogies and key competencies
- 3 Plan** Collaboratively agree goals and establish targets, indicators and an action plan
- 4 Support** Support staff, students and ESD initiatives, deepen and strengthen ESD and celebrate achievements
- 5 Evaluate** Assess impacts of ESD in short and medium term and through graduate achievements in the long term
- 6 Reflect** Reflect on processes, outcomes and impacts, learn from experience and others and adapt ESD support and monitoring as required



The framework is a learning spiral in which the cycle can be iterative, can be initiated at any step, and steps can be taken concurrently. Application of these steps in this handbook is supported through In Practice, Toolbox, Practice Recommendations and Reflective Questions sections.

It was concluded that the learning spiral framework permits a contextualised approach to monitor and evaluate ESD. The six steps (Discuss, Scope, Plan, Support, Evaluate, Reflect) facilitate a journey in which learning is strengthened around the reflection cycle. Potentially paradoxical issues demand consideration of the principles as well as practices of education. ESD is a process of engagement, learning, action and reflection, as well as generating outcomes for positive staff, student and societal impacts. We hope the framework will help us to nurture graduates and to strengthen the role of universities in creating a better world.



Introduction

Introduction

Increasingly, external imperatives are encouraging a shift towards greater awareness and practice of sustainability within the Higher Education (HE) sector. Education for Sustainable Development (ESD) has been defined in many ways, but it is broadly understood that it *“empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education”* (1). The term ‘learning for sustainability’ (LfS) is often used in Scotland and relates to formal, informal and non-formal learning (2).

ESD is understood to be about pedagogy as much as curriculum. It is agreed to include critical engagement with the concepts of global citizenship, environmental stewardship, social justice, ethics and wellbeing, and the practical challenges of how systems and societies can be adapted to ensure sustainable futures. In a whole institution approach, it can be included in all University programmes and in extra-curricular activities (3).

ESD is a route by which we enable critical and vigorous debate on the kind of society in which we wish to live. It has been proposed that *“[a]t the heart of [a sustainable] university lies independence of thought, critical debate and social critique, but perhaps more importantly, such critical debate and social critique should feed imagination and re-imagination that is creative, productive, and intellectually rich and stimulating”* (4). ESD can thus be broadly conceived as excellent scholarship underpinned by sustainability principles.

It is timely to encourage further embedding of ESD in universities. The recent [Quality Assurance Agency \(QAA\)/Advance HE guidelines on ESD in HE](#) (QAA/AdvanceHE 2021) outlines provision for competencies and advises on assessment of, as and for learning. Subject benchmarks now indicate requirement of specific disciplinary ESD requirements within all programmes (5). The [SOS-UK Sustainability Skills Survey](#) has demonstrated that 88% of students believe that their place of study should actively promote and incorporate sustainable development (6). Business is demanding both awareness of corporate responsibility within their graduates and the skills conferred by ESD pedagogy. ESD also aligns with other HE agendas such as enterprise and entrepreneurship and decolonisation of the curriculum. However, there is little information regarding monitoring and evaluation (M&E) of ESD. M&E can facilitate an active learning cycle from goal development and co-design of ESD provision embedded within the curriculum, then evaluation, reflection and modification of future goals and targets (7).

Several universities have initiated monitoring, but many of the efforts focus on indicators of activity (such as number of courses with sustainability content) rather than competencies developed or subsequent impact of ESD. M&E through reflective self-assessment can deepen learning for learners and educators. Given the integrated nature of M&E, suitable approaches and tools are likely to differ across universities.

Our collaborative project, supported by QAA's Collaborative Enhancement Project programme, assessed current approaches to and tools for M&E of ESD in UK universities, identified existing generic tools and developed a framework for M&E of ESD. This Handbook presents the framework and some of the tools and lessons learned. The Handbook is designed especially for academics or academic support staff seeking to monitor and evaluate quality education in university programmes and across institutions, but it will also be useful at a module level and for other stakeholders with an interest in ESD.

*“M&E through reflective
self-assessment can deepen
learning for learners and
educators”*





**Aim, Objectives
and Methods**

Aim and Objectives of the Handbook

The **aim** of this Handbook is to support a reflective, collaborative approach to monitoring and evaluation to strengthen the quality of education for sustainable development in universities.

Objectives

- To present a framework to enable individual universities to design and implement monitoring and evaluation strategies for education for sustainable development
- To highlight tools and resources that can support action and critical reflection through monitoring and evaluation of education for sustainable development
- To share lessons learned regarding the monitoring and evaluation process

Methods: Development of the framework

We undertook a collaborative project, funded by the QAA, between the University of St Andrews and University of Edinburgh, [EAUC Scotland](#), [Learning for Sustainability Scotland](#), [Students Organising for Sustainability UK \(SOS-UK\)](#) and [sparqs \(Student Partnerships in Quality Scotland\)](#).

A literature review was conducted to identify previous and contemporary monitoring and evaluation approaches in HE, but also across other sectors. Discussion threads on monitoring and evaluation in online ESD groups were searched and universities with experience in this area were identified.

A pilot framework for monitoring and evaluation was developed, drawing on this literature and previous models. This pilot was tested in a workshop attended by project partners and key individuals with experience of monitoring and evaluation of ESD in their institutions. Discussions in the workshop led to modifications and enhancement of the framework.

A series of semi-structured interviews was conducted with participants who had experience of institutional monitoring, some who were only beginning their journey and some who had trialled tools in this project. In this Handbook, lessons learned and indicative quotes are provided from these interviews to inspire and inform others to take action.



The Framework: a learning spiral

Introduction to the learning spiral

We present a Framework for Monitoring and Evaluation (Figure 1) as a spiral, to indicate the iterative nature of this process and the potential for continued growth in an institution. The framework is designed to be adapted to an individual institution or programme. It focuses on ESD in the formal curriculum, but extra-curricular opportunities for ESD can be included. Curricular provision forms part of a whole institution approach in which sustainability is highlighted in formal, non-formal and informal learning, teaching and research, operational management and community engagement.

The Framework is an adapted version of the Kolb cycle of action learning and reflection (8). Content was informed by our literature review, interviews, workshops and results of piloting new tools. We portray the Framework as a spiral to indicate that small steps may be taken initially, with the monitoring and evaluation process deepening over time and subsequent learning cycles.

The spiral is designed to be used from Steps 1 to 6 sequentially, but it can be adapted to start at any step and be modular, to be iterative and to run steps concurrently, enabling adaptation to context. Individuals and institutions can thus begin at any step in the Framework and do not have to undertake steps sequentially.

The Framework is geared not merely to achieve outputs, but also to focus on the process and the learning and engagement that derive from this. The following sections discuss each step in turn, supported by In Practice, Toolbox, Practice Recommendations and Reflective Questions.

- **Toolbox** describes tools that can be used to implement steps.
- **In practice** showcases case studies to illustrate how steps have been achieved in particular contexts.
- **Practice Recommendations** offer suggestions for implementation of steps.
- **Reflective Questions** create opportunities to critically explore why and how steps could be addressed in a given context.



Figure 1: Framework to monitor and evaluate Education for Sustainable Development in universities. The six steps around the learning spiral are explained in the text.

We portray the Framework as a spiral to indicate that small steps may be taken initially with the monitoring and evaluation process deepening over time and subsequent learning cycles.

1 Discuss: What is ESD for us?

I think when colleagues work with their own definition, then they are going to have more autonomy and take more credit and feel more responsible for delivering on something that they identify with, more than something that's top-down.

Senior Manager, University



The first step is to create a conversation about what ESD is or might be in our programmes or institutions. There are multiple definitions of ESD, and deciding how we wish to contextualise it is important. Listening to different perspectives and agreeing a broad common definition can be part of the process of learning and should not be seen as an impediment to beginning. Whilst the scope of ESD is broadly agreed, a specific lens can be useful for recognition of the concept within an institutional context. It is critical that different stakeholders are involved in this process, including academic and support staff, students, senior managers, operations staff, and those involved in community initiatives.

Established definitions that can serve as a starting point include:

“ESD is an educational change agenda grounded in transformative learning and critical pedagogy. It can be understood as a lens that permits us to look critically at how the world is and to envision how it might be and equips us to deliver that vision”
QAA / Advance HE ESD Guidance, 2021 (9)

“ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and the learning environment. It achieves its purpose by transforming society.” UNESCO, 2019 (1)

Whilst there are different perspectives on ESD, some aspects that ESD are not are generally agreed. ESD is:

- **not only related to environmental issues** – rather it also critically explores social justice, notions of prosperity and human-nature relationships
- **not about sustainability** – rather it is *for* a sustainable future
- **not an ideology** – rather it uses critical pedagogies, creates opportunities for transformative learning and enables learning for societal change agendas to address societal problems and global challenges.

Dimensions of definitions

Discussions could involve exploration of **ESD content, topics and themes**. However, ESD approaches are expected to support acquisition and deepening of **key sustainability competencies**, be supported through **innovative pedagogies** and **link to practice**. These dimensions are unpacked below.

Content: topics in ESD

ESD is not merely about environmental issues. It is about imagining a more sustainable future and developing pathways to pursue this by learning from past civilisations and actions, understanding ecosystems and societies and innovating solutions to sustainability challenges. All disciplines and subject areas can benefit from introducing ESD themes and approaches.

Supporting context:

- **Discipline specific examples by NUS:** Discipline based examples of ESD and ways of thinking about ESD in different subject programmes can be found in the NUS report [From art to zoo management](#).

- **The UN SDGs:** The scope of sustainable development and the range of interconnected goals we are pursuing is demonstrated by the [UN Sustainable Development Goals](#) (SDGs). Constructively and critically engaging with these can be an excellent first step for many institutions. However, they represent contemporary political context and should not be seen to be the same as sustainable development.



Figure 2: The UN Sustainable Development Goals

Competencies: Beyond knowledge

A competency is an “interplay of knowledge, capacities and skills, motives and affective dispositions” (10). Sustainability competencies are “complexes of knowledge, skills, and attitudes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges, and opportunities” (11). The information we need for a particular task in sustainable development, such as developing a form of renewable energy or understanding the implications of a recycling policy, changes rapidly. By equipping our graduates with the knowledge, skills and capacities to be active change agents in an uncertain, complex world, we are best preparing them for the future. Development of these competencies overlaps with other agendas such as entrepreneurship, equality and diversity and inclusion.

There are eight key sustainability competencies (7,9,10) (Table 1).

