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Westminster Business School**

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Embedding sustainability in curricula: a case study of an Education for Sustainable Development (ESD) framework at the Westminster Business School

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Abstract:

Increasingly complex socio-economic and environmental issues have been transforming all industries, with education playing a critical role in shaping a sustainable future. For that reason, UNESCO created the Education for Sustainable Development (ESD), which is an interdisciplinary approach to learning that enables students to develop the values, knowledge and competencies needed to address the current local and global challenges (UNESCO, 2023). The Sustainable Development Goals (SDGs) adopted by United Nations in 2015 provide a comprehensive framework for addressing these challenges (United Nations, n.d.). However, there are barriers to the implementation of ESD in the curricula, including a lack of detailed guidance to implement it in educational contexts (Waltner, Scharenberg, Hörsch, & Rieß, 2020) resistance to change, and lack of financial resources (Calvert, Higgins, Thompson, & Galvin, 2023). For that reason, there is a need for guidance in the implementation of ESD, in this case, in the context of higher education.

This conceptual paper is aimed at providing a framework to aid educators in embedding ESD in their curricula. This framework has nine stages: alignment of ESD policy and education strategy, mapping course and module learning outcomes, pedagogy, training of module design, learning activities, assessment, indicators and feedback for improvement. This paper uses narrative inquiry (Adams, Ellis, & Jones, 2017) as a research strategy to analyse the module leaders' experiences when developing the ESD framework and applying it to Sustainable City Economies (SCE), a second-year undergraduate module (340 students) at the Westminster Business School (England) that has been implemented since 2021/22. This paper showcases the positive impact of the ESD framework in different areas, including assessment performance, consistent engagement on a field trip and positive feedback during module evaluation. The early findings represent an opportunity for further research to assess the impact of the ESD framework over time and its application to other disciplines.

Keywords:

Education for Sustainable Development (ESD), ESD framework, case study, ESD in curricula, Sustainability in Education, Sustainable development, Education for sustainability, problem-based learning, project-based learning, team-based learning, SDGs, Westminster Business School, Sustainable City Economies, pedagogy.

JEL classification:

- I23: Higher Education • Research Institutions

Biography

Dr Gustavo R. Espinoza-Ramos

Gustavo undertook a PhD at the University of Westminster that focused on developing social partnerships between private companies and civil society in the Peruvian mining industry. His research interests are pedagogy, active learning, business sustainability, and social partnerships. In 2015, Gustavo became lecturer at the University of Westminster at the undergraduate and master levels; and he has also supervised master students' dissertations. has been the co-module leader of Sustainable City Economies and the module leader of Strategic Perspectives for Marketing at the School of Management and Marketing. During this time, he has demonstrated leadership and mentoring skills when guiding seminar leaders using digital tools to promote student engagement and has been responsible for designing, planning and delivering teaching activities.

Gustavo has been leading projects that disseminate good teaching practices and enhance pedagogical knowledge when working with students on co-creator projects. Gustavo has extensive experience in giving presentations and writing book chapters and blogs about teaching and learning in higher education. His contributions to academic literature also serve

as valuable resources for fellow educators, promoting a culture of continuous improvement and collaboration in higher education. Owing to his contribution to improving the student learning experience at the university, he has received different recognition, such as the Staff Appreciation Award 2017: Outstanding Contribution to Student Experience, 'the Change One Thing' in 2021, and a nomination for the Go Westminster Award due to his contribution to support students and/or colleagues over time in 2024.

Amanda Capucci Polzin

Amanda has been lecturing at the School of Management and Marketing at the University of Westminster since 2021. She has completed her Master of Science in International Development and Management also from the University of Westminster. She is a co-module leader of Sustainable City Economies. She is also part of the MBA teaching team, co-leading modules that support students gaining consultancy skills and innovation capabilities. Amanda has made significant contributions to the development of innovative business strategies and education methodologies. Due to her ethical approach in education, she has received a nomination for the Go Westminster Award due to modelling the University values at high standard over time in 2024.

