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Enabling change agents for sustainable development: a whole-institution approach to embedding the UN Sustainable Development Goals in Higher Education.

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Title:

Enabling change agents for sustainable development: a whole-institution approach to embedding the UN Sustainable Development Goals in Higher Education.

AbstractPurpose

Recognising that there is increasing urgency to equip graduates to become future leaders in delivering the SDGs, we present a critical analysis of a whole-institution approach to embedding Education for Sustainable Development (ESD) in curricula. We explore the wider reach of adopting a similar approach within varied professional practices and institutional settings.

Approach

Our approach is mixed-methods action research framed within a revised institutional strategy. We place this in the wider context of ESD in Higher Education.

Findings

Embedding ESD in curricula and recognition of its relevance across all disciplines were important to stakeholders. These outcomes translated into strategic commitments. Within the first year of the strategy, Carbon Literacy was embedded in almost 20% of courses and in progress in a further 25%; ESD was embedded in 42% of courses and in progress in a further 7%; and over 80% of students agreed with the statement 'My course provides me with the opportunities to gain knowledge and skills relating to sustainable development'.

Originality

This work demonstrates effective measures that can be amplified across the sector, framed by two overarching principles that are effective regardless of context: (1) demonstration that sustainability *adds value* to academic activities and (2) consultation and co-creation to build a shared vision and support for change.

Key words: Education for Sustainable Development, climate change education, Carbon Literacy, sustainability strategy

Introduction

We are facing global environmental challenges that threaten to overstep our planetary boundaries, whilst social and economic inequalities have been exacerbated (Raworth, 2017; Richardson *et al.* 2023). Sustainable development is a route to envision better futures and address these challenges (Baker, 1997). The UN Sustainable Development Goals (SDGs) were launched in 2015 to create a global framework and impetus for action in transforming our world for a more sustainable future. The SDGs recognise the climate and nature emergencies, pollution, poverty and inequalities and the interlinkages between these challenges (UN, 2015). The SDGs combine an aspirational vision for transforming our world, whilst setting out a target-driven agenda for 2030 (UN, 2015). The SDGs, when considered as an indivisible whole, are central in representing the wide framing and scope of sustainable development, illustrating a holistic view of interconnected environmental, economic, cultural, and social systems and dimensions, and encouraging interdisciplinarity (Johnson, 2013; Sterling, 2013). There are synergies and trade-offs between the 17 SDGs (Pradhan *et al.* 2017), and it has been recently suggested that SDG 13 (Climate Action) '*is the 21st century's greatest opportunity to drive forward all the Sustainable Development Goals*' (UN, 2023).

Universities have a critical role in pursuing and interrogating critically the SDGs and their consequences (Price *et al.*, 2021). By embedding the SDGs in teaching and learning, universities are enabling future graduates to contribute to the global sustainability agenda. Education for Sustainable Development (ESD) is a crucial mechanism for achieving this. ESD is not merely learning *about* sustainable development, but rather learning *for* sustainable development. It is a holistic approach typically centred around three elements: subject-relevant learning objectives for the SDGs; key competencies for sustainability; and transformational pedagogies to support sustainable development (SDSN, 2020; Advance HE/QAA, 2021; Price *et al.*, 2021, UNESCO, 2021). It can, in fact, be a route to overall enhanced forms of learning, emphasising transformative rather than transmissive approaches, employing experiential learning and critical pedagogy and using real world examples (Sipos *et al.* 2008; Thomas, 2009; Sterling, 2012; Price *et al.*, 2021). ESD also involves interdisciplinary work across boundaries between disciplines, and transdisciplinary work between universities and wider society (Vogel *et al.*, 2023). ESD therefore requires a *reframing* of teaching and learning and should not be considered as an add-on to existing curricula. Deep, enduring sustainability learning is best supported by integrating ESD into core curricula, while standalone courses are less effective (UNESCO, 2014; Vogel *et al.*, 2023). There is growing recognition that the most significant impact ESD will have is in supporting learners across *all* academic disciplines in developing the subject relevant knowledge, skills, competencies, values and readiness to act to pursue visions of a better world through whichever career or life path they take (UNESCO, 2017; SDSN, 2020; Advance HE/QAA, 2021; Vogel *et al.*, 2023). To enable this, UNESCO (2019, p.3) advocates a whole-institution approach to ESD: *'the whole-institution approach should be strengthened with emphasis on the necessity for education institutions and communities to work together'*.

Institutional context is a key factor influencing what is possible in terms of enabling ESD in a particular university. This includes the nature and degree of strategic commitments to ESD, capacity of staff and students to implement ESD across an institution and inclusion of ESD in engagement and monitoring processes (Reeves *et al.*, 2023). Universities differ in their context, and institutional cultures (White and Harder, 2013) and thus will vary in how they perceive and provide governance supporting ESD. Drivers of leadership and governance enabling ESD include strategy, implementation, engagement, and monitoring (McCoshan and Martin 2014; Reeves *et al.*, 2023). However, there is a gap between positive attitudes towards SDGs within universities and how these institutions integrate SDGs into the curriculum (Leal Filho *et al.*, 2019). Recognising that there is increasing urgency to equip graduates to become future leaders in delivering the SDGs, this mixed-methods action research (Ip, 2017) presents a critical analysis of a whole-institution approach to embedding the SDGs in curricula through ESD.