Table 1: Key sustainability competencies to integrate with programme specific knowledge, skills and competencies

Key Sustainability Competency	A student who displays this competency can	
Systems thinking competency Anticipatory competency (Future thinking) Critical thinking competency	recognise and understand relationships, analyse complex systems, consider how systems are embedded within different domains and scales, deal with uncertainty understand and evaluate multiple outcomes, create their own visions for the future, apply the precautionary principle, assess the consequences of actions, deal with risks and changes question norms, practices and opinions, reflect on one's own values, perceptions and actions, sustainable development discourse	<i>WAYS OF THINKING</i>
Strategic competency Collaboration competency Integrated problem-solving competency	develop and implement innovative plans and actions that further sustainable development at the local level and further afield learn from others, understand and respect the needs, perspectives and actions of others, deal with group conflicts, collaborative & participatory problem solving apply different problem-solving frameworks to complex sustainable development problems, develop viable, inclusive and equitable solutions, interdisciplinarity	<i>WAYS OF PRACTISING</i>
Self-awareness Normative and cultural	reflect on own values and actions; monitor feelings and needs understand and reflect on norms and values underpinning actions, appreciate other worldviews, negotiate goals and trade offs	<i>WAYS OF BEING</i>

Pedagogies: Teaching and learning approaches for ESD

Considering that ESD is not just about knowledge, but also about skills, capacities, values and attitudes, it is evident that it does not only matter what we teach, but also how we teach it. *“Competencies cannot be taught, but have to be developed by the learners themselves”* UNESCO (2017: 10). Pedagogies influence this development. Teaching and learning approaches that centre and enable student-led learning are often appropriate. Teaching pedagogies encompass philosophy, learning session delivery, assignments, and assessment.

Toolbox

- The QAA/Advance HE Guidance for ESD (2021) summarises a range of innovative pedagogies that can help learners to develop the competencies, including collaborative learning, problem-based learning, enquiry-based learning, play-based learning and learning through storytelling.
- The UNESCO [ESD toolbox for 2030](#) offers useful resources to engage with the SDGs but also to explore pedagogical innovations.
- The [seed library by Faculty of the Future](#) contains a multitude of pedagogical approaches and examples.

In practice

- It is important to consider the definition of ESD beyond theoretical aspects. What does ESD mean in 'the real world', outside of the academic and learning context? We can provide practical examples for learners through case studies in class, field trips, community engagement in learning, extra-curricular activities or some combination of these options. This can help to provide a more 'real world'-based context for and with our learners and colleagues. In some programmes, placements or internships in practical or employer contexts may help to provide this real-world contextualisation. The [Living Labs](#) approach develops links between real world projects and teaching and learning, as exemplified at the University of Edinburgh.
- EAUC Scotland ran a workshop in 2023 on different innovative pedagogies that support the development of the ESD competencies. Materials and recorded practice examples can be accessed [online on the Sustainability Exchange](#).
- The [ESD Topic Support Network](#), led by EAUC Scotland and Learning for Sustainability Scotland, has also explored innovative pedagogies in several workshops over the last decade.

Purpose of education for sustainable development

Whilst considering the practical aspects of ESD, it is also worthwhile discussing the purpose of higher education, and the place of ESD within this, to inform and deepen the meaning of ESD in our context. Education should permit socialisation, promoting citizenship in order to replicate society and culture; be vocational, preparing people for employment; achieve liberal goals in enabling individuals to achieve their full potential; and it should be transformative, encouraging change towards a better society and a fairer world (12). ESD can play a major role in achieving these wider goals. Widening the debate to include discussions around the purpose of education can encourage staff, students and other stakeholders to consider ESD as contributing to their goals in different ways. It may also begin to stimulate discussion about the possible paradox between transformation (change) and embedding within existing systems in HE that we explore more under Step Six: Reflect.

Practice recommendations: Discuss ESD

ESD practitioners suggested the following recommendations when discussing and defining ESD as part of our monitoring, and beyond.

- **Defining ESD is an important step:**

"The defining ESD step is such a determinant on how successful the rest of [the steps] are." (ESD Support Officer, University)

- **Consider process as well as outcome:** The process of defining ESD in our context allows us to learn and understand different aspects and perspectives of ESD. Several practitioners spoke of the conversation around ESD being vital for achieving progress regarding ESD, independent of whether a detailed agreed definition was established or not.

- **Allow for creativity and ownership:**

"I think sometimes there is a benefit to not being extremely explicit and prescriptive about certain definitions, to leave the space and room for creativity, for innovation, for (...) more ownership for something that that colleagues identify with more strongly." (Senior Manager, University)

"I think when colleagues work with their own definition, then they are going to have more autonomy and take more credit and feel more responsible for delivering on something that they identify with more than something that's top down." (Senior Manager, University)

- **Contextualise definitions:**

"I think there's a real danger if we tell institutions exactly what to do that it becomes less meaningful rather than them adapting it to their students."

(ESD Support Officer, NGO)

- **Allow for iterative discussions:**

"I think it's good to keep it pretty open to start off with to make sure that we all understand what it is we're talking about, and what we're not talking about, as importantly. But I think it then does help to iterate towards a commonly held definition."

(Senior Academic, University)

- **Think beyond environmental:**

"I think, ESD... suffer[s] from the... basic pitfall, which is that people think they know what it's about... Folks will go to recycling and turning the lights off and possibly thinking about transport, and perhaps not understanding some of the deeper structural things to do with the economic model, to do with the whole way that ESD and feminism and women's rights are connected issues."

(ESD Support Manager, NGO)

- **Involve students:**

"Their voices need to be heard, need to be at the centre of the design of education. Because it's for them, so their needs need to be addressed. We need to create value for them and therefore we need to listen to them and co-create with them."

(Senior Manager, University)

- **Bring in expertise:**

"You know, unless you've had the opportunity to study and be enlightened by people who really know their stuff, then clearly, you won't have even begun to think about that - why would you associate feminism with ESD unless you listen to it?"

(ESD Support Manager, NGO)

- **Discuss with purpose:**

"Everybody's really busy and bringing people together just to talk often doesn't really work. But if you bring people together to do something... then that has been more effective where we are." (Senior Academic, University)

Reflective questions:

- How do these definitions apply to your context?
- Do the above definitions vary between different subjects, programmes, or environments?
- Is there a different framing that you prefer?
- How could you create good dialogue in your institution?
- Which topics have you included in your practice?
- Have you discussed pedagogies and competencies?



University of Strathclyde, photo courtesy of Students Organising for Sustainability

2 Scope: How much ESD are we already achieving?



In this step, we gain an overview of the existing baseline ESD within our institution or programme. We outline some processes and tools here, but scoping how much ESD we have should be undertaken in the most appropriate and effective way for different institutional contexts. It is worth noting the following key points:

- First, the scoping or mapping exercise does not have to be perfect from the start. The process can be developed over time and throughout the next steps of the monitoring process. The most important thing is to start somewhere.
- Second, it is important to link any scoping exercise back to discussions around definitions in Step One: Discuss while being mindful of the need to create goals and an action plan for ESD in Step Three: Plan.

- Third, consider which aspects of ESD are being assessed with the scoping process. It may be easiest to start with topics and themes such as the SDGs, but perhaps your institution is already mapping competencies or attributes and this is a good starting point in your context (see Step One: Discuss)
- Fourth, ensure that aspects that are important to your institution are mapped.
- Finally, try to include stakeholders in this process, in a way that is engaging and not onerous. Linking this scoping step into the learning spiral should enable stakeholders to perceive it as more than just a box-ticking exercise. Mapping is a dynamic process that should enhance understanding of ESD, and co-creation will strengthen outputs and buy-in.

An initial scoping exercise can be repeated regularly to include new examples, to drop redundant cases and to track changes in ESD activity. Approaches that can be used for mapping include mapping against the SDGs, mapping against an internally determined framing of ESD, mapping ESD along with other agendas such as entrepreneurship or equality, or embedding mapping within existing quality assessment processes. Most early mapping focuses on content and is largely quantitative, but case study stories can help to inspire and engage others as well as provide meaningful qualitative data.

Some specific examples of factors to map are illustrated below (Table 2), with different approaches having their strengths and weaknesses. For example, the approach using artificial intelligence to map keywords is rapid, but can be inefficient and does not engage people well. It is usually slower to undertake a collaborative mapping process with stakeholders, but if the engagement generates debate, understanding and ultimately quality and a sense of ownership and collaboration regarding ESD provision, this can be more beneficial in the long term. In some cases, both approaches can be used in parallel.



Table 2: Scoping approaches. Several can be used concurrently. They approximately increase in detail going down the table. These are indicative; other approaches may be suitable for particular contexts. What comprises ESD themes, pedagogies and competencies can be determined in Step 1.

Scoping Approach	Detail
<p><i>Mapping Curriculum</i></p> <p>Mapping content through key word searches</p> <p>Mapping with academic champions</p> <p>Mapping with students</p> <p>Mapping pedagogies</p> <p>Mapping competencies</p>	<p>Automated searches for ESD key words in module titles and module descriptors in university programme documents. See above on 'defining ESD' to identify possible key words for a given context.</p> <p>Each department or programme has an academic champion who identifies relevant examples at module or programme level.</p> <p>Students identify examples of ESD in their programmes.</p> <p>Mapping of teaching and learning approaches can begin in this step or can be undertaken when deepening ESD in later steps. This might include a matrix of types of assessment used across a programme, or the presence or absence of particular pedagogical approaches in a programme.</p> <p>Mapping competencies is more complex and is discussed in later steps and may be left until later in the process. It can include a matrix of competencies completed for each programme with programme directors, or analysis of learning outcomes for modules or assessments.</p>
<p><i>Mapping extra-curricular activity</i></p> <p>Mapping with wider groups and communities</p>	<p>Mapping relevant extra-curricular activities together with wider university groups, including student societies, Transition University groups and other initiatives that explore or pursue sustainable development.</p>
<p><i>Mapping student or staff engagement</i></p> <p>Mapping student exposure</p> <p>Mapping student exposure across core/compulsory modules</p> <p>Mapping student exposure across programmes</p> <p>Mapping staff exploring ESD themes and approaches</p>	<p>Number of students experiencing ESD or particular topics, pedagogies, competencies in core or option modules.</p> <p>Number of students experiencing ESD or particular topics, pedagogies, competencies in core modules and thus in programmes.</p> <p>Number of students experiencing ESD or particular topics, pedagogies, competencies at different stages of programmes.</p> <p>Number of staff exploring ESD themes and approaches, across programmes and the institution.</p>

These different scoping options demonstrate how we can build a more complex picture of the amount and distribution of ESD across a programme or institution. Once ESD has been broadly mapped across the curriculum of modules and programmes, and extra-curricular activities, it is possible to assess student and staff engagement. This will include how many students experience ESD, and how many staff are engaged in teaching or facilitating ESD.

Staff engagement in ESD may be represented by how many staff use ESD themes and approaches, but it would also be useful to understand the engagement of teaching assistants and tutors. In addition, many staff may be engaged with concepts and practices of sustainable development in research, community outreach or extra-curricular activities. Their experiences may not explicitly be portrayed in curricula, but they may include such knowledge informally. It is also important to map multidisciplinary and interdisciplinary initiatives.