Amanda is passionate about change in action and carries out research around social issues that are prominent in our society. Her research interests lie in sustainability in business, modern slavery and migration issues. She has been involved in a research project funded by the University of Westminster Research Communities COVID-19 Funding Scheme called "The 'Inclusion' Challenge: UK Social integration of low-skilled and low-waged migrant workers during the pandemic". She is also a member of the Research Centre on Peripheral Populations. Currently, she is working on an innovative project to use virtual reality as part of learning activities to enhance employability skills in management and marketing modules.

1. Introduction

Contemporary socio-economic and environmental challenges have been the main concern of the 21st century, such as inequality and the climate crisis (United Nations, 2020). As a response to address these issues, the United Nations adopted 17 Sustainable Development Goals (SDGs) through which the universal development should balance social, economic and environmental sustainability (United Nations Development Programme, n.d.). According to Whelan and Fink (2016), embedding sustainability efforts in firms' strategy has had a positive impact on business performance. For example, industries with companies in food, retail, fashion and tech have been focussing on sustainable practices to benefit society and pleasing their consumers (Rizvi, 2024).

The education sector has been one of the main motivators for setting the foundations for sustainable practices. This influence has been growing in recent years to implementing sustainability into the curricula of higher education (Lozano et al., 2015). Lately, efforts to implement sustainability in the curricula have witnessed a rapid increase (Fekih Zguir, Dubis, & Koç, 2021). Nevertheless, a more robust investigation is necessary for a strong implementation of sustainability in universities' activities (Leal Filho et al., 2019). There are disparities in literature that come from little integration of sustainable development in the transformation of higher education and the lack of connection between learning and teaching, research and governance (Leal Filho et al., 2019).

Finally, UNESCO developed Education for Sustainable Development (ESD) as a pedagogical approach to the climate-related challenges confronting the globe, with the aim of empowering individuals to develop a sustainable future (Afolabi, 2019). ESD is an interdisciplinary approach to learning that involves the improvement of the curricula in higher education by applying a suitable pedagogy and learning activities to the discipline of study that equip students with the knowledge and competencies for enhancing sustainable development (QAA & Advance HE, 2021).

2. Literature review - Framework for embedding ESD in the curricula

This section is divided into nine sub-sections that reflect the ESD framework proposed by this conceptual paper. The ESD framework was developed based on the experience of the module leaders in module design, private industry, research and as external examiners in higher education, who have cooperated in identifying current practices in other UK higher education institutions, areas of improvement and practical advice, when embedding ESD in the curricula.

2.1. ESD strategy

The inception of Education for Sustainable Development (ESD) originated in the 1990s, through early dialogues in conferences convened by the United Nations in recognition of the significance of raising awareness and developing education endeavours that foster sustainable development. This was exemplified in 1994 when UNESCO developed the Environment and Population Education and Information for Human Development Project, known as EPD. Later, in 1997, the name was changed to Education for Sustainable Development (ESD) aiming to make its objectives clear (York University, 2023).

Furthermore, ESD aims to align socio-economic concerns with cultural practices and conservation efforts (Afolabi, 2019) to develop student autonomy, enabling them to be accountable for their actions. Therefore, ESD is a process of learning that facilitates the acquisition of values, knowledge and competencies needed to tackle the current local and global challenges (UNESCO, 2023). To

support ESD, UNESCO developed eight competencies for sustainable development that represent comprehensive skills crucial to devising solutions to contemporary issues (QAA & Advance HE, 2021a). Table 1 shows these competencies that shape the learning outcomes of any subject.

Table 1: UNESCO's key competencies for sustainability (QAA & Advance HE, 2021a, p. 20)

Category	Competency	A student who displays this competency can:
Ways of thinking	Systems thinking competency	- Recognise and understand relationships - Analyse complex systems - Consider how systems are embedded within different domains and scales - Deal with uncertainty
	Anticipatory competency (Future thinking)	- 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
	Critical thinking competency	- Question norms, practices and opinions - Reflect on one's own values, perceptions and actions - Take a position in the sustainable development discourse
Ways of practicing	Strategic competency	- Develop and implement innovative actions that further sustainable - Development at the local level and further afield
	Collaboration competency	- Learn from others (including peers and others inside and outside of their institution) - Understand and respect the needs, perspectives and actions of others - Deal with conflicts in a group - Facilitate collaborative and participatory problem solving
	Integrated problem-solving competency	- Apply different problem-solving frameworks to complex sustainable development problems - Develop viable, inclusive and equitable solutions - Utilise appropriate competencies to solve problems
Ways of being	Self-awareness competency	- Reflect on their own values, perceptions and actions - Reflect on their own role in the local community and global society - Continually evaluate and further motivate their actions - Deal with their feelings and desires
	Normative competency	- Understand and reflect on the norms and values that underlie one's actions - Negotiate sustainable development values, principles - Goals and targets, in a context of conflicts of interests and - Trade-offs, uncertain knowledge and contradictions