Context and Action Research Focus

This action research (Ip, 2017) is framed by a strategic approach to embed ESD across a university aimed at enabling students to enact more sustainable futures. Manchester Metropolitan University (Manchester Met) is a large, diverse, city centre university in the UK with 43,000 students and 5,100 staff (Manchester Metropolitan University, 2023). As a top three ranked institution in the People and Planet University League since 2013 (People and Planet, 2023), sustainability has been a priority for Manchester Met for some time. Recognising the value of ESD in delivery of the SDGs and the particular significance of climate change education advocated by the UN (2023), ESD and climate change education in the form of Carbon Literacy (CL) had been a feature of some of our provision for

over a decade. However, there was an aspiration to further develop and improve academic awareness and engagement through a strategic approach to sustainability. The goal and focus of the work presented in this action research was to enable a whole-institution approach to ESD at Manchester Met (UNESCO, 2019). There was a shared vision from the outset that this work was to be developmental, iterative, and reflective. There was an intention to secure institutional buy-in for the strategic approach and to employ methods such as consultation and engagement to enable this. This paper presents and analyses processes from strategy development through to implementation, engagement and monitoring to support this goal. It evaluates the wider reach of adopting a similar approach within varied professional practices and institutional settings.

Strategic Commitment to ESD

Strategic commitment to embed ESD can provide impetus to support the whole-institution integration of ESD, and both stakeholder engagement and governance are key enablers for success. There are a variety of approaches for engaging stakeholders in strategy development (Vargas *et al.*, 2019a). Authoritative support from senior leadership is key in formulating strategy, but influential stakeholders include academic and professional services staff, students, alumni, and external partners. A whole-institution approach also requires robust governance mechanisms that ensure institutional ESD commitments are both explicit and achievable (Price *et al.* 2021). Additionally, building internal support for organisational change is essential and this can be achieved through addressing six components of institutional culture: *legitimacy, ownership, relevance, attainability, authenticity, and impartiality* (Olsen, 2023).

Strategy Development: Consultation

To develop a new sustainability strategy and address the six components of institutional culture (Olsen, 2023) at Manchester Met, different engagement activities were employed in a consultation process:

- a) Leadership training: CL training was delivered by staff, students, and alumni to about 100 leaders from across the University and Students' Union. This training led to a heightened awareness, better understanding of aspects of sustainable development and positive engagement from leadership teams. In turn, this strengthened *ownership* of sustainability and development of the new strategy.
- b) Engagement: Students were involved in the creation of a short video as a communication piece to inform staff, students, and external stakeholders about the strategy development project, to illustrate *relevance* of the process and encourage engagement with it.
- c) Consultation: In February 2021, a range of consultation activities were undertaken with staff, students, and external stakeholders to capture ideas on what Manchester Met should be doing by 2030 if it were to be a leading sustainable university (Table I). This facilitated *legitimacy, ownership, relevance, authenticity, attainability, and impartiality* of the process.
 1. Online survey: A short online survey collected feedback from internal and external stakeholders on what the university's key sustainability priorities should be.
 2. Interactive online workshops: Workshops open to all staff and students were delivered across the three themes of *Place* (exploring campus sustainability), *People* (exploring social responsibility) and *Impact* (exploring ESD and research that supports global sustainability agendas).
 3. Social media campaign: A student-led campaign on Instagram and Facebook also served to identify sustainability priorities for students.

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- 3 d) Practice review: A best practice review, consultation with external partners, and horizon
- 4 scanning were undertaken to ensure *legitimacy* and *relevance* of outcomes.
- 5 e) Dialogue: Engaging leadership teams through conversations about delivery in their areas to
- 6 support sustainability ambition facilitated *ownership*, *attainability*, and *authenticity*.
- 7 f) Endorsement: Endorsement and associated *legitimacy* was sought from those at the most senior
- 8 levels of leadership and governance.
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11 Facilitators captured data during structured online workshops. The survey was hosted through
12 Microsoft Forms and all responses were anonymised. Data captured through the survey contained
13 both quantitative and qualitative data and consisted of Likert-scale and free comment questions.
14 Thematic classification of the qualitative data from both the (1) online survey and (2) interactive
15 online workshops coded text into categories using NVivo 12 Pro. Likert-scale data were analysed
16 quantitatively using Microsoft Excel. The mixed methods research was intended to maximise
17 accessibility to the consultation process. However, the variety of engagement methods available
18 mean that participants were self-selecting, and some participants may have contributed in multiple
19 ways with the potential to replicate views and opinions. This may highlight a potential limitation in
20 representativeness of the stakeholder views and opinions captured in data collection.
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25 **Strategy Development: Outcomes**