These results then enable us to plan (moving into Step Three: Plan) where efforts should be focused. For example, ensuring that every programme has ESD in a core or compulsory module means that all students have some experience of ESD. The depth of ESD may differ across smaller, more specialised modules in senior Honours from the larger sub-Honours modules. Postgraduate modules should also include quality ESD.

This mapping process allows re-definition of ESD in context, and strategic planning for the future. Be careful that the parameters mapped are not selected merely because they can be measured. Indicators should be relevant and related to goals as well as feasible to assess.

Mapping is a dynamic process that should enhance understanding of ESD, and co-creation will strengthen outputs and buy-in

Existing generic mapping tools – SDG and keyword mapping

The SDGs provide a common framework to map the integration of sustainability across curricula. The 17 goals provide a “shared blueprint for peace and prosperity for people and the planet, now and into the future” ([United Nations, 2015](#)).

There are benefits of using the SDGs as a framework especially in the early stages and iterations of mapping ESD provision. They provide a broad framework that illustrates the broad scope of sustainable development and emphasise the understanding that sustainability goes beyond climate and nature related topics. They intend a holistic, systems approach to address local and global challenges. They allow us to align with government, private sector and civil society groups that are addressing the SDGs, and they prepare graduates to work in this context. However, the SDGs framework has its limits. If ESD targets focus on individual SDGs, the holistic intention of the SDGs can be lost. The SDGs are agreed international policy from 2015-2030, after which time another framework will be developed. The SDGs are sometimes critiqued for not including perspectives of the Global South or for reinforcing neocolonial practices (13). It is therefore important that we engage critically with the SDGs. They can offer a useful framework to stimulate discussion and get mapping processes started, but should not be considered as all encompassing.

Toolbox

The following tools have been widely used and are an excellent source of support for mapping against the SDGs.

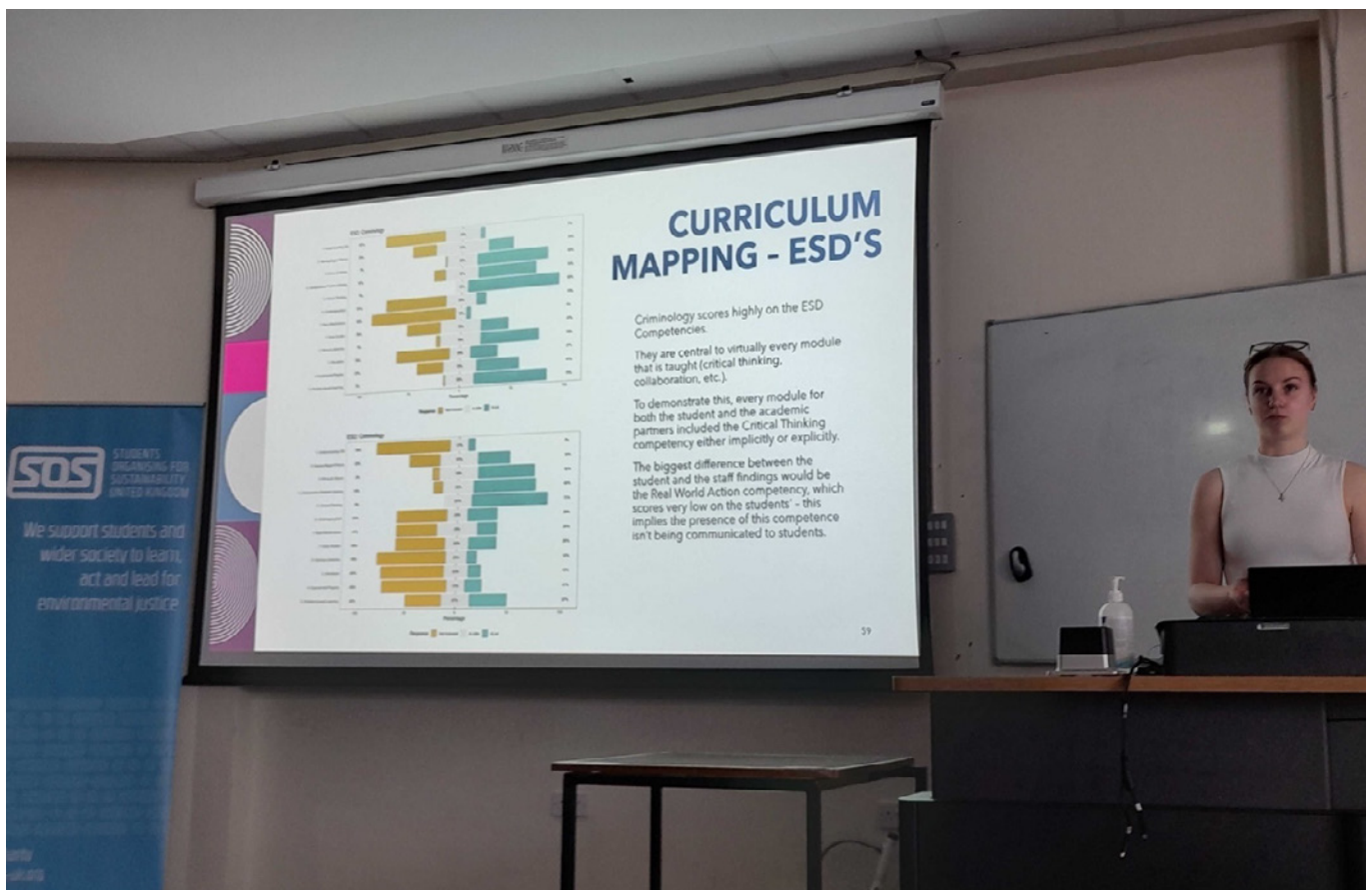
- [University of Cork SDG mapping toolkit](#): This comprehensive toolkit from the University of Cork provides detailed guidance on its use. It uses a scale from 0 to 5, and allows for the inclusion of pedagogies and interdisciplinarity in the mapping process. It automatically generates visuals of SDG coverage, has a research extension, and is very user friendly.
- [Education & Training Foundation \(ETF\) SDG Mapping the Curriculum Tool](#): This tool has been developed by the ETF in collaboration with and for colleges in England and the UK. The tool is easily adaptable to university contexts, and provides summary graphics and statistics, and allows mapping for green and sustainability skills as well. With clear instructions and handy graphics, this is a solid tool to get started in the process of mapping the curriculum.
- [University of Galway keyword scanner](#): This tool helps to automatically scan learning outcomes or other files for keywords. Whilst this can be one useful scoping step, please see the practice recommendations for the importance of the process of discussion in developing mutual understanding and co-creating strategies with buy in.

In practice

Student partnerships in scoping – example approaches

Students are vital partners in programme or institutional scoping of ESD. There are many ways to engage students, including:

- **Student driven mapping – University of St Andrews:** Student driven mapping in the School of Economics and Finance at the University of St Andrews led to three questions on ESD being included in the module evaluation questionnaire (MEQ). Students also ran a survey about attitudes to sustainability in the curriculum with fellow students.
- **[SOS-UK Student-led sustainability curriculum mapping support package:](https://www.sos-uk.org/project/sdg-global-goals-curriculum-mapping)** SOS-UK offer a support package that provides training for students to audit the curriculum, using the Sustainable Development Goals, wider aspects of sustainability learning including ESD competencies and ESD methods as a framework. www.sos-uk.org/project/sdg-global-goals-curriculum-mapping



University of Strathclyde, photo courtesy of Students Organising for Sustainability

- [Responsible Futures Programme by SOS-UK](#) – whole institution approach to embedding sustainability and ESD in student learning: Responsible Futures is a whole institution student-led change programme and accreditation mark partnering institutions with students to embed sustainability across all aspects of student learning through a framework of criteria and network learning. Responsible Futures includes an audit of the partnership’s progress on various sustainability metrics, run by students who are trained by SOS-UK staff to conduct the audit.

The audit determines whether partnerships receive Responsible Futures accreditation. The Responsible Futures framework is based on 50 criteria covering a range of topics including baselines and benchmarks, leadership and strategy and policy and commitment. View the [programme overview](#) for more information on the programme and to see the full range of criteria. Following the audit, partnerships receive an audit report with recommendations from students on how to progress their work on embedding sustainability in learning. Examples of institutions that have published audit reports include [Manchester Metropolitan University \(2020\)](#) or the [University College of Estates Management \(2022\)](#). Find out more about the [Responsible Futures programme on the SOS-UK website](#).

Student partnerships in scoping – institutional examples

- [Staff and student led mapping at the University of the West of England](#): Over several years, mapping has evolved into strong student and staff led processes that explore which programmes of study at UWE Bristol are engaging with the SDGs. UWE has increasingly drawn on these maps to reflect on the content, delivery and outcomes of UWE’s educational provision. The report on the detailed mapping portfolio and approach is available [online](#).
- [Multi-method mapping at the University of Edinburgh](#): Building on student interns, PhD students and varied staff contributions, the University of Edinburgh’s Business School and School of Geosciences have undertaken a multi-method mapping project of their respective curricula. In both schools, keyword searches of module catalogues were followed by staff surveys to reflect on and discuss the results of the keyword search. The results of this mapping process can be explored online.



University of St Andrews community garden

Practice recommendations: Scoping ESD

- “Just start”: Don’t be afraid to start small and let mapping activities evolve over time. No one needs to be, or could possibly be, an expert in mapping all subjects. At UWE, they initially worked with a small group in a specific subject and then gradually expanded the discussion and mapping exercise.
- Add to initial scoping activities over time: UWE expanded their approach from a pilot project until they had staff from all departments. Other institutions demonstrated growth in their scoping approaches.

“What you tend to do is, you try to work with some people are already keen. So for us, you might find a school that’s very progressive, a head of school that really wants to do this, you work with them, give them a lot of support around their thinking on it, how we think best practice might look ... find people who have an interest in a commitment, use them as leaders (...), give them as much support as you can to develop good practice. Then once you’ve developed something that you think resembles good practice, offer it to others and offer support.”

(Senior Manager, University)

- **Keep following up:** Set 'deadlines' and follow-up dates, as these are crucial to keep reflecting on practice and progress. Ideally this is led by one central person who can engage, support, and motivate others, and sets up regular meetings, for example, every 6 months initially.
- **Encourage staff and student ownership:** ESD champions and enthusiasts in a subject area to contribute to work around ESD gives staff and students more ownership and control in the mapping process, increases motivation and make the mapping project more fit for purpose as it relates to student and staff experience.

"[Staff] are going to have more autonomy and take more credit and feel more responsible for delivering on something that they identify with more than something that's top down." (Senior Manager, University)

"All these things were possible because I saw that there was a student who was really into the project and she was very active.....It was really student driven in a sense." (Academic, University)

- **Scope pedagogies and competencies as well as content:** Scoping often starts with mapping of sustainability content in the curriculum. However, it should eventually progress to mapping of pedagogies and competencies as well.