There is a need for a holistic and systematic approach to ESD, involving aspects such as leadership, pedagogy, research, and quality assurance mechanisms (Leal Filho et al., 2019; Lozano et al., 2015). For that reason, every higher education institution should formulate an ESD strategy that is aligned with other strategies, such as university and teaching ones. This conceptual paper aims to contribute

towards providing a framework for educators to embed sustainability in their teaching in a more practical way. This contributes to the literature on Teacher Education for Sustainable Development (Fischer et al., 2022) and guidance when embedding ESD in the curricula (Wiek, Withycombe, & Redman, 2011), more specifically within business studies, which is the focus of this case study.

2.2. Course learning outcomes

The higher education sector is highly regulated and monitored to make sure institutions responsibly provide returns to its stakeholders and follow guidelines and standards (QAA & Advance HE, 2021a). Some elements that are closely monitored are course and module outcomes expected to be achieved by learners. According to the Higher Education Academy, course learning outcomes are a measure of achievement of knowledge and learning that a student should acquire by the end of the course (Advance HE, 2017). In addition, specific Subject Benchmark Statements (crafted by subject specialists) shape the structure, implementation and evaluation of academic programmes, varying according to the discipline of study and playing a big part in the quality assurance in the UK higher education sector (QAA, 2023).

Furthermore, it is within course learning outcomes and subject specific statements that ESD comes into play, if clearly implemented. Not surprisingly, the literature reveals that even though there have been efforts to promote ESD being incorporated into teacher training programmes and curricula, they usually lack coherence or systematic inclusion (Nguyen et al., 2022). This, again, shows the need for clearer ESD integration into higher education.

2.3. Module learning outcomes

The module learning outcomes (LOs) state what students are expected to demonstrate in terms of learning, skills and knowledge after completing the module (UCL, 2022). The LOs help in the planning of the learning activities and assessment methods, and they must be aligned with the course learning outcomes. The level of ESD and SDGs integration into modules should be clearly identified as it will provide more guidance when embedding learning about sustainability. For example, the University College Cork, is supporting SDG integration into courses and modules by developing SDG mapping tools, which can be used by instructors and students (University College York, 2023).

2.4. Pedagogy

The literature on ESD does not identify a unique pedagogical approach suitable for higher education. However, there is a consensus that the pedagogical approach suitable to ESD should consider students' context and the capabilities to solve real sustainability issues (Rieckmann, 2017). Consequently, the three most common pedagogical approaches that have been cited in the literature of ESD in higher education are listed below.

Problem-based Learning (PBL)

In the early 1970s, Howard Barrows coined the term Problem-Based Learning (PBL) as a teaching method in medical studies (Neufeld & Barrows, 1974). Then, PBL was applied in other disciplines, including chemical studies, psychology, law, and education (Kay et al., 2000; Servant-Miklos, 2020). Kay et al. (2000) state that PBL involves solving a large, real-world problem and enhances teamwork and student agency as students are responsible for their own learning; meanwhile, the teacher has the role of a facilitator. Moreover, Tejedor et al. (2019) argue that PBL involves finding a solution to a problem with two distinctive aims: the critical evaluation of the sources of information and the data about a problem and the process of finding a solution.

Project-based Learning (PjBL)

Project-based learning is an active learning method that involves teamwork when finding solutions to specific real-world problems (González-Domínguez, Sánchez-Barroso, Zamora-Polo, & García-Sanz-Calcedo, 2020). There are some similarities with PBL, as both methods involve students working in teams, finding solutions to real problems, and the role of lecturers as facilitators during this process (Wiek, Xiong, Brundiers, & van der Leeuw, 2014). However, the key differences between project-based learning and problem-based learning are identified by Kokotsaki et al. (2016) as the former involves the development of a specific product or artefact for a specific audience and an evaluation of the project and its implementation. Moreover, in PjBL, not only the lecturers but also clients (employers or community members) are facilitators who provide guidance, feedback and support in the learning process when developing the artefacts (Guo, Saab, Post, & Admiraal, 2020).