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27 Classification resulted in the identification of thirteen emergent categories capturing participant
28 views of what a leading sustainable university should be doing by 2030. The categories covered
29 aspects of environmental, social, and economic sustainability of the university's activities and
30 operations. The findings from all aspects of the stakeholder consultation were considered alongside
31 sector guidance and examples of best practice to develop a Leadership in Sustainability Strategy with
32 four strategic areas: (1) Leadership in Sustainability, (2) Academic Innovation and Impact, (3)
33 Sustainable Campus and Practices and (4) Engagement and Partnerships (Manchester Metropolitan
34 University, 2022). The focus of this paper is most closely aligned with the Academic Innovation and
35 Impact strategic area.
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39 Notwithstanding potential limitations in the research methods highlighted above, consultation
40 responses suggest that stakeholder groups were engaged with the wider sustainability agenda and
41 the university's contribution to this. Embedding ESD in the curriculum and recognition of its
42 relevance across all disciplines emerged as important outcomes of the workshops (Table I). Of those
43 who responded to the online survey, 90% of staff (n=160), 84% of students (n=62), and 75% of
44 external stakeholders (n=48) rated ESD as very important or important. Furthermore, 87% of
45 students (n=334) voted for more ESD in the student-led social media campaign (Table I). These
46 outcomes were translated into strategic commitments to include ESD and climate change education
47 in the form of CL in 100% of courses and to achieve 90% satisfaction from students that they have
48 had opportunities to gain sustainable development skills and knowledge, both by 2026 (Manchester
49 Metropolitan University 2022a). A complementary strategic commitment was made to embed ESD
50 and CL in all university taught programmes in the university's subsequently developed Education
51 Strategy (unpublished).
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56 This strategic commitment aligns well with practice elsewhere in the UK. For example, a recent
57 survey of UK universities with 84 respondents from 34 institutions revealed that 75 (89%) reported
58 an institutional strategic commitment to sustainable development to some degree (Reeves *et al.*,
59 2023), while in a worldwide survey of universities engaged in sustainability networks, 43% indicated
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3 that their university had made a strategic decision to embed the SDGs in their curricula (Leal *et al.*,
4 2019). An exploration of embedding ESD in UK universities (Fiselier *et al.*, 2018) identified a two-fold
5 division in institutional approaches. One approach is top-down, built around a strategic commitment
6 to ESD. The other approach identifies sustainable development in the institutional mission but
7 decision-making about implementation is made at a local level. Both approaches achieved successful
8 outcomes, but the authors concluded that institutional culture was the overriding determinant of
9 success in any given context. The whole-institution approach to sustainable development
10 exemplified by Manchester Met differs in that it aligns with both these approaches. On one hand
11 there is top-down, strategic and policy commitment driven by senior leadership, but there has also
12 been tremendous effort to develop a positive and holistic culture through engaging and co-creating
13 with students, staff **at all levels**, and external partners. This has driven personal commitment to
14 sustainable development across all areas of activity (Vargas, 2023), the value of which cannot be
15 over emphasised (UNESCO, 2019; Advance HE/QAA, 2021).
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20 **Implementation, Engagement and Monitoring**

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22 With a whole-institution strategy for embedding ESD and the SDGs in place, implementation,
23 engagement, and monitoring are needed to successfully execute strategy across an organization
24 (Sedmak, 2019). At Manchester Met, the strategic commitment to embed ESD and CL represented
25 an important recognition of their value, as well as a significant logistical challenge. This was
26 impossible to achieve without a large-scale collaboration across the university involving both staff **at**
27 **all levels** and students. **This collaboration has been achieved by reinforcing the value that**
28 **sustainability adds to academic activities, including to student experience, graduate attributes and**
29 **opportunities for staff development and recognition.** A Leadership in Sustainability Strategy
30 Implementation Plan was developed to ensure progress in delivering the strategy goals and
31 objectives. An annual Sustainability Report captures and communicates progress and performance
32 against the Implementation Plan. The implementation plan identifies strategic projects, strategic
33 leads, and project details. Strategic projects aligned to Academic Innovation and Impact
34 commitments to ESD and CL focused around three core themes: (1) Embedding CL, (2) Embedding
35 ESD, and (3) Monitoring and Quality Assurance processes. Underpinning all of these was the need to
36 build staff **engagement and** capacity for embedding ESD and CL in taught courses, considered
37 essential by Reeves *et al.* (2023). At Manchester Met, a phased approach to capacity building was
38 adopted, focusing first on CL and then on ESD. This is because an effective CL training model was
39 already established in the University. In contrast, while there was evidence from student surveys and
40 accreditation processes that many students were already gaining sustainable development skills and
41 knowledge, **and further evidence of bottom-up innovations helping build local capacity** (Nicholson *et*
42 *al.*, 2023), there was not an equivalent **institutional** staff training model for ESD.
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49 *Theme 1: Carbon Literacy*