"The mapping provides ideas and then.... once we have the mapping and also we understand who is more willing to participate and have more ideas, ... one can do ... something more substantial." (Academic, University)

- **Consider different frameworks:** The SDGs offer a popular mapping framework now used by many institutions, but they are not perfect (see above). They derive from a collaborative process of international debate, frame current policy context and priorities and will end in 2030 with the subsequent sustainability direction currently unknown. They can be useful in demonstrating the scope of sustainable development and in promoting a holistic, systems approach. However, they are sometimes used by stakeholders highlighting only individual goals or without a constructive yet critical debate.

"...because the SDGs are so broad it can mean an awful lot of different things to different people. (...) What are the strengths and weaknesses of the current framing of SDGs and what would an improvement look like?" (Senior Academic, University)

- **Use mixed methods:** Different mapping methods each have their merits. Automated key word searches are quick to set up, but their results are not always accurate and can create a false picture of the extent of ESD. Qualitative methods may take more time, but provide more detailed results and can support the process of mapping as well as yielding outcomes. Qualitative and quantitative methods can be combined.
- **Going beyond “tick box” and to-do lists:** In our research, practitioners and managers repeatedly emphasised the importance of both engaging staff and going beyond a ‘tick box’ exercise, but also keeping it feasible for staff and full to do lists.

“I think for people it’s a bit scary to think oh, I’m being asked to do this and that... So I think it’s through conversation and it cannot happen through a mechanical box ticking exercise” (Senior Manager, University)

“So much [monitoring] is about ... tick box. People need to engage much more deeply. But in terms of time commitments, you only get that deep connection if it’s a small requirement” (ESD Support Officer, University)

Reflective questions:

- Which of these scoping approaches seem most appropriate to your context?
- How can you invite stakeholders into the mapping process in ways that feel meaningful and energising and not merely an additional work load?
- How could you improve your scoping process in the next iteration?

3 Plan: How do we create goals and an action plan for ESD?



Building on how we have defined and contextualised ESD and our baseline map for our institution, the next step is to set goals and develop an action plan to further integrate, monitor and evaluate ESD. ESD needs continuous support rather than merely one-off events and exercises. Setting goals and targets helps us to define our purpose and to be ambitious, yet pragmatic.

Goals and targets can help maintain momentum even when competing agendas demand attention. Institutional or programme-based goals might include, for example, enhancing innovative pedagogies, combining ESD with other agendas or supporting student voice in curriculum development. A logical framework approach can support an institution to keep focused on long term goals with appropriate targets, activities and indicators.

Example targets would be an increase in diversity of assessments, integrated targets such as future thinking, establishment of a student ESD ambassador scheme, or having all students experience some ESD. In a full strategy, targets will be SMART, feasible, with appropriate indicators and timelines.

There will need to be agreement of what constitutes 'ESD' inclusion in a module – is this at least 30 minutes' worth of content? Should it cover more than one SDG explicitly? Should it include content, pedagogy and competency assessment? Should it include real world engagement through case studies or with practitioners? Subject benchmarks now indicate requirement of specific ESD requirements within all programmes (5). Further examples of typical targets are included in Table 3.

Table 3: Example targets that might be set within an ESD Strategy and Action Plan. Note that what comprises sufficient ESD to be counted will be a minimum emphasis on themes, pedagogies and competencies as defined by an institution in Step One: Discuss.

	Target	Comment
Quantitative targets		
Student experience	Number/percentage of modules with ESD.	Once a minimum level of content is identified, and a means of mapping this (Step Two) is agreed, it is relatively simple to assess this parameter.
	All programmes contain ESD.	Beyond provision of modules with ESD, this parameter allows us to assess if each degree pathway or other form of programme will offer student experience of ESD.
	All students experience ESD themes and approaches.	Once each programme has ESD in at least one compulsory module, all students in the institution can be offered experience of ESD.
	All core modules have some ESD inclusion.	Inclusion of ESD in all core modules ensures regular coverage for all students.
	All subject benchmarks require ESD.	As subject benchmarks become more explicit about requirements to address global challenges, inclusion of ESD ensures programmes are compliant with discipline standards.

	Target	Comment
Staff experience	All staff offered professional development opportunities in ESD in induction.	Many staff do not have either ability or capacity for ESD themes and approaches and require professional development and structural support. Ensuring that all new staff have ESD awareness and appreciation of institutional expectations will help to shift norms to enhance ESD provision.
	All staff offered CPD opportunities for ESD.	This target recognises need for staff support and, over time, increasing numbers of staff will gain confidence, knowledge and skills for provision of ESD.
	Number of publications by staff on ESD reflects critical engagement.	As staff deliver and critically reflect on ESD, they should be encouraged to write on their experiences, thus sharing their lessons locally and globally.
Qualitative targets	Quality review of ESD.	A target could be a regular review of the quality and depth of ESD, in a manner that generates positive dialogue and engages staff and students. This will also highlight any potential greenwashing.
	Evidence for some achievement of all competencies for all students.	Moving beyond content, this target assesses the extent to which modules and programmes support key generic and specific sustainability competencies.
	Examples and case studies of assessment, module, programme.	Qualitative case studies can inspire staff and students and spread ideas and enthusiasm.
	Quality ESD in specialist Honours and senior level modules.	Many core or compulsory modules are in early stages of programmes, but inclusion of ESD also in more specialised senior modules ensures that students can understand specific application and theories.
	Assessment of staff professional development opportunities.	Ensuring that staff professional development is not tick box but is in sufficient depth and of quality can be a good target to develop capacity for ESD provision.
	Staff forum or workshop.	Some form of staff support is a good target to make, with indicators such as regular workshops or seminars being appropriate.

Once appropriate quantitative and qualitative targets are agreed, it is important to select effective indicators. These should assess progress towards targets, be easy to measure and not lead to actions with unintended negative consequences. An action plan developed to support such targets should minimise such gaming. Such a plan will support (see Step Four: Support below) and enable progress and feedback on the process.

Embed within existing systems whilst promoting radical transformation

There is a paradox regarding efforts to embed ESD processes whilst also promoting ESD as a process of radical transformation. Can we use standard approaches to advance ESD, if these are part of the very system that limits meaningful education? One interview participant expressed their critical view.

“We managed to meet our targets ... to me, this is to plan into a system that we need to be away from. Are we trying to commodify this? In a way, is that for marketing purposes? What drives this [ESD action]?” (Academic, ESD specialist, University)

It is thus important to link ESD targets to wider goals around the purpose of education (Step One – Discuss). We can remind our institutions that the pursuit of knowledge, nurturing of graduates and community support are the key aims of universities. The commodification of education has become a challenge for the integrity of the higher education sector. It may be difficult to genuinely promote transformation whilst also persuading our universities that support of ESD is linked to other agendas so that we can gain practical support. Such questions can also form part of Step Six: Reflect.

Toolbox

Logframe tool

The [Logical Framework](#) approach is commonly used in development and other project work. It can be a useful approach to ensure that activities align with overall goals. Given the potential complexity of ESD Monitoring and evaluation, we have developed a logframe tool to support planning. It is available on our [project page](#).

In practice

University of Edinburgh Curriculum Transformation Programme: sustainability subgroup

ESD is being incorporated into a wider strategic [curriculum transformation process](#) at the University of Edinburgh.

This long-term process builds on insights from staff and students. Many groups of stakeholders and university departments are involved. The careers office has developed a [paper](#) suggesting skills required by employers, including a suite of relevant competencies.

A sustainability subgroup feeds a sustainability perspective into the process, including practical suggestions and deeper discussion of system transformation and structural adjustment. This subgroup has proved an excellent mechanism to retain focus on and lobby for ESD within the wider context and targets of institutional reform.



University of St Andrews outdoor learning activity

Practice recommendations: Plan ESD

- **Do not get lost in a quest for perfection:**

"There are so many challenges about measuring progress and defining those key performance indicators, . . . Just to be able to monitor progress. Having any metric, however imperfect it is, will already be maybe a step forward."

(Senior Manager, University).

- **Enable an institution wide approach:**

"...the ambition is to make this part of the experience of every student in the university. It doesn't make sense to think of it in a very narrow way of saying that we're just dealing with geosciences, because they kind of deal with the environment, or we're just going to deal with education, because they do the pedagogy You know, it has to be everywhere." (Senior Academic, University)

- **Link with other planning and evaluation processes:**

"... maybe setting timelines for reflection. Is this going to be a yearly process? Is it a five yearly process? Does it link in with other kinds of evaluation processes? I think it needs to be done in line with the strategic targets of the institution."

(Support officer, University)

- **Contextualise approach for institution:**

"Institutions and student unions are all working at different capacities and within different contexts. So I don't necessarily think there's a one-size-fits-all target."

(Support manager, NGO)

- **Develop meaningful targets and indicators:**

"Some of the initial indicators may well be (...) things like how many students are exposed to sustainability and how many of them have to have it in their programmes. So, as long as we have some ESD in a core module for every programme, then we know that all students have some education for sustainable development. But that's not as meaningful as saying are they supported to develop the skills, knowledge and capacities that they actually need when they leave [the university]?"

(Senior academic, University)

Reflective questions:

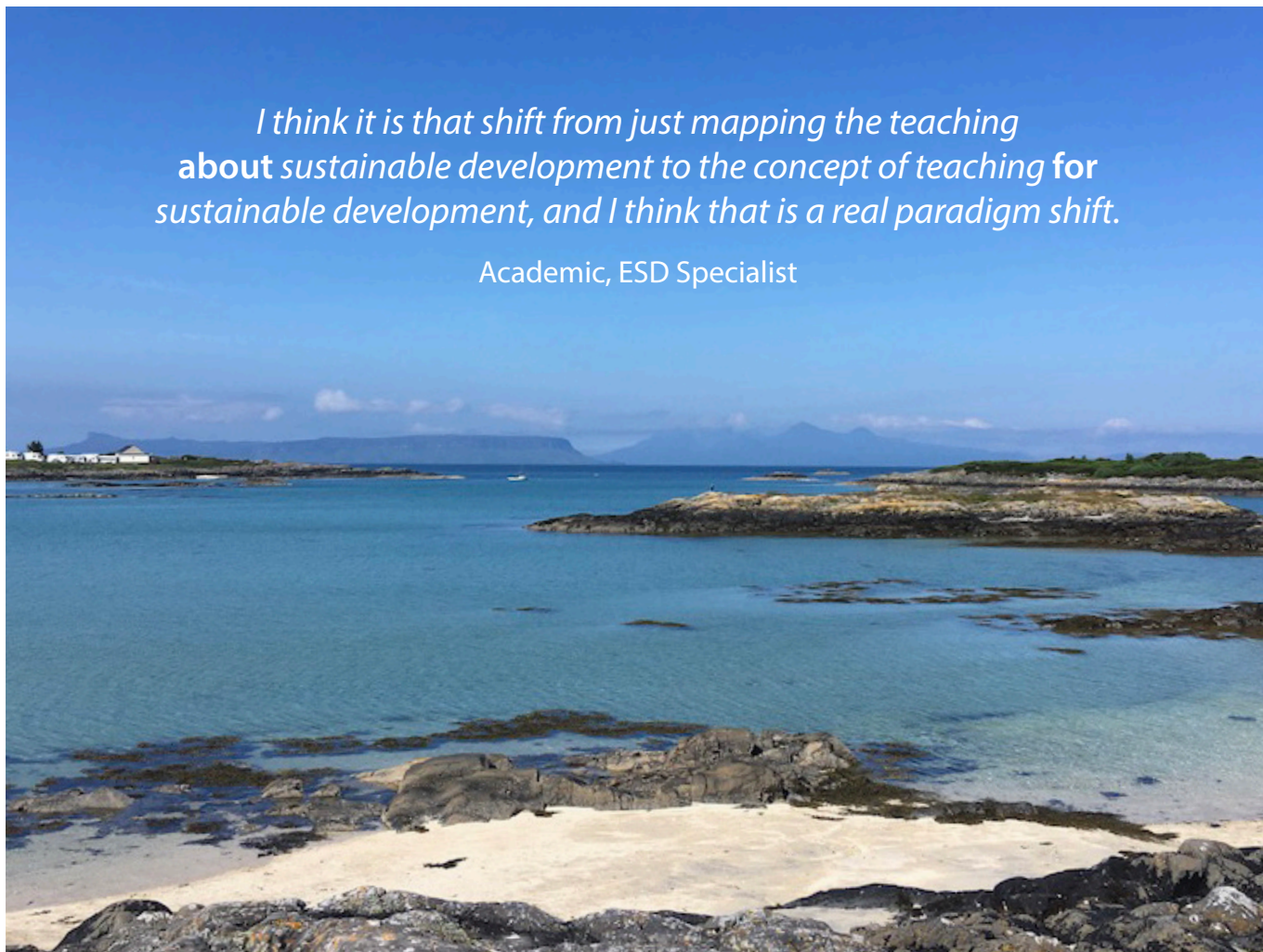
- What targets and indicators are meaningful and should be prioritised in our institution?
- How can we balance quantitative measures and qualitative stories and case studies?
- How can we deliver on targets yet enable a facilitated, participatory process?
- How ambitious should we be in setting targets and timescales to address ESD in the climate and nature crises without excessive additional workload?
- Who is holding us accountable to our plans and processes?
- Can we embed ESD within existing systems and with ongoing agendas whilst balancing transformative change?



4 Support: How do we enhance and deepen the provision of ESD?

I think it is that shift from just mapping the teaching about sustainable development to the concept of teaching for sustainable development, and I think that is a real paradigm shift.

Academic, ESD Specialist



In this step we seek to support ESD by enhancing and deepening provision. This is about engaging critically with the concepts and practices of ESD in an institution. It goes beyond merely mapping, towards supporting quality ESD.

Supporting ESD might be enabled through the appointment of student champions and provision of staff training.

Deepening ESD can occur through workshops and academic fora, encouraging research on ESD and emphasising a whole institution approach, going beyond the initial scoping in Step Two: Scope.

Celebrating ESD can be undertaken through awards and certification, or student ESD choices. It is important to pause and appreciate people and progress.

There is much debate over what comprises quality ESD. Two other QAA projects have recently assessed aspects of this challenge and present frameworks, examples and resources to support quality provision.

- [Students Driving Curriculum Quality for Sustainability](#) – QAA funded Collaborative Enhancement Project led by University of Gloucestershire.
- [ESD and Academic Quality](#) – QAA funded Collaborative Enhancement Project led by De Montfort University.

Here we further consider how we can support staff and students and begin to consider what the long-term impacts of ESD might be (see Step Five: Evaluate). In particular, we move from a focus on topic and content to a focus on competencies and on the outcomes of teaching and learning. There are examples of how educators or learners might begin to assess their adoption of competencies (7,9,10).

In practice

Cooking a metaphorical dish of education for sustainable development

An academic with experience of ESD described the difference between teaching *about* Sustainable Development, and teaching *for* Sustainable Development as different ways of cooking.

“So teaching about can be perceived to be quite easy, because you can put in a case study or you could include a reference, you can put in three slides in a lecture. One of your examples can be in relation to sustainable development. It can be a flavour; it might be a little bit like putting some chilli into a recipe: it gives you sort of a token relationship, and you could say, ‘Well, this is Mexican now because it’s got a little bit of chilli in it.’

But actually, if you really want to make it Mexican, you actually have to have an idea of what is Mexican cuisine and how do they cook? How do they eat together and what are they trying to achieve when they eat together? And you need the fresh ingredients; you need the cilantro and you need the ingredients that come from Mexico. It’s a much more nuanced, sophisticated engagement with the palette, and people sit down and eat together. It’s a celebration of culture and it’s dependent on where you are located in place and links to wider globalised issues. And that’s a very different thing from putting a little bit of chilli in a dish.”

This metaphor highlights the difference between awareness, inclusion, and monitoring of some ESD, and a deeper engagement with philosophy, principles, and practice.

The most appropriate actions to take will always be influenced by type and purpose of particular institutions or programmes and by the goals and targets defined. It is important that this step is supportive and not punitive, and that a dialogue is encouraged amongst all stakeholders. It is difficult to judge quality ESD, as we discuss further in Step Five: Evaluate. The following issues, activities and examples derive from literature, interviews with practitioners and case studies.

University leadership support for ESD

Visible, articulated, and practical support from the Principal's Office or other level of senior management can enable staff and students to go further on their learning journey. Leadership, governance structures, institutional strategy and regulations, and institutional values are important in determining ESD goals, strategy, and resources. Some institutions already have high level support through leadership and embedded in overarching institutional strategies.

"We got a principal... [who is] very much pushing that we should be a values-led university... And for us, you know, making the world a better place is something that we regard as part of our mission... The principal and I discussed where does it [sustainability] go next, and it was his decision clearly to elevate it further... It's certainly increasing in its importance to us as a university, recognising that the sustainability agenda should be informing every significant decision we take."

(Senior Academic, University)

"Our world leading strategy articulates that we want to embrace interdisciplinarity at every level and especially in education, because that is the way where we can try to tackle the biggest societal, economic and environmental challenges.... I think things will keep moving forward because this year we have adopted our new sustainability strategic pillar." **(Senior Manager, University)**

In other contexts, a campaign to generate support has to be undertaken.

"Just after the meeting I spoke to the director of teaching. Then in later meetings, sustainability was actually on the agenda." **(Student, Sustainability Champion, University)**

Governance support for ESD

As well as support from university leaders, governance systems can support ESD and those who strive for it. Governance systems include committees, regulations and appointment of ESD champions, and training and awards (covered below).

For example, every partnership that takes part in [Responsible Futures](#) has a working group that the programme organisers ask to be embedded within a formal structure. The partnership asks for a broad representation within the group, including academic staff, professional staff, students, trade union representatives to tackle sustainability holistically across the institution. Having one or two key contacts that specifically focus on ESD is critical.

Identifying and empowering gatekeepers can also be useful. Sustainability champions can often identify and overcome local barriers.

“We have sustainability representatives in every school. These are students and we encourage them to do what they think is appropriate and engage with colleagues in schools [informally and on committees]” (Senior Manager, University)

Regulations can be developed such as a requirement for all new modules to indicate ESD engagement, or for every programme to demonstrate some core ESD. However, it is important to get the appropriate balance between regulation and encouragement.

“As a university, of course, we’re incredibly broad. We’re not about pigeonholing people. We’re not about being really restrictive about the way people think or speak or act. On the contrary, it should be really diverse.” (Senior academic, University)

Support for staff

Support for academic staff includes recognition of the workload issues already highlighted in the sector. ESD and its monitoring should be incentivised, such as through consideration in promotion applications, create new professional opportunities, provide fulfilment, and minimise additional bureaucratic load.

Internal workshops, sustainability fora and conferences can celebrate and share good practice in an institution. External networks, conferences and communities of practice can further support knowledge exchange and enthusiasm. For example, the [ESD Topic Support Network](#) run by EAUC Scotland and Learning for Sustainability Scotland, and the [United Nations University approved Regional Centres of Expertise in ESD](#) can be excellent groups to join.

Encouraging and enabling staff to engage in internal and external training will strengthen capacity to integrate ESD themes and approaches. For example, University College London has developed guidance to [integrate ESD into staff inductions](#).

Prizes, awards, and certification for ESD, categories for student nomination category, new module, existing module, and programme, can catalyse interest and incentivise in a positive way. For example, the University of St Andrews [Golden Dandelion Prize](#) and [EAUC Green Gown Awards](#) celebrate achievement.

Reducing bureaucratic load and keeping ESD meaningful can be challenging:

“To embed [monitoring], you’ve got to make it something that’s attractable attractive and feasible, not just add it onto everybody’s To Do List. So as a former head of school, quite often you’re asked to report against all sorts of things, and every now and then a new thing would come in.... And so that was a lot of what our discussion was, is, how do we support our colleagues in doing this without adding to their To Do List?”
(Senior academic, University)



University of St Andrews, activity for real world examples

Support for students

We need to work with students to co-create plans and changes. As one student who is involved in curriculum mapping and change processes phrases it:

"It's really nice because I get to talk to staff and other students about our learning. I really like the fact that we get to have a say; I know that in other universities, students don't really get to participate or provide feedback on what they're learning.... I think students do really care and they want to see changes."

(Student, Sustainability Champion, University)

Connecting students with each other, with supporting organisations such as [SOS-UK](#) and [sparqs](#) and with other stakeholders can help develop a community of practice.

"I was lucky that I was in a network of people that were supportive of these ideas. I think once everyone's on board, you just need someone to help make things actually happen." (Student, Sustainability Champion, University)



University of Western England, photo courtesy of Students Organising for Sustainability

Support for whole institution and community

Links to whole institution sustainable development can be encouraged by enabling students to participate in community engagement and sustainability initiatives, such as [Transition](#). Student society and Student Union activities can develop a sustainability impetus. Sustainability research and research led teaching can link different facets of knowledge production and exchange through ESD. Community engagement through sustainability action can provide context and real-world examples for ESD. ESD can be linked with other university agendas such as entrepreneurship, quality education, and graduate attributes. At its best, the whole institution approach can link teaching and learning with community engagement, operational management and staff fulfilment (14,15 Figure 3).



Figure 3: A whole institution approach can enable and be enabled by vision and leadership (from 15).