Team-based Learning (TBL)

Team-based learning is an active learning strategy developed by Larry Michaelsen in the 1970s that aims to promote collaboration, critical thinking, and student engagement and has been applied in different disciplines, including medical, business and engineering studies (Cagliesi & Ghanei, 2022). According to Haley et al., (2020) TBL includes the following activities: an individual readiness assessment test (IRAT) and a team readiness assessment test (TRAT); in both cases, students complete the same multiple-choice questions. After the TRAT, there is an opportunity to discuss their answers, and teams will apply concepts covered in the test using different case studies. Teams in TBL are larger than in other teaching approaches; for example, five to seven students will work together for the duration of the semester (Ruder, Maier, & Simkins, 2021).

2.5. Module design training

Effective module design is critical for creating engaging and impactful learning experiences. To this end, higher education institutions should provide module design training to course and module leaders to enhance the development of learning outcomes, active learning activities and assessment. There are different training design models, but this ESD framework recommends the ABC (Arena Blended Connected) curriculum design method (Perovic, 2015) that was developed by Perovic and Young in 2014, as it is a time-effective, hands-on rapid-development training program (Perna & Nunziante, 2021).

ABC curriculum design method is a ninety-minute workshop that uses canvases, cards and a storyboard to identify learning activities (both online and offline) to meet the module learning outcomes (Young & Perović, 2020). The learning activities are based on six learning types: acquisition, inquiry, practice, production, discussion and collaboration, which are rendered in the form of a card deck (Young & Perović, 2016). Then, teams work together to create a visual storyboard that showcases the structure of the physical and digital learning activities.

2.6. Learning activities

Currently, higher education is rapidly evolving to address challenges, including increasing dropout rates, improving multicultural integration and offering flexible learning experiences (Castro, 2019). Notably, this ESD framework encourages the use of physical and digital environments where students can express knowledge according to their learning preferences. Students can interact with the following learning activities.

- On-campus activities include face-to-face interactions, direct communication and access to physical spaces and materials within the university. For example, lectures, seminars, workshops, studios and labs.

- Off-campus synchronous activities include educational experiences that take place outside the traditional classroom and have the following benefits, including the improvement of critical thinking, increased student engagement, and development of social and interpersonal skills (Pamulasari, 2017). For example, field trips, outdoor challenges and visits to exhibitions and companies.
- Online activities refer to synchronous and asynchronous activities that require the use of digital tools. Synchronous online activities occur in real-time, where students and instructors engage simultaneously (Beckingham, Beggs, Hinton, Varga-Atkins, & Watson, 2022) and involve real-time digital platforms for team collaboration. Asynchronous online activities do not require real-time participation. Instead, they allow students to interact with learning materials at their own pace (Beetham & MacNeill, 2023).

Table 2 below shows examples of the learning spaces, activities and tools that can support module design.

Table 2: learning spaces, activities and tools supporting module design

Learning spaces	Activity	Tool
On campus	• Lecture theatre • Seminar room • Laboratories • Studio	• Collaborative digital whiteboards (Padlet, Miro) • Online test/games (Poll Everywhere/Kahoot, Virtual Learning Environment) • Collaborative/Shared productivity tools (MS 365 software) • Online/simulation games • Generative AI tool • Video hosting platform (Panopto, YouTube, Vimeo) • LinkedIn Learning courses/videos
Off campus	• Field trips • Exhibitions • Industry visits	• Online guides/apps • Video hosting platform (Panopto, YouTube, Vimeo)
Online	Synchronous activities • Live online class • Virtual reality Asynchronous activities • Recorded video and answer questions. • MOOCs • Virtual tour • Generative AI	• Video Conferencing Software (MS Teams, Panopto, Virtual Learning Environment) • Collaborative digital whiteboards (Padlet, Miro) • Online test/games (Poll Everywhere/Kahoot, Virtual Learning Environment) • Collaborative/Shared productivity tools (MS 365 software) • Online/simulation games • Generative AI tools • Discussion boards • Video hosting platform (Panopto, YouTube, Vimeo) • LinkedIn Learning courses/videos • Virtual reality video