50 CL training represents a day's-worth of learning to develop awareness of the carbon costs and
51 impacts of everyday activities and gives participants the ability and motivation to reduce emissions
52 on an individual, community, and organisational basis (The Carbon Literacy Project, 2024). Working
53 in partnership with The Carbon Literacy Project, Manchester Met has delivered CL training since
54 2012 and offers expertise to students and staff, external organisations, and partner universities. The
55 CL team developed an innovative peer-to-peer CL for Staff and Students (CL4SS) cascade training
56 model and subsequently developed online training. In 2020, the Manchester Met programme was
57 shared by The Carbon Literacy Project with all universities and colleges as part of their UK
58 Government-funded Public Sector Carbon Literacy Toolkit, to maximise the speed and ease with
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3 which CL can be adopted (Dunk *et al.* 2021). To date, 1834 students and 319 staff (total=2153) have
4 been certified Carbon Literate at Manchester Met, largely through extra-curricular activity, rather
5 than in the formal curriculum. An in-depth analysis of 920 matched pairs of pre and post CL course
6 surveys from 2015 to 2019 (Dunk *et al.*, 2024a) showed that participants significantly improve their
7 understanding, confidence, and communication relating to climate change. As a result of the CL4SS
8 cascade training, students have played a key role in delivering CL; between 2015-2019, 60% of all CL
9 at Manchester Met was delivered solely by students, 31% was co-delivered by staff and students,
10 and 9% was delivered solely by staff. Students have reaped benefits from becoming CL trainers,
11 including building employability skills and boosting confidence (Dunk *et al.*, 2024b).
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15 Building on the success of the existing programme, CL training provides a key mechanism for
16 achieving Manchester Met's strategic target for climate education in 100% of courses and
17 supporting SDG 13, Climate Action. Facing the challenge of rolling out training at such scale, the
18 focus of the cascade model was temporarily shifted towards staff (rather than students). Training
19 was packaged into six modules to be incorporated into the teaching curriculum, with guidance on
20 how to adapt the training to disciplinary contexts. Academic CL 'Champions' were recruited and
21 trained in all Departments, taking responsibility for collaborating with the CL team to lead local
22 delivery. CL Champions are also engaged with recruiting students to become CL trainers for future
23 training provision. This work involves building an institutional community of practice around CL, with
24 staff collaborating across disciplines to explore opportunities and challenges in embedding CL in
25 their context. There is also day-to-day interaction between Champions and the CL team to
26 coordinate aspects of planning and delivering training. In the first year (2022 – 2023), the team
27 actively worked with over 150 CL Champions to tailor training to varied disciplinary contexts. A 2022-
28 23 survey of Programme Leaders implemented in collaboration with academic and professional
29 services colleagues indicated that CL was embedded in almost 20% of courses (n=145) and in
30 progress in a further 25% (Table II). All Faculties and 95% of Departments had engaged to some
31 extent (Table II).
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37 *Theme 2: Education for Sustainable Development*

38 Manchester Met has been Responsible Futures accredited since 2015, reflecting our ongoing
39 engagement with sustainability across all aspects of teaching and learning (SOS-UK, undated). Going
40 further, the sustainability strategy consultation process endorsed an aspiration to provide *all*
41 students with the skills, knowledge, and mindsets to tackle sustainability challenges. These
42 outcomes were translated into strategic commitments (Manchester Metropolitan University 2022a).
43 Implementation focusses on a) the formal curriculum, b) co-curricular activities and c) graduate
44 attributes.
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48 a) Formal curriculum

49 The next phase of strategy implementation was to develop and mainstream support to effectively
50 embed ESD in all courses, **which presented a significant logistical challenge**. In 2022–2023, the
51 baseline survey of Programme Leaders referred to above indicated that ESD was embedded in 42%
52 of courses (n=327) and in progress in a further 7% (Table III). All Faculties had engaged but there was
53 variation between them (Table III). Respondents indicated that capacity building should focus on
54 training to embed ESD in a discipline context without increasing learning load for students and staff
55 and supported by best practice examples. Since ESD is much broader than CL and can be embedded
56 in many places within the curriculum, the approach required the development of training relevant to
57 all staff, rather than identifying 'Champions'. Scoping in 2022 identified a UNESCO-endorsed
58 CoDesignS ESD Framework to embed ESD (Toro-Troconis *et al.*, 2023). The CoDesignS ESD
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3 Framework provides a structured and user-friendly pedagogic method for embedding ESD in
4 curriculum design. It uses a co-design and co-creation approach and comprises three pillars
5 (CoDesignS ESD, 2021):

6 Pillar 1: The key competencies for sustainability identified by UNESCO (2017) as being relevant for
7 people to act for sustainability.

8 Pillar 2: Specific learning objectives for the SDGs. This introduces the importance of ESD being
9 framed within all three learning domains; the cognitive domain (head) aiming to develop
10 knowledge and thinking skills, the socio-emotional domain (heart) aiming to develop values,
11 attitudes and motivations, and the behavioural domain (hands) aiming to promote action
12 competencies (Sipos *et al.* 2008). The specific learning objectives for the SDGs emphasise
13 the interconnectedness of the SDGs, fostering an interdisciplinary and systems framing of
14 ESD.
15

16 Pillar 3: Transformative pedagogies and teaching methods which are central to the design of future-
17 focused curricula.
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21 The CoDesignS ESD Framework includes examples of best practice that can be applied to different
22 scenarios, helping to contextualise ESD competencies and practices (CoDesignS ESD, 2021). A team
23 of academic colleagues and students worked together to successfully trial the Framework which
24 includes a toolkit and dashboard to guide the design or reframing of curricula for ESD (Nicholson *et al.*, 2024). The trial suggested that with appropriate training, the CoDesignS ESD Framework would
25 meet our needs.
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29 To achieve this, a core team of academic staff worked with our E-Learning developers to co-develop
30 bespoke training that is relevant across disciplines and to the Manchester Met context. The training
31 comprises a suite of interactive online learning resources. These have been reviewed by colleagues
32 and students from across the university including members of the cross-Faculty University
33 Responsible Futures Working Group, the Students' Union, the University Teaching Academy, and the
34 student Sustainability Society. Development of the resources has also engaged Faculty Education
35 Committees and Heads of Departments to explore embedding ESD in a variety of contexts. This
36 approach to capacity building for ESD has three levels that provide flexibility to suit different
37 circumstances and needs: light touch ('bite-size' face-to-face delivery), standard (online interactive
38 modules) and digging deeper (online elements for more in-depth consideration; Table IV). The
39 capacity building programme is being implemented in 2024. To reflect variation in faculty practice to
40 date (Table III), our engagement hierarchy for ESD enables departments and courses to track
41 progress according to their circumstances (Table V). The hierarchy has four levels of engagement
42 from Level 1 (awareness and understanding) to Level 4 (fully integrated). Level 2 would meet the
43 university's strategic threshold for embedding ESD, with an aspiration that all courses would achieve
44 Level 3 or 4 in time.
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50 b) Co-Curricular Activities