Toolbox

Competencies survey tool

Some target indicators can be easy to assess once they are well defined. However, others can be more challenging. There is currently great interest in ways to effectively assess competencies. Specific competencies can be evaluated via assessments, for example:

- Critical thinking – essay
- Systems thinking – systems maps and reflection
- Self-awareness – reflective diaries and essays
- Collaborative competencies – group projects

It can be more complex to assess suites of competencies across a learning unit. We suggest reflexive questioning of students and staff (also 7). Whilst this could be through relatively unstructured class discussion, [we have developed a survey tool](#) for this project that enables assessment of module or programme effects on different aspects of key sustainability competencies. It asks students to reflect on the extent to which they have developed or strengthened their competencies in a given module or programme and uses Likert responses to against statements per competency. The tool explicitly states that not all modules will emphasise all competencies.

We found that this tool works best if students and staff consider how learning contributes to competencies from the start of the module or programme. Completing the whole survey takes time and focus and completion rates were best if students were given the opportunity to do it in class. Parts of the survey could be used to assess individual competencies if this was relevant to a module or programme. Terminology was a challenge with the intention to minimise jargon but to use language to signal attributes of the competencies. Even when doing a survey, we found that the tool was most successful when preceded or followed by collective discussion of reflection to strengthen learning.

Transition University

One tool that promotes community engagement and associated learning through development of Transition approaches is the [Transition University Handbook](#), which provides case studies and practical examples.

In practice

[ESD Changemakers at University of Hull: ESD Changemakers programme](#) partners students with academics from aligned disciplines to embed ESD approaches in teaching and learning. In 2023, students at the University of Hull have completed extensive curriculum mapping and audits as part of the **[ESD Changemakers programme](#)** by SOS-UK. Students then collaborated with staff to explore ESD solutions to challenges revealed in the mapping exercise.

[Responsible Futures Programme](#) by SOS-UK – whole institution approach to embedding sustainability and ESD in student learning: as described in detail in Step Two: Scope,, this programme is excellent for auditing ESD, but it also helps develop support through staff student partnerships.

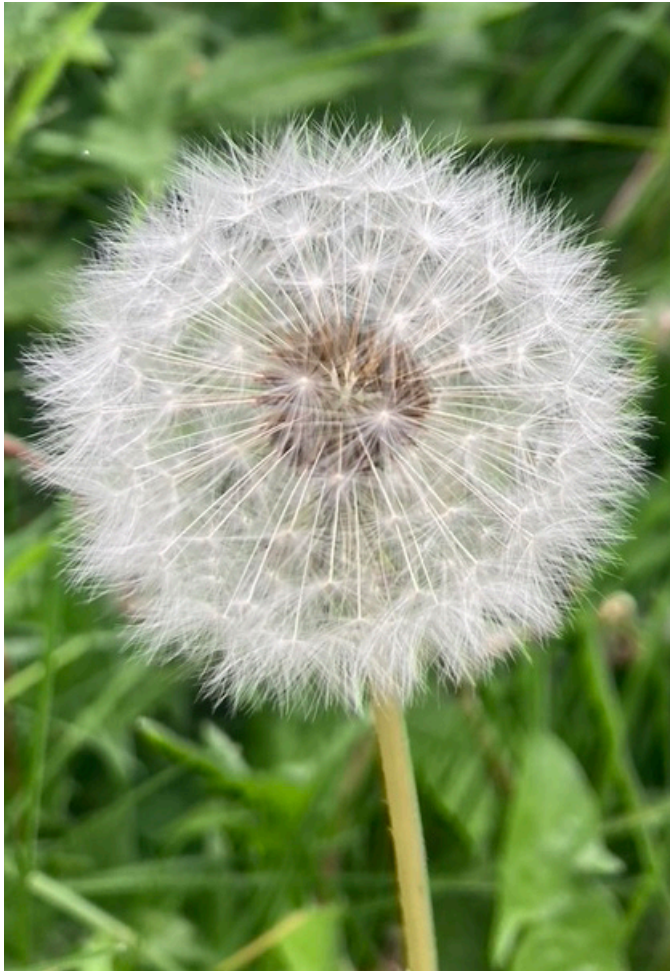
Competency reflections and assessment In University of Strathclyde: The **[Vertically Integrated Projects for Sustainable Development](#)** programme sought to embed competency development in the core learning experience, and enable students to articulate their competencies in relation to their professional development. Staff collaborated with **[Practera](#)**, an ed-tech provider that supports experiential learning experiences via its online platform. Measures adopted included Baseline Competency Self-Assessment, biweekly individual reflections, Team 360s and Post-Team 360 Reflections, and a Final Reflection and Skills ePortfolio (graded). This approach has worked well, although adaptations have been required to support understanding and the quality of evidence and outputs. Read a more detailed report about the projects **[here](#)**.

The Golden Dandelion Award was developed at the University of St Andrews to promote and reward ESD. Initially, applications for a prize were invited. However, the quality of applications was so high that it was decided to award a certification for all eligible entries with the highest scoring entry being awarded the prize. An online application form asked applicants to provide word limited responses for their module against the criteria of:

- Creativity and innovation
- Development of sustainability knowledge, skills and competencies
- Reflection on inter- or transdisciplinary engagement
- Engaging students with real world examples in impacts on sustainability

A committee then assessed applications for approval and identified a prize winner through application criteria. In addition, a Golden Dandelion Seed award was developed for new module applications to encourage consideration of ESD in new modules.

“The dandelion is . . . a good symbol for seeding, nourishing and disseminating sustainability in the curriculum. At the University of St Andrews, we use it as a symbol to showcase excellent sustainability modules in the curriculum.”



<https://www.cabidigitallibrary.org/doi/10.1079/cabicompendium.52773>

Practice recommendations: Support ESD

- **Lead with intention:** leadership can support institutional values and enable top-down support.
- **Incentivise, support and share good practice in ESD:** Develop prizes, awards, sustainability fora.
- **Regulate for ESD:** by including a section in the form for new modules, creating programme wide requirement for inclusion, and other. See the [ESD and Academic Quality](#) QAA project e examples of how ESD can be included in quality processes.
- **Develop capacity of staff to teach ESD:** Provide optional, inspiring and exciting internal CPD opportunities. Provide compulsory, inspiring, professional development for ESD at induction for new staff.
- **Limit monitoring tasks and make them meaningful:**

“If you need to write a whole paragraph, then it’s a lot. Better if you ask one short question that takes 2 minutes to fill in There could also be an open field that says what topics you could include, what the pedagogies you could include, just to make them reflect, but it’s not long.” (Academic, University)
- **Start with ‘enthusiasts’:** Appointed sustainability champions and recognised enthusiasts can catalyse significant change.

“What you tend to do is you try to work with some people are already keen. So for us, you might find a school that’s very progressive, a head of school that really wants to do this, you work with them, give them a lot of support around how we think best practise might look. You work with them and you see how it goes and if they find that it’s a good positive experience, then you can roll it out to other schools.” (Senior Academic, University)
- **Bring in expertise:** invite others from your institution or externally to bring knowledge, advice and experience to the discussion. Join networks to exchange knowledge and find guest speakers or good practice examples.
- **Seek co-creation with students:** supporting participatory curriculum development.

- **Exploit opportunities:** we can often link monitoring and evaluating into existing processes and opportunities.

“Building into any opportunity we can, is probably the way we’re going to make this happen quicker and more effectively... And then linking in with the kind of initiatives that are in progress and making sure we leverage the opportunities there as much as possible.” (Support officer, University)

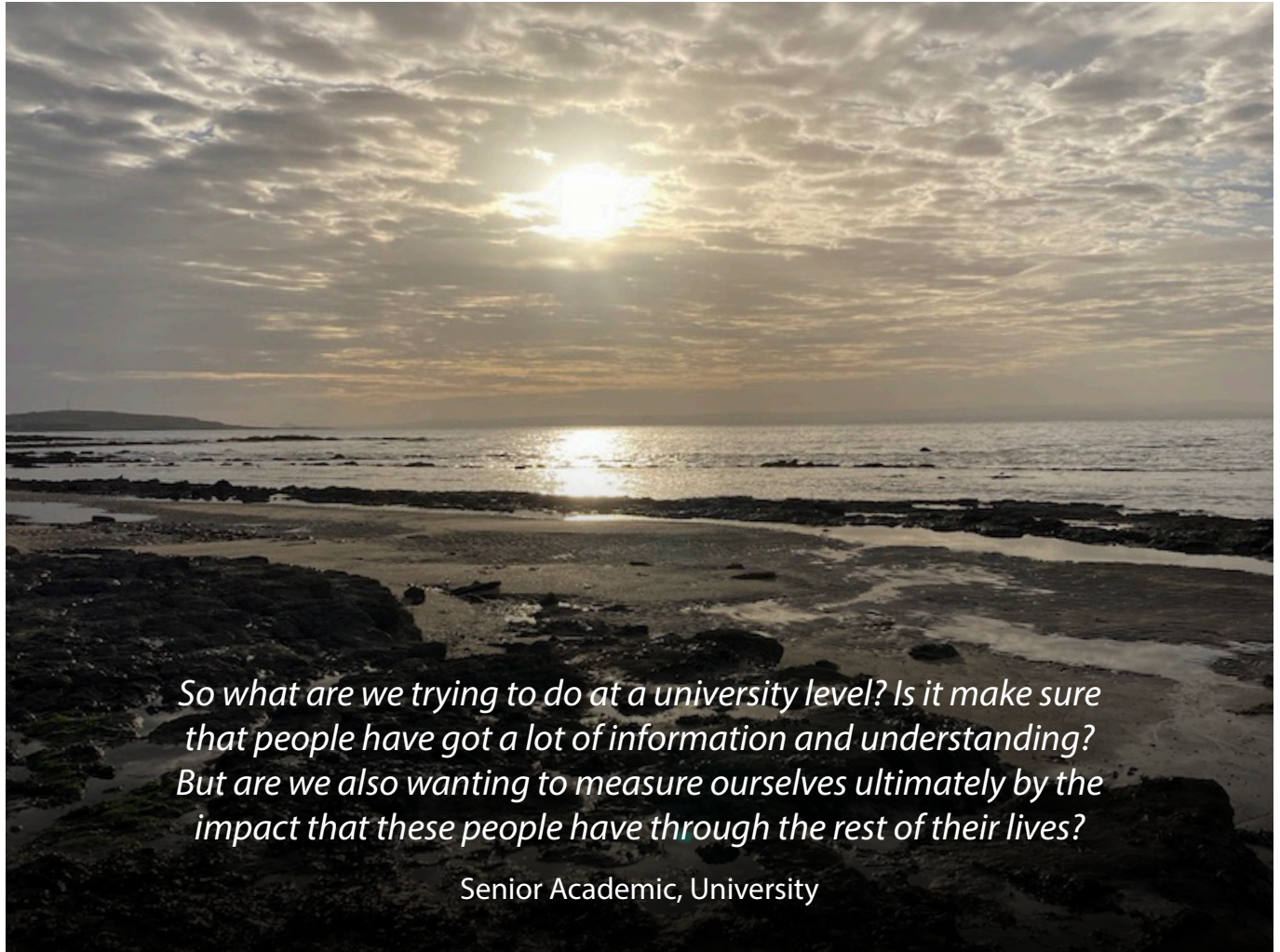
- **Seek quality ESD:**

“It’s the quality... We actually call it excellence in education for sustainable development.” (Senior Manager, University)

Reflective questions

- How can we capture different stakeholder perspectives of effective ESD support mechanisms?
- What support, deepening and celebration activities will work best in our institution?
- How can we embed ESD and create a culture of sustainability and social justice across the whole institution and community?
- What does quality and depth mean in our context for ESD?