2.7. Assessment

Assessments are a significant part of students' journey in education. There are two types of assessment. Formative assessment does not contribute to the module's final grade, but rather, provides feedback to aid students in reaching the learning goals, while summative assessment counts towards the final module grade and shows whether the student has clearly met the predicted outcome (Joosten-ten Brinke et al., 2007). There is a need for educators to adopt different

assessment approaches that motivate students to apply knowledge and competencies in real contexts (Pereira, Cadime, Brown, & Flores, 2022). In business studies, in particular, a wide range of efforts has been made to contribute to enhancing activities and assessments carried out in the classroom that are able to integrate skill development needed in a real work setting, hence more authentic assessments (Ashford-Rowe, Herrington, & Brown, 2014). Various forms of authentic assessments encompass reports, oral presentations, role-playing, case studies, performances, situational judgement tests and portfolios (James & Casidy, 2018), business simulations and challenges (Vos, 2015). Therefore, ESD should incorporate authentic assessments to help tackle world sustainability problems.

2.8. Indicators

Indicators assess student success and learning experience; and they contribute to the institution's reputation and the continuous development of modules (Douglas, Douglas, & Barnes, 2006). This ESD framework categorises indicators in the following way.

- Short term: instructors have direct access to the module data, such as grades, Student Module Evaluations and micro-credentials results. The latter could be recommended by module leaders, as they are online short-term qualifications students could take to learn new skills (McCabe, 2022), especially if they are related to sustainability, i.e. carbon literacy.
- Medium to long-term: indicators to evaluate the impact of sustainability beyond the module. For example, the number of internships or graduate placements, funds, external recognition from other departments or institutions and alumni connections. These indicators are the most difficult for module leaders to have access to, as they are measured by other departments, course leaders, career departments and other organisers.

2.9. Feedback for improvement

The course and module should go through a continuous improvement process as it will represent an opportunity to reflect upon the teaching, learning and performance using different sources of information (University of Westminster, 2023). In addition, module design enhancement will improve the learning outcomes, completion, progression, employability skills and the quality of teaching and learning experiences. This is a dynamic process that requires mechanisms for collecting feedback from the following stakeholders.

Students voice

- It is important to offer different spaces, where students can express their feedback on their teaching and learning experience at course and module levels (Brooman, Darwent, & Pimor, 2015). In addition, it is important to offer an online space that can gather student feedback, which can take the form of an online discussion board or a digital whiteboard, such as a Padlet that can gather anonymous students' comments.

Lecturers

- Teaching team members can gather feedback through observations or conversations with students on their learning experience in the module, learning material and assessment (Brooman et al., 2015). The coordination between the teaching team can be through meetings, including the pre-semester, pre-marking and moderation meetings, and through online spaces such as the virtual learning environment (VLE).

Employers

- Feedback from employers can identify areas of improvement in learning activities and assessments aligned with the current industry needs and prepare students for the workforce (Kumar & Rewari, 2022). The meeting with employers should be developed at course and module levels. Moreover, employers can be invited as guest speakers or organise business challenges and hackathons so that students can find solutions to real-life problems that can be part of the course or module assessment.

3. Methodology

This case study utilises autoethnography as a qualitative research methodology, wherein the researcher engages in reflective analysis of personal experiences and situates themselves within the study to analyse cultural beliefs, practices and experiences (Adams et al., 2017). By enabling researchers to delve into their own personal experiences for knowledge and insight, autoethnography facilitates a more profound comprehension of various cultural aspects and interpersonal dynamics in diverse settings such as organisations (Edwards, 2021).

Furthermore, autoethnography has been selected as the best-fit approach to understanding the module leaders' experiences when designing Sustainable City Economies (SCE), a second-year undergraduate module at the Westminster Business School (England). These experiences and analyses have led to a framework designed to expand on the existing module proforma while addressing ESD directly.