51 'Rise' is Manchester Met's sector-leading offering that provides students with a platform to take part
52 in and gain credit for co-curricular activities. Rise facilitates such opportunities through playful,
53 experiential learning activities that give students a space to explore topics and themes outside of but
54 complementing their course curriculum. Experiential learning is a powerful component of ESD
55 (Backman *et al.* 2019), and thus Rise contributes significantly to implementation of the institution's
56 ESD strategy. Rise activities provide students with a transformative holistic journey through the
57 'head, heart, and hands' learning domains (Sipos *et al.* 2008) (Table VI). Learning in the cognitive
58 domain (head) is stimulated through engagement in self-study courses; learning takes place in the
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socio-emotional domain (heart) through sharing motivations to act sustainably such as during a climate café; and behavioural learning (hands) is applied through hands-on workshops such as crafting with repurposed plastic waste. Rise also seeks to work with local community partners to ground ESD in the culture and community of Manchester, for example working with a local climate action group to investigate how to enhance urban greenspaces. Through the extensive catalogue of activities and courses offered through Rise at Manchester Met students are encouraged to engage in ESD in ways that allow them to take control of their own learning journey, share knowledge and expertise with other students, academic staff, and members of the community, and self-identify personal connections and motivations for sustainable development. A key feature of Rise is that students from all disciplines and levels can engage in the activities and courses offered and this facilitates interdisciplinary collaboration and systems thinking.

c) Graduate Attributes and Employability

Explicitly including sustainability in employability and graduate outcomes to highlight its relevance to students in real-world contexts was an emergent theme from the strategy consultation process (Table I). Manchester Metropolitan University (2024a) now has a new graduate attributes framework comprising six 'wrap-around' themes: Digital, Connected, Interpersonal, Autonomous, Sustainable, and Enterprising. These attributes combine the academic abilities, transferable skills and personal qualities that a Manchester Met student can achieve and exemplify when they graduate. Graduate attributes under the 'Sustainable' theme (Table VII) were developed by a working group to align with the key competencies for sustainability identified by UNESCO (2017). This ensures integration between the graduate attributes and ESD and CL in the curriculum and co-curricular activities. Linkages between ESD, CL, graduate attributes and employability are further highlighted through cross-university initiatives such as 'Every Job is a Green Job' in an annual 'Future Me' week to highlight the growing recognition that sustainability is a crucial aspect of every job, regardless of sector, skills, or degree discipline (Manchester Metropolitan University, 2024b). Here students, academics, the Careers Service, alumni, and employers come together to demonstrate the relevance of ESD and sustainable graduate attributes in a real-world context.

CL, ESD and Rise mesh well together at Manchester Met. CL increases students' understanding and motivation to take action and provides a sound basis for students taking part in ESD or Rise activities. Embedding of ESD within courses provides opportunities for students to develop future-facing competencies and apply their contextual knowledge or motivation to practical real-world challenges. In turn, these guide them towards developing sustainable graduate attributes, while Rise provides opportunities to explore themes outside of their degree curriculum. Additionally, co-curricular opportunities are often co-facilitated by recent graduates, providing students with insight to create self-led sustainability career pathways.

Theme 3: Monitoring and Quality Assurance

Robust internal and external monitoring and quality assurance processes are essential for effective implementation of the institution's strategy for embedding ESD and the SDGs and to demonstrate a commitment to transparency and accountability (Elsevier, 2023). Furthermore, universities are increasingly being compared or ranked by engagement with the SDGs (SDSN, 2020).

Internal processes at Manchester Met include the following:

a) Measuring Progress of Implementation Against Targets

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3 For ongoing review of provision, data on embedding ESD and CL in courses (Tables II and III) are
4 monitored as outlined above. These indicators of progress against targets are scrutinised at
5 Education Annual Reviews (EARs). EARs provide a holistic and in-depth review of educational
6 performance at course, department, and faculty level, with follow-up actions tracked through
7 education committees. The reinforcement of strategic goals that EARs provide has proved invaluable
8 in driving progress.
9

10 11 b) Quality Assurance Processes

12 A recent survey of UK universities (Reeves *et al.*, 2023) highlighted a frequent misalignment between
13 strategic commitments to ESD and effective quality assurance processes to ensure progress. ESD is
14 best achieved when its framing within curricula is included in the validation of new courses and
15 ongoing review of existing courses (Advance HE/QAA, 2021). This is the case at Manchester Met,
16 where ESD is included in the validation process through the Policy for Programme Approval, Review
17 and Amendment, requiring academic scrutiny of the effectiveness of ESD and CL.
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20 21 c) The Student Voice