5 Evaluate: how do we evaluate impacts of ESD?



In this step, we need to go beyond targets and goals in our teaching and learning and begin to consider the influence of ESD in enabling students, and staff, to become change agents and to create a more sustainable world. This is a difficult step that will require long term engagement with alumni and focused discussion with enthusiasts.

We encourage reflection by learners and academics on competencies, using reflective questionnaires and discussions. Following up with alumni to assess long term effects of ESD (whilst recognising cumulative effects) and capturing stories and reflections can be useful. It may lead to, for example, a 10 year impact review. This might be linked to alumni reunions. SOS-UK and graduate destination questionnaires can provide some information about short term graduate achievements.

Monitoring and evaluation activities are likely to be connected to existing alumni networks and to be institutionally contextualised. Distinguishing the effects of ESD on graduate actions amongst other effects is difficult. Impacts are often cumulative and serendipitous and come in different forms, including instrumental, conceptual, capacitive, collective and relational. Evaluation for this step requires not only

assessment of how graduates are achieving sustainability after their learning, but also the extent to which the ESD stimulated their actions. Given the need to untangle consequences and connections, evaluation is likely to include qualitative life history stories as well as quantitative surveys.

“We should be producing graduates who can contribute to making a better world, and at its very core, education for sustainable development is about that. It is about supporting our graduates to be critical thinkers, future thinkers, thinking holistically with the capacity to work independently and work with others and to and have some kind of moral compass so that when they go out into the world, they can act in a way which will leave the planet a little bit better than when they first went out”

(Senior Academic, University).

Much of the focus of ESD evaluation has been on the outcomes for and impacts on students, but teaching ESD also has an impact on staff. Staff can learn about the links between their material and sustainability. There may be an effect on staff wellbeing or sense of fulfilment in being engaged with real world issues. It can lead to novel research pathways. Ideally, this should be both embedded in programmes and in widescale surveys across universities.

Examples & possibilities

Evaluating impact is a step that many higher education providers struggle to undertake. In our interviews and workshops with university practitioners, many suggested that this is the step for which people feel least equipped.

While there are few examples of impact assessment for ESD out there, the following present some examples of how impact may be evaluated:

- Focus groups with final year graduates to explore consequences of ESD learning
- Quantitative surveys of alumni at key points: possibly one year, three years, ten years after graduation
- Interviews and life history analysis of graduates
- Impact analysis of graduate employment and actions
- Impacts on staff, including wellbeing, fulfilment, practice and learning
- Analysis of cascading impacts on research, operational and community aspects of the whole institution

In practice

[Assessing graduate sustainability attributes using a vignette/scenario approach in RMIT University, Australia](#): A research project explored how curriculum and pedagogy influenced the capacity of graduates to enact sustainability in the workplace. A tested survey tool was developed for assessing sustainability attribute uptake using a vignette/scenario-based question design to assess the level of attribute attainment. The pilot indicated possibility for the use of this and other tools to assess impact through graduate learning and to adjust curriculum and pedagogy to support graduate sustainability action in future cohorts.

Practice recommendations: Evaluate ESD

- **Conduct alumni surveys:** Many universities run alumni surveys with their graduates – see for example [University College London's alumni survey](#) results. These surveys often ask about employment and 'success'. It would be possible to include specific questions on the impact of education on sustainability knowledge, skills, and competencies.
- **Survey graduate employment:** The [Graduate Outcome survey](#) is the largest provider of graduate employment data. While this is a centrally run survey, providers are able to select from a number of opt-in question banks. These questions would only be asked of their graduates. We could use these processes to find out more not just about employment status, but also about the types of jobs graduates adopt.
- **Gather alumni stories:** support alumni gatherings and gather stories of activities and impacts since graduation.
- **Listen to staff stories:** enable and capture the stories of staff who may be inspired and learn from adopting ESD themes and approaches. Respect the emotional and personal costs and benefits of such experiences.

Reflective questions

- What is the purpose of higher education? What kind of graduates do we want to nurture through ESD?
- How can we create a community within our institutions and maintain meaningful contact with our graduates?
- To what extent could and perhaps should ESD create change and transformation in people, society and systems? What kind of change?

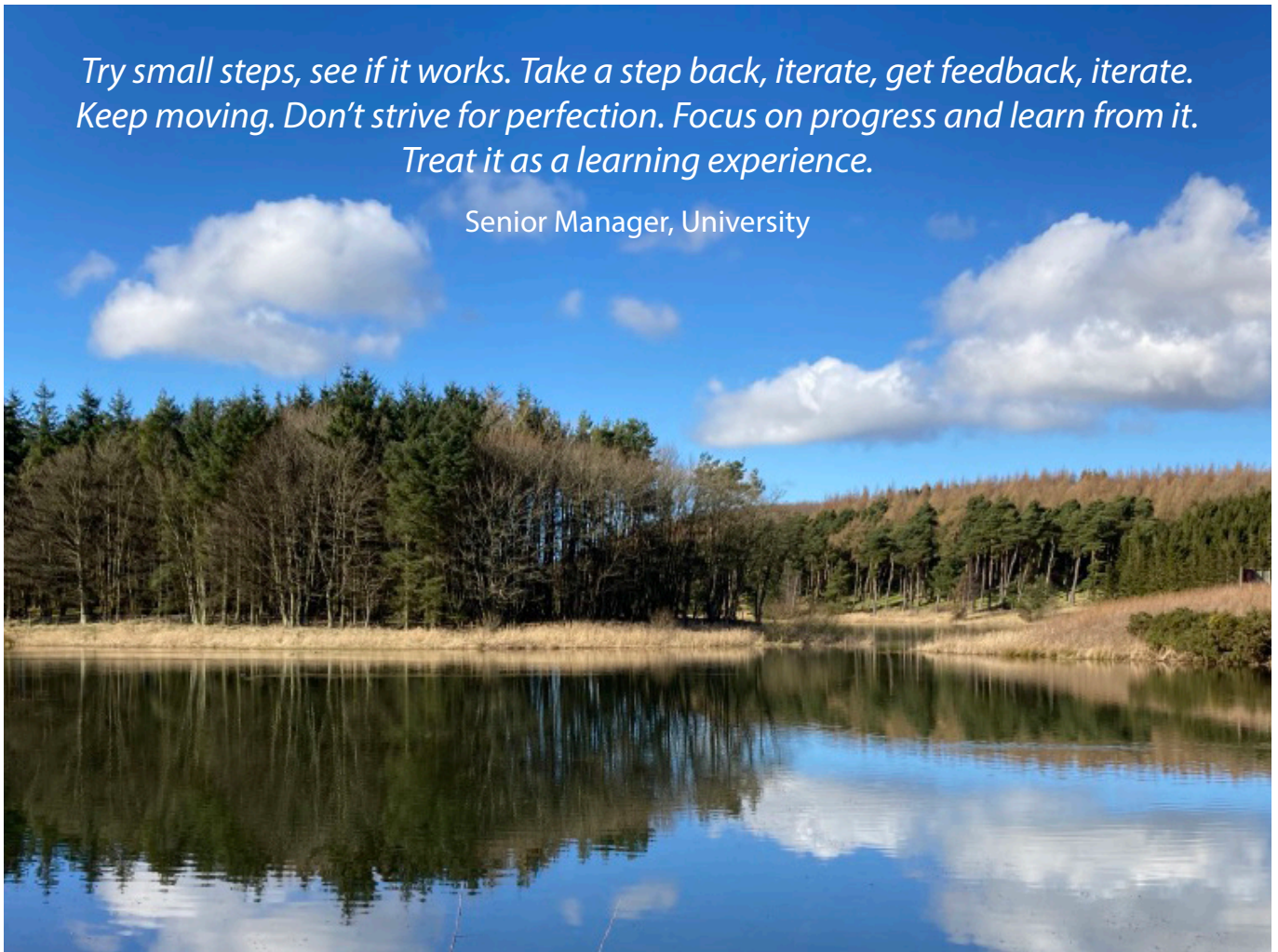


University of St Andrews, graduation procession, photo courtesy University of St Andrews

6 Reflect: How do we learn from evaluation to modify future ESD plans?

Try small steps, see if it works. Take a step back, iterate, get feedback, iterate. Keep moving. Don't strive for perfection. Focus on progress and learn from it. Treat it as a learning experience.

Senior Manager, University



This final step takes us further round the learning spiral to connect once more with definitions and meanings of ESD in our institutional context. This step is often omitted, but it is important to take the time to celebrate achievements and to consider how we might adapt future goals, targets and plans.

On reflection, we may seek additional or updated tools for monitoring and evaluation. Reflection should be participatory, including reflection by students, academic and support staff, and the wider community. Whilst ongoing reflection is required, minor (e.g. annual) and major (e.g. every 4 years) reviews and long-term (e.g. 10 years) analysis of ESD strategy can be planned. Reflection enhances learning and should be seen as part of learning.

Examples of activities

Possible reflection activities might include:

- A Prize or Award to celebrate excellence in ESD
- Regular (e.g. bi-annual) staff fora or conferences specifically integrating and encouraging reflection
- Articles in institutional newsletters highlighting achievement
- Reflective essays by final year students reflecting on ESD in their programmes
- Focus groups with students reflecting on their experiences
- Focus groups with staff reflecting on their experiences
- Surveys gathering anonymous reflections in quantitative ways
- Minor (e.g. annual) reviews, major (e.g. every 4 years) reviews and long term (e.g. 10 years) analyses of ESD strategy
- Regular grounding discussions in ESD team or committee meetings to reconnect with the definition of ESD and the institution's overarching ESD goals

Critical analysis of transformative learning

Whilst starting is the important aspect in monitoring and evaluation, reflection can include deeper and more critical analysis of our pedagogical approaches, competency outputs and evidence for transformative learning and impact. We may reflect on the ultimate need for transgressive approaches. One academic asked:

"Are we really addressing issues of exploitation and capitalism and neoliberalism? If we're so bound in these structures, we have to then end up complying to these structures... It's like a sticking plaster, just a kind of a shallow form when we need to actually get deeper. Maybe [we need] transgression to get us to different ways of thinking, to question the whole system.... Which is something different... to transformation that doesn't really get us into maybe some of that bigger disruptive thinking, which ... really challenges us to be uncomfortable."