4. Case study: Sustainable City Economies module

Since the academic year 2021/22, Sustainable City Economies (SCE) has been established at the Westminster Business School. SCE is a second-year undergraduate module that has more than 340 students enrolled every year. The module aims to provide students with theoretical and practical knowledge regarding sustainable cities, acknowledging the importance of the UN's Sustainable Development Goals (SDG), particularly SDG 11 (Sustainable Cities and Communities) and allows students to critically reflect on their role as well as other stakeholders' impact when achieving a sustainable city.

SCE has been going through a process of continuous improvement, which motivated the module leaders to develop the current framework to embed ESD in the curricula more comprehensively in the following ways.

4.1. ESD strategy

The University's Education strategy identifies sustainable development as one of the three key priorities and principles to achieve its mission of "students and colleagues from different backgrounds fulfil their potential and contribute to a more sustainable, equitable and healthier society" (University of Westminster, 2023, p. 2). This demonstrates the university's commitment to embedding ESD and SDGs in their courses and modules.

4.2. Course learning outcomes

SCE is a core module in the BA Business Management course, one of the largest courses at Westminster Business School. The course has identified learning outcomes per year of study that clearly align with the university's strategy and efforts to embed sustainability. The term SDG has not been mentioned, but instead, social and environmental elements of sustainability have been identified that provide certain flexibility when embedding ESD. In the second year of studies (level

5), there are seven learning outcomes and the following three are related to sustainability (University of Westminster, 2024, p. 4):

- L5.01 Justify how organisations manage resources internally and in the supply chain in both traditional and digital environments, ensuring responsible management of environmental and social aspects.
- L5.05 Apply relevant business management concepts, tools and techniques to business problems and evaluation of environmental, social and governance performance.
- L5.06 Demonstrate understanding of global citizenship and personal potential to contribute to communities, appreciating the diversity of people and cultures.

The BA Business Management course should map the SDGs per module to identify that all SDGs are covered in the course, and it will be a starting point for discussion on the depth of SDGs by the module leaders. Table 3 shows an example of the SDG mapping per course.

Table 3: SDG mapping per course for each model

Course Name - SDG Mapping				
Module	SDG 1	SDG 2	...	SDG 17
Module 1	x	x		
Module 2		x		x
...				
Dissertation	x			x

4.3. Module learning outcomes

Business studies courses follow the SEEC Credit Level Descriptors as they identify the complexity, depth and autonomy expected at each level of study in higher education (SEEC, 2021). The SCE module learning outcomes (LOs) are aligned with the Level 5 – SEEC descriptors and UNESCO’s key competencies for sustainability (QAA & Advance HE, 2021a) to determine the purpose and skills developed when completing the module. Table 4 shows the alignment of LOs, key competencies for sustainability, SEEC descriptors and assessment.

Table 4: Learning outcomes, Key competencies, SEEC descriptors and Assessment

Learning outcome	Key Competency for Sustainability	SEEC descriptor	Assessment
LO1. Selects appropriate techniques for evaluation and discriminate between the various forms of evidence collected aimed at investigating the impact of businesses and governmental structures in cities on economic development, environment and social equity.	Critical thinking competency	Cognitive skills - Analysis and evaluation	Assessment 1: Poster
LO2. Adapts research, analysis, and communication skills to raise awareness of sustainability issues in the city to a range of situations, audiences and degrees of complexity.	Collaboration competency	Personal and enabling skills - Interpersonal and communication skills	Assessment 1: Poster
LO3. Collects and synthesises information from a range of authoritative sources to inform a choice of solutions to sustainability problems in familiar and unfamiliar contexts of various cities around the world	Integrated problem-solving competency	Cognitive skills - Synthesis and creativity	Assessment 2: Report
LO4. Analyses performance of self and others in promoting a sustainable city and suggests improvements	Self-awareness competency	Performance and practice - Performance	Assessment 2: Report

4.4. Pedagogy

The best-fit pedagogy approach for meeting the SCE module LOs is problem-based learning (PBL), where students can select a city from the Arcadis Sustainable City Index 2022 report (Arcadis, 2022) and analyse the causes of two general sustainability issues.

4.5. Module design training

Since the academic year 2023/24, the University of Westminster has been providing the ABC curriculum design method that helps module leaders improve the module design through the visualisation of the student journey, the identification of learning activities, assessment, SDGs, and blended learning opportunities.

4.6. Learning activities

The following learning spaces were implemented to support meeting the LOs and improve student engagement.