22 National surveys indicate that around 82% of higher education students would like to see
23 sustainable development actively incorporated and promoted through all courses (SOS-UK, 2023).
24 At Manchester Met, student satisfaction with opportunities to gain sustainable development skills
25 and knowledge is recorded through a Student Voice Survey. Data can be split by faculty, department
26 and course, and outcomes feed into course enhancement. The survey asks students to respond to
27 the statement 'My course provides me with the opportunities to gain knowledge and skills relating
28 to sustainable development' using a Likert scale ranging from 'definitely agree' to 'definitely
29 disagree'. Results in 2023 indicate that 87.5% of students agreed with this statement (Table VIII),
30 although the response rate was quite low at 18.4% (n=5086). The Manchester Met annual Enrolment
31 Survey asks all returning students to respond to same question and results in 2023 indicate that a
32 comparable 81.4% agreed with this statement with 100% of students responding (n=19,064). These
33 results are encouraging, but do not assess how ESD enables graduates to become change agents for
34 sustainability. Manchester Met undertakes qualitative surveys of alumni after graduation
35 (unpublished), but the process requires refinement since distinguishing the effects of ESD on
36 graduate outcomes from other influences is challenging (While *et al.*, 2023).
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41 External indicators of success include the following:
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43 44 a) Environmental Management System

45 An annual Sustainability Report (Manchester Metropolitan University, 2022b), externally audited as
46 part of the University's annual Environmental Management System (ISO 14001) re-certification,
47 together with surveillance audits, is conducted by the NQA Global Certification Body (NQA, 2022) to
48 provide external scrutiny of performance and progress in ESD.
49

50 51 b) Responsible Futures

52 Manchester Met undergoes a biennial Responsible Futures audit against 50 ESD criteria covering key
53 themes such as benchmarking, leadership and strategy, policy and commitment, interventions,
54 outcomes, and outreach. Manchester Met holds the Responsible Futures mark awarded to
55 institutions following a successful student-led audit (SOS-UK, 2022). This mark is a demonstrable
56 commitment to embedding sustainability across all aspects of student learning (SOS-UK, undated).
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59 60 c) Rankings and awards

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3 Indicators of esteem include membership, university rankings and sector awards. Manchester Met
4 has been a United Nations Academic Impact (UNAI) member since 2020 in recognition of our work to
5 promote global priorities. Furthermore, Manchester Met has achieved a top 3 position in the People
6 and Planet University League since 2013, was recognised as a global top 5% ranked university in the
7 Times Higher Education Impact Rankings 2023 and was ranked 7th in the world for SDG 17
8 (Partnerships for the Goals), receiving a score of 100% for Education for the Sustainable
9 Development Goals. In addition, Manchester Met has won Green Gown Awards in recognition of
10 achievements in CL.
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14 A challenge faced by universities in implementing ESD is ambiguity in how sustainability outcomes
15 relate to individual organisational success (Haddock-Fraser and Gorman, 2020). There remains a lack
16 of sector-wide agreed metrics for ESD and sustainability in higher education with recognition
17 achieved by a range of awards, accreditations, league tables and frameworks that attribute varied
18 significance to ESD (Haddock-Fraser and Gorman, 2020). Analysis of sustainability reporting
19 frameworks used by higher education concluded that all those examined align with the UN SDGs in
20 some way and that challenges of participation are likely to be outweighed by the advantages.
21 Challenges include the complexity of participation and resource commitment required, while
22 advantages include transparency and accountability, recognition for sustainability efforts and
23 generating opportunities for partnerships and influence (Elsevier, 2023). Although addressing ESD in
24 performance monitoring is an important component of its mainstreaming across an institution, it is
25 likely to be ineffective without a wider enabling environment that motivates and empowers staff
26 and students to understand the agenda and put it into practice (Reeves *et al.*, 2023).
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31 **Lessons Learned, Conclusion and Implications for Future Practice**

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33 Many universities have signed international commitments to integrate sustainable development in
34 all areas of activity (Vargas *et al.*, 2019b). However, a lack of holistic integration of sustainable
35 development in higher education globally has been documented (Roos *et al.*, 2020). Reeves *et al.*
36 (2023) suggest that ESD adoption frequently appears to be an 'emerging agenda' within universities,
37 meaning despite strategic commitment there is a gap in terms of capacity to support meaningful
38 implementation. The work presented here illustrates initiatives to develop the capacity of staff and
39 students across all disciplines to embed ESD and CL in support of the SDGs in all taught courses,
40 graduate attributes, and extra- and co-curricular learning.
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44 Manchester Met's goal and focus remain a whole-institution approach to ESD (UNESCO, 2019).
45 Consultation identified a need to embed ESD and CL in curricula, secured institutional buy-in, and
46 informed practice. Since the launch of the Leadership in Sustainability Strategy in 2022, significant
47 progress has been made but much more is needed to improve outcomes. For example:

- 48 • Developing online CL resources to support asynchronous delivery for large classes.
- 49 • Implementing ESD capacity building.
- 50 • Developing training for Quality Assurance processes.
- 51 • Enhancing student and graduate voice mechanisms.
- 52 • Addressing monitoring challenges, while maintaining a commitment to transparency and
53 accountability.
- 54 • Engaging regularly and meaningfully with internal and external stakeholders to continue
55 building momentum.
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Institutional context is a key factor influencing what is possible in terms of enabling ESD in a particular university, but this work demonstrates effective measures that can be amplified across the sector. These measures are framed by two overarching principles that are effective regardless of context: (1) demonstration that sustainability *adds value* to academic activities and (2) consultation and co-creation *at all levels* to build a shared vision and support for whole-institutional change.