(Academic, University)

Toolbox

Core value reflection

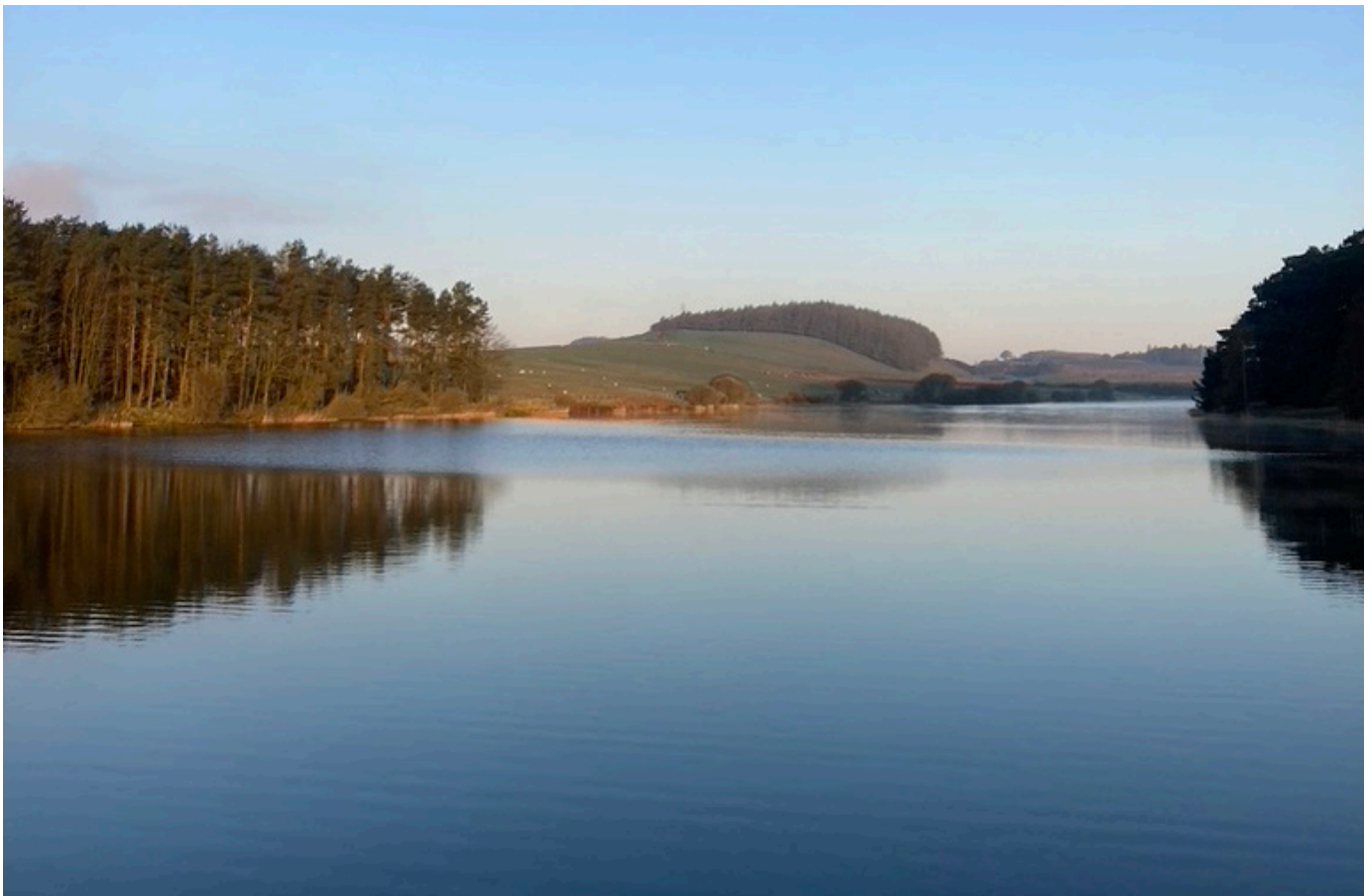
In some workshops, there may be opportunities to facilitate activities that stimulate reflection of personal core values – and how these overlap within a given group. The following can be run with students and staff. [Read about this activity in greater detail](#) here.

Step 1: Write down a list of values that you align with. The facilitator can provide an overview of examples for some inspiration.

Step 2: Group similar values together into four or five groups.

Step 3: Find a word that describes the values in each group.

These final group values can be shared among all participants. Typically, participants find this activity more difficult than initially assumed, and find it refreshing to share with others and discover differences and similarities. This exercise can be followed up by discussing institutional values or values that are considered important for sustainability and ESD.



Practice recommendations: Reflect ESD

- **Improve step by step:** recognising that monitoring and evaluation can be a cycle of action learning and reflection, spiralling deeper, enables us to begin with imperfect tools and to hone and sharpen these over time.

“Try small steps, see if it works. Take a step back, iterate, get feedback, iterate. Keep moving. Don’t strive for perfection. Focus on progress and learn from it. Treat it as a learning experience” (Senior Manager, University).

- **Learn as you go:**

“See, you know you learn along the way and it’s a huge jump to go from where we currently are to where we want to be, so we probably can’t predict exactly how to get there now and what resources are needed. So I think you do have to do it in an iterative way.” (Senior academic, University)

- **Integrate student voice:**

“I would like to see written into [Monitoring and Evaluating processes] an expectation that this isn’t something that staff do and then impose on students. This is something that is done with students as equal partners... Students are very, very capable of contributing very meaningfully to this.” (Support manager, NGO).

- **Celebrate success:** a good way to gather people and reflect is to celebrate achievements.

Reflective questions

- How do we celebrate progress and achievements in ESD?
- How can we capture reflections from different stakeholders and share these?
- What have we learnt from past experiences and how can we use this learning to enact positive changes in our ESD strategy?
- How can we continue to move around the spiral, generating ever wider ESD and impacts on the community and system?



Conclusions

Conclusions

This learning spiral is designed to support different routes to monitor and evaluate ESD in institutions across the UK and beyond. The six steps (Discuss, Scope, Plan, Support, Evaluate, Reflect) are designed to be used sequentially, but some people may find it easier to do several at once, to start from a different point or to undertake regular iterations of the steps. The spiral represents a continuing journey in which learning is strengthened around the reflection cycle.

We found that the spiral of monitoring and evaluation may raise potentially paradoxical issues that require us to consider the purpose of education as well as daily practices. For example, we need to embed our monitoring and evaluation with existing systems and agendas, and yet enable a radical transformation. We should support ESD self-declared enthusiasts, whilst widening participation across and within stakeholder groups. Our approaches should be flexible and participatory, and yet we need to work with targets and indicators. We must gather quantitative data, but not neglect rich, inspiring stories. We need incentives such as prizes and awards to encourage engagement, whilst also establishing regulations to ensure minimal engagement. We can develop leadership and top down managerial support, but grassroots sustainability efforts and student voice must be supported as well. This process can start with small steps, but we ultimately need a long term approach. Finally, we see ESD as a *process* of engagement, learning, action and reflection, but also as a suite of *outcomes* generating positive staff, student and societal impacts.

Recognising these and other potential paradoxes demonstrates the need for critical engagement with the principles as well as the practices of monitoring and evaluation of ESD. Focusing on the process as well as outcomes around the spiral framework will strengthen understanding and generate new insights on ESD. We hope that in using the framework for action learning and reflection, we deepen, widen and enhance quality ESD to help us nurture graduates and strengthen the role of universities in creating a better world.

Acknowledgements

We are grateful to QAA for funding this project and to Kerr Castle, QAA, for his support. Thanks to all the workshop and interview participants and to those who piloted the competency survey. We are particularly grateful to early project contributions from Rebecca Petford, Lucy Patterson and Barbara Keating.

We are grateful to Print and Design, University of St Andrews, for excellent design work on the Handbook

References

- 1 UNESCO (2019) What is Education for Sustainable Development? <https://en.unesco.org/themes/education-sustainable-development/what-is-esd> Date accessed 2 January 2021.
- 2 Learning for Sustainability Scotland <http://learningforsustainabilityscotland.org>
- 3 Sterling, S. (2013) The sustainable university: challenge and response. In: Sterling, S., Maxey, L. and Luna, H. (2013) *The Sustainable University. Progress and Prospects*. Routledge, London. pp 17 – 50.
- 4 Heila Lotz-Sisitka quoted in STERLING S., MAXEY L. & LUNA H. (eds.) (2013). *The sustainable university: progress and prospects*. Routledge, Oxon, UK.
- 5 Price, E. A., White, R. M., Mori, K., Longhurst, J., Baughan, P., Hayles, C. S., ... & Preist, C. (2021). Supporting the role of universities in leading individual and societal transformation through education for sustainable development. *Discover Sustainability*, 2(1), 49.
- 6 SOS-UK www.sos-uk.org/research/sustainability-skills-survey
- 7 Giangrande, N., White, R.M., East, M., Jackson, R., Clarke, T., Salo Coste, M. and Penha-Lopes, G. (2019). A Competency Framework to Assess and Activate Education for Sustainable Development: Addressing the UN Sustainable Development Goals 4.7 Challenge. *Sustainability*, 11: 2832. doi:10.3390/su11102832.
- 8 Kolb, A., & Kolb, D. (2018). Eight important things to know about the experiential learning cycle. *Australian educational leader*, 40(3), 8-14
- 9 QAA/Advance HE. Education for sustainable development guidance. (2021). www.qaa.ac.uk/quality-code/education-for-sustainable-development and www.advance-he.ac.uk/knowledge-hub/education-sustainable-development-guidance. Accessed 29 Mar 2021.
- 10 UNESCO (2017) Education for Sustainable Development Goals: learning objectives <https://unesdoc.unesco.org/ark:/48223/pf0000247444> p. 10
- 11 Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability science*, 6, 203-218.

- 12 Sterling, S. R. (2001). *Sustainable education: re-visioning learning and change*. Totnes: Green Books for the Schumacher Society.
- 13 Langan, M. (2017). *Neo-colonialism and the Poverty of 'development' in Africa*. Springer.
- 14 Kohl, K., Hopkins, C., Barth, M., Michelsen, G., Dlouhá, J., Razak, D. A., ... & Toman, I. (2022). A whole-institution approach towards sustainability: a crucial aspect of higher education's individual and collective engagement with the SDGs and beyond. *International Journal of Sustainability in Higher Education*, 23(2), 218-236.
- 15 Wals, A. E., & Mathie, R. G. (2022). It Takes a Whole School. *American Scientist*, 110(4), 244-247.

Unattributed photographs are from Rehema White