On campus

The SCE module consisted of 12 weeks of classes, comprising both two-hour live lectures and two-hour seminars that include the following learning activities.

- Individual and teamwork: the seminars included both types of activities, for which students had to answer questions based on a short case study or video with captions.
- Diversity in examples and case studies: during seminars and lectures, examples and case studies of cities and companies from developed and developing countries were used to decolonise the way of knowing and encouraging student self-identification with the examples.

Off-campus

- In week 6, an outdoor learning activity was developed through the field trip, where the students could identify sustainability issues and solutions in London. Student engagement during the field trip was important to complete a section in Assessment 2 (report) on which students had to reflect on their learning experience.
- The field trip was offered in two modes: walking or virtual tour, and students could choose any of them according to their learning preferences and availability. The walking tour lasted 1 hour and 20 minutes, whilst the virtual tour consisted of watching a 45-minute video that shows the places visited in London.
- To summarise the key learning during the field trip, in week 7, the tour guide was a guest speaker and shared the key findings during this activity. Moreover, this session represented an opportunity for discussion with students about their role in promoting a sustainable city.

Online

- Two out of the 12 weeks of classes are delivered synchronously online. The learning activities during on-campus and online classes involved using digital tools so that students can demonstrate engagement and knowledge in an online environment. For example, during lectures, a Poll Everywhere (PE) Competition was used, where students had to answer multiple-choice questions about the session. Students had to compete for points, and they could see their names on the leaderboard after each question. This activity improved student engagement and served as a tool for formative assessment, where the lecturer could identify concepts to reinforce.

- In addition, two free online games were used in seminars so that students could compete against each other when developing solutions to sustainability issues. For example, in Siemens Energy Island, students have to provide energy on an island for 24 hours and analyse trade-offs (SIEMENS, n.d.), whilst in Street Mix, students must design their own sustainable street (New Urban Mobility & Code for America, n.d.). Moreover, Padlets were used in all seminars to gather students' answers to case studies, which allowed for listening to the unheard voices of shy students.

Micro-credentials

- Currently, the module leaders are reflecting on embedding massive open online courses (MOOC) to enhance students' visual design and digital capabilities when designing a poster and how to use Artificial Intelligence ethically through a prompt engineering short course as it will prepare graduates when using AI in the job market (Southworth et al., 2023). The module leaders are evaluating providers, including LinkedIn Learning, Google Career Certificates, and Udemy Business. It is important that, when completing these MOOCs, the student will receive a certificate that can be shared on LinkedIn to enhance their employability skills.

4.7. Assessment

The assessment in SCE is twofold: formative and summative. The former was carried out through the Poll Everywhere competitions explained in the previous section, and during seminar activities when students worked on an assessment section in each class, and they received ongoing feedback that prepared them for the summative assessment. The latter was developed in two forms so that student can express knowledge according to their learning preferences:

- Assessment 1 was an individual poster on which students can visually express knowledge. In this assignment, students could choose:
 - The city of their preference from a sustainable city ranking;
 - Two Sustainable Development Goals (SDGs) complementing SDG 1;
 - The two sustainability issues could be social or environmental;
 - The root cause analysis tool that helped them to identify the underlying causes of the two sustainability issues.
- Assessment 2 was an individual report through which students could express knowledge in a written way. In this assignment, they could choose:
 - A different city than in assessment 1 (poster) in case students could not find enough information in their analysis;
 - Two solutions to address sustainability issues identified in Assessment 1;
 - To reflect on their roles in developing a sustainable city and two solutions they experienced during the field trip, regardless of whether they completed the walking or online tour.

4.8. Indicators

Both quantitative and qualitative indicators have been used to assess the impact of ESD in the module and on the student learning experience. These indicators have been classified in the following ways:

- Short-term
 - Table 5 shows the assessment grades, student module evaluation (SME) and participation in field trips. There has been an improvement in the grades in both

assessments. However, grades on posters are lower than on reports. This shows that students need additional support in poster design, the development of concise arguments, and the selection of literature resources. Currently, micro-credentials have not been used in the module.