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26 **Revision**

27 **(6,675 words + tables)**

28 **(Tables 1373 words)**
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31 **Total 8,048 words**
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Table I. Overview of key consultation activities undertaken with staff, students, and external stakeholders to develop the Manchester Met sustainability strategy.

| Consultation Activity | Stakeholders and Analysis | Outcomes Relevant to ESD |
|---|---|--|
| <p>Interactive online workshops. Nine workshops across three themes of place, people and impact (ESD and research).</p> <p>Neutral facilitators captured data. Participants were encouraged to provide additional comments following the workshop to elaborate on ideas.</p> | <p>Open to all staff and students. 148 stakeholders attended the workshops with a ratio of 80% (n=119) staff to 20% (n=29) students. Anonymised qualitative data were analysed using the research software NVivo 12 Pro.</p> | <p>Categories and themes emerging from the data included:</p> <p>Category: education and research (n=223 references).</p> <p>Theme: embedding sustainability in the curriculum. Clear management support required to facilitate and motivate academic support.</p> <ul style="list-style-type: none"> • Training for embedding across disciplines. • Approach to delivery needed for consistency and to demonstrate relevance across all disciplines. <p>Category: embed in university processes (n=123 references).</p> <p>Theme: embed within the student experience.</p> <ul style="list-style-type: none"> • Embed within enrolment, induction, employability, and graduate outcomes to enable students to see the relevance of sustainability within a real-world context. |
| <p>Online survey. A Microsoft forms survey asked respondents to rate the importance of five statements related to zero carbon, education, community partnerships, sustainable campus, and research (Likert-scale), and to provide free text comments on how the University could improve its sustainability performance and the actions required to do so.</p> | <p>Internal and external stakeholders. 270 respondents, 59% (n=160) were staff, 23% (n=62) students and 18% (n=48) external. Anonymised qualitative data were analysed using NVivo 12 Pro, and the Likert-scale data analysed quantitatively using Microsoft Excel.</p> | <p>90% of staff, 84% of students, and 75% of external stakeholders who responded rated ESD as very important or important.</p> |
| <p>A student-led social media campaign. Twelve Instagram and Facebook online polls on actions to improve the university's sustainability performance. Users were asked to build a virtual garden by 'picking flowers' to vote yes for the actions they wanted to see the university take.</p> | <p>Open to all students. In total, there were 2,723 direct responses across the 12 polls, an average of 314 per poll. The overall reach, i.e., number of accounts this content was served to, totalled 26,675 on Instagram and 3,593 on Facebook (overall total = 30,268). Anonymised poll responses were tallied.</p> | <p>87% of 334 students voted for more ESD.</p> |

Table II. Percentage (%), (with Variance, σ^2) of courses by Faculty that have embedded CL, that have not embedded CL, where embedding is in progress, or missing data, where no data were returned. The data are based on the proportion of courses with 1 or more enrolments in 2022/23.

| Faculty | CL Embedded % (σ^2) | CL Not Embedded % (σ^2) | CL In Progress % (σ^2) | Missing % (σ^2) | Total (n) |
|-------------------------|------------------------------|----------------------------------|---------------------------------|--------------------------|----------------------|
| Arts and Humanities | 24.8 (12.3) | 41.3 (11.9) | 5.9 (7.7) | 28.1 (13.0) | 100.0 |
| Health and Education | 9.9 (0.8) | 44.1 (12.3) | 13.8 (9.6) | 32.2 (6.1) | 100.0 |
| Business and Law | 14.4 (2.4) | 19.0 (7.9) | 49.0 (7.5) | 17.6 (1.5) | 100.0 |
| Science and Engineering | 20.0 (5.8) | 21.2 (4.6) | 49.1 (3.8) | 9.7 (1.3) | 100.0 |
| University Total | 18.8 (6.3) | 33.1 (9.7) | 25.2 (9.1) | 22.9 (6.4) | 100.0 (n=773) |

Table III. Percentage (%), (with Variance, σ^2) of courses by Faculty that have embedded ESD, that have not embedded ESD, where embedding is in progress, or missing data, where no data were returned. The data are based on the proportion of courses with 1 or more enrolments in 2022/23.

| Faculty | ESD Embedded % (σ^2) | ESD Not Embedded % (σ^2) | ESD In Progress % (σ^2) | Missing % (σ^2) | Total (n) |
|-------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------|----------------------|
| Arts and Humanities | 39.6 (15.3) | 32.3 (10.6) | 0.0 (0.0) | 28.1 (13.0) | 100.0 |
| Health and Education | 18.4 (1.4) | 40.1 (14.2) | 9.2 (7.4) | 32.2 (6.1) | 100.0 |
| Business and Law | 71.2 (8.0) | 9.2 (6.2) | 3.3 (0.7) | 16.3 (1.6) | 100.0 |
| Science and Engineering | 42.4 (6.3) | 13.3 (5.0) | 21.8 (2.9) | 22.4 (2.1) | 100.0 |
| University Total | 42.3 (11.9) | 25.2 (10.1) | 7.1 (2.8) | 25.4 (6.4) | 100.0 (n=773) |