- Medium/Long-term
 - As the SCE module is delivered in semester 1, it is difficult to gather some data related to students' completion of internships on sustainability jobs or gaining sustainability funds and awards. One key reason is that students tend to participate in these activities at the end of the academic year. Therefore, gathering this data may be suitable at a course level.
 - Currently, two former students won a joint second place in the Alternative Media category for Principles for Responsible Management Education's (PRME) Responsible Business and Management Student Writing Competition 2023/24 (PRME Chapter UK and Ireland, 2024). PRME is an organisation that aims to raise the profile of sustainability in business and management education (PRME Chapter UK and Ireland, n.d.). Students submitted their Assessment 1 (poster) for this competition, demonstrating how assessment components can be used as artefacts that show employability skills.

Table 5: summary of some of the indicators in the SCE module

Sustainable City Economies: Indicators from 2021/22 to 2023/24			
Indicators	2021/22	2022/23	2023/24
Assessment 1 - grade	48.56	49.44	52.68*
Assessment 2 - grade	49.45	52.65	58.15*
Field trip			
Participants	326	337	337
Walking tour	134 (41%)	130 (39%)	134 (40%)
Virtual tour	192 (59%)	207 (61%)	203 (60%)
SME	4.2	4.1	4.2

(* provisional grades)

4.9. Feedback for improvement

Since the academic year 2020/21, the module design of SCE has been in the process of continuing improvement by gathering information from the following stakeholders.

- Student reps: there have been 12 seminar groups yearly, and each selected a student rep who meets the module leaders in two meetings. The student reps were responsible for gathering and communicating students' feedback on good practices and areas for improvement related to the learning material, student-teacher dynamics, and assessment support.
- Lecturers: Six teaching team members provided feedback on learning material, seminar activities, assessment, and student support. The SCE teaching team uses an MS Teams group chat to discuss students' dynamics and concerns, and share new sources, such as links to videos, recent news, and articles.
- University sustainability team: A representative from the team is a guest speaker who delivers a lecture about sustainable solutions at the university and helps select the best three posters in the sustainable city poster competition. Moreover, the sustainability team shares news, including funds and additional training on sustainability that can enhance students' competencies.

- Employer feedback: This is provided at module and course levels about the competencies required for graduates. At a module level, employers are invited to give a guest lecture on a topic related to sustainable business. At a course level, employers provide feedback before the academic year starts and help to identify competencies that can be embedded in courses. Currently, the module leaders are reflecting on working with more employers to provide real, sustainable business challenges that will be embedded in the assessment.

5. Recommendations

Several recommendations originate from this conceptual paper to embed ESD in the curricula. Firstly, further research on the application of ESD in the curricula within higher education institutions is needed to provide a more comprehensive approach to sustainability. Secondly, seeking opportunities to share good practices among instructors within the institution and the sector would be highly beneficial. Thirdly, adopting course and module mapping of SDGs would offer a more holistic understanding and guidance for instructors to avoid repetition as well as providing a deeper involvement with SDGs. Fourthly, ABC curriculum design training should be mandatory for all course and module leaders, as it provides substantial and practical curriculum design instruction.

6. Further research

Regarding ESD, further research is necessary to explore its application in general management studies, particularly within logistics (Putz, Treiblmaier, & Pfoser, 2018). Additionally, understanding how pedagogical approaches influence sustainability competencies remains an important area of study (Lozano, Merrill, Sammalisto, Ceulemans, & Lozano, 2017). More research is necessary to investigate how sustainability-related courses impact students' perspectives (Brian Fisher & McAdams, 2015). Lastly, further research is required when evaluating sustainable development-related teaching methods in higher education courses (Dziubaniuk, Ivanova-Gongne, & Nyholm, 2023).

7. Conclusions

This conceptual paper attempts to provide a more holistic and practical framework for embedding ESD in the curricula since the literature has presented many gaps in how to guide instructors in doing this more practically, even though there are many efforts from different institutions. The case study showcases a core sustainability-related module at the Westminster Business School, which provides data and opportunities for reflection when considering the level of ESD implementation. The ESD framework, even at its conceptual level, provides a stronger level of engagement with sustainability issues, opportunities for skill development and a more integrated approach that benefits institutional-wide efforts in embedding ESD in the curricula and beyond. Finally, this ESD framework provides opportunities for skill development and equips learners with the tools to address global sustainability challenges.

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