Table IV. Overview of approach to capacity building for ESD

| Intensity | Description | Target Audience |
|----------------|---|--|
| Light Touch | Bite-size face-to-face version for use in department meetings and away days to introduce key ideas. | Large groups of staff, for introductory concepts. |
| Standard | Main training resource – interactive online programme. | Individual staff and/or teaching teams. Could be completed in partnership with students. |
| Digging Deeper | Elements within online programme for more in-depth consideration. | Programme Leaders, ESD Leads, Education Leads. |

Table V. Engagement hierarchy for ESD

| Level | Description |
|-------|---|
| 1 | Individual and collective understanding of ESD and its fundamental elements. Awareness of disciplinary opportunities and constraints. Grasp of wider context and importance (graduate attributes, solving sustainability challenges). |
| 2 | ESD embedded in at least one core module per course. Three pillars of ESD present (transformational pedagogies, key competencies for sustainability, specific learning objectives for the SDGs). |
| 3 | ESD embedded in 30 - 50% of modules per course, including some core modules, and at all study levels. All students exposed to ESD. Some colleagues confident in using the CoDesignS ESD Toolkit Planner and Dashboard for learning design and analysis. |
| 4 | ESD embedded in the majority of modules within a course. CoDesignS ESD Toolkit Planner and Dashboard used as standard (integral with annual unit planning, Education Annual Reviews (EARs) and programme review). |

Table VI. Examples of co-curricular Rise activities and associated SDGs: Sustainability Self-Study Packs and Sustainability Activities.

| Rise Sustainability Self-Study Packs (Associated SDGs) | Rise Sustainability Activities (Associated SDGs) |
|--|---|
| Introducing the United Nations Sustainable Development Goals (1 – 17) | Bring the UN to your University: students implemented SDGs on campus and in the community (3, 4, 7, 9, 11, 12, 13, 15, 17) |
| How to be a Sustainable Citizen (1, 4, 7, 8, 9, 12, 13, 17) | Mock COP with the World Food Programme: students played the role of delegates at COP to debate and vote on a range of global pledges (1, 2, 4, 7, 10, 11, 13, 16, 17) |
| Decolonising and Decarbonising Digital Society (7, 10, 12, 13) | Fantastic Plastic Fashion: students explored the role and impact of plastics, including new technologies to repurpose plastic waste (9, 12) |
| Join the Anti-Slavery Movement (8, 10, 12, 16) | Climate Café with Force of Nature: a discussion of feelings of climate anxiety and how they might turn anxiety into action leading to the creation of a Sustainability Student Society (3, 13) |
| Business and Sustainability (8, 9, 12, 13) | Transforming Urban Greenspaces with Ardwick Climate Action and the Cloud Gardner: students developed sustainable urban green spaces and small-scale gardens to feature at an Urban Show (9, 11, 13, 14, 15) |
| PESTEL (political, economic, social, technological, environmental, legal) Framework in Business (8, 9, 13) | Ecotech Explorers and the Greener Compute Club: students investigated the carbon impact of the University's ICT systems and developed methods to mitigate these (7, 9, 12, 13) |
| A Guide to Social Enterprise (8, 9, 11) | Challenging Menstrual Stigma in Sport: a discussion of menstrual stigma in sport and developing resources to tackle this in early years education (3, 5) |
| Black Lives Matter and Business (8, 9, 16, 10) | Pop-up repair café with StitchedUP: students repaired clothing and discussed how to reduce the impacts of the fashion industry (12) |
| Researching Race and Racism (10, 11, 16) | Nature Park and Wildlife Champions with Chester Zoo: students were trained to deliver lessons to primary school pupils through the Children Without Limits programme (4, 11, 13, 15) |

Table VII. Manchester Met Sustainable Graduate Attributes alignment with UNESCO (2017) core competencies for sustainability.

| Manchester Met Sustainable Graduate Attributes | UNESCO core competencies for sustainability |
|---|--|
| Recognise the interplay of environmental, social and economic systems | Systems thinking competency |
| Challenge norms, assumptions and values to support sustainable practice | Normative competency |
| Apply critical understanding of sustainable development and climate literacy | Critical thinking competency |
| Foster creative solutions to local and global sustainability challenges | Integrated problem-solving competency |
| Use influence and agency to drive forward change for sustainable development | Anticipatory competency, Strategic competency, Collaboration competency, Self-awareness competency |

Table VIII. Student Survey results 2023 'My course provides me with the opportunities to gain knowledge and skills relating to sustainable development'.

| Faculty | Response rate (%) | Definitely Agree (%) | Mostly Agree (%) | Mostly Disagree (%) | Definitely Disagree (%) |
|-------------------------|-------------------|----------------------|------------------|---------------------|-------------------------|
| Arts and Humanities | 17.7 | 33.1 | 52.3 | 11.7 | 2.9 |
| Business and Law | 15.4 | 44.2 | 46.5 | 7.3 | 2.0 |
| Health and Education | 18.8 | 37.6 | 48.4 | 9.9 | 4.1 |
| Science and Engineering | 22.9 | 31.2 | 57.2 | 8.3 | 3.3 |
| University Total | 18.4 | 36.3 | 51.2 | 9.4 | 3.1 |