

CASEBOOK OF IDG IMPLEMENTATION INTO HIGHER EDUCATION

The IMPACT Project: A Case Study of a Potentially Replicable and IDG-Aligned Education for Sustainable Development Initiative

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Abstract

Progress towards the Sustainable Development Goals (SDGs) is inadequate. Greater attention to the inner skills and qualities needed to achieve the SDGs is necessary. The Inner Development Goals (IDGs) outline 23 skills and qualities to focus on. Education for Sustainable Development (ESD) initiatives in higher education are key to honing them but are often under-described, lack generalisability, and/or are under-theorised. This case study aimed to comprehensively report the context, background, development, implementation, and exploratory qualitative analysis of the pilot IMPACT (Inspiring Movements for Progressive Action and Change Together) Project for ESD practitioners to assess its replicability and value. The IMPACT Project is a one-day workshop supporting students to create change campaigns targeting field- and SDG-related issues. The case study further aimed to outline its pedagogical foundations, retrospectively map the IDGs to its activities, and retrospectively explore the qualitative data from the three pilot participants in relation to the Inner Development Goal (IDG) mappings and ESD literature. The purpose was to generate hypotheses for future research about whether and how the workshop might promote the IDGs. Two coders subjectively compared the workshop activities against the IDG definitions. All IDGs were associated with at least one activity. The same coders retrospectively explored the students' feedback for potential IDG connections. When considered next to the IDG mappings and ESD literature, preliminary observations indicated plausibility that at least 15 IDGs may have the potential to be developed through the workshop. However, given our retrospective approaches, all

preliminary observations and IDG mappings must be robustly assessed in future research, ideally in diverse educational and disciplinary contexts to determine the transferability of the workshop. Senior management in universities should make resources available for this to advance progress towards the IDGs and SDGs.

Keywords/key phrases: Inner Development Goals (IDG/IDGs), Sustainable Development Goals (SDGs), Education for Sustainable Development (ESD), Experiential Learning Theory, Transformative Learning Theory, Constructivism

1. Introduction

In 2015, United Nations (UN) Member States adopted 17 Sustainable Development Goals (SDGs), with 169 targets. The SDGs aim to address social, environmental, and economic issues by 2030 to ensure long-term peace and prosperity (UN, n.d.-b). Yet, the UN's (2024) report indicated sufficient progress towards just 17% of the targets. Approximately 50% have modestly improved, and advancement has stalled or reversed for the remainder.

Efforts to achieve the SDGs have focused on political and socioeconomic structural reforms. Ives et al. (2020) argued these alone are insufficient, with individuals' inner worlds playing a crucial but overlooked role in shaping sustainable futures. The Inner Development Goals (IDGs) project emerged in 2020 to foster the skills and qualities people need to realise envisioned change. With input from over 861 sustainability professionals and adult development and leadership researchers, a framework outlining 23 skills and qualities, across five categories, was developed (Jordan et al., 2021). Table 1 illustrates these 23 IDGs, and full definitions are available in Jordan et al. (2021, pp.13-24). Please note, throughout, we use IDGs to refer to multiple Inner Development Goals, and 'IDG' when referring to an individual Inner Development Goal (IDG) (e.g. complexity awareness, empathy & compassion) or when the term functions adjectivally (e.g. 'IDG-aligned', 'IDG Framework')

TABLE 1. IDG FRAMEWORK

Being	Thinking	Relating	Collaborating	Acting
Inner Compass	Critical Thinking	Appreciation	Communication Skills	Courage
Integrity & Authenticity	Complexity Awareness	Connectedness	Co-Creation Skills	Creativity
Openness & Learning Mindset	Perspective Skills	Humility	Inclusive Mindset & Intercultural Competence	Optimism
Self-Awareness	Sense-Making	Empathy & Compassion	Trust	Perseverance
Presence	Long-Term Orientation & Visioning		Mobilisation Skills	

Source: Based on Jordan et al. (2021, p.12).

1.1. Education for Sustainable Development (ESD)

Sustainable Development Goal (SDG) target 4.7 emphasises ESD (UN, n.d.-a), defined by UNESCO (2025, n.p.) as ‘a holistic approach to education that empowers learners of all ages with the knowledge, skills, values and agency to make informed decisions and act responsibly to protect the environment, promote just and equal economic development and societies.’ In a view appearing to align with this definition, Wood (2024) argues the IDGs should be central to education, asserting that educational settings provide ideal circumstances for students to develop the IDGs in relation to the SDGs.

Past reviews elucidated five main ways higher education institutions (HEIs) integrate ESD (Mburayi & Wall, 2018; Mokski et al., 2023; Tijsma et al., 2023; Weiss et al., 2021; Weiss & Barth, 2019), shown in Table 2.

TABLE 2. ESD INTEGRATION IN HEIS

Approach	Description
1. Extracurricular	Standalone sustainability-related courses not linked to any degree programme. Students from diverse fields participate, but the course is not discipline specific. These courses are usually non-credit-bearing.
2. Incorporated into existing curricula	Individual teaching staff explore sustainability in relation to topics in a degree programme module, which could be elective. Students gain credit for the module, but the extent of sustainability inclusion varies, as this is not the focus.
3. Dedicated, discipline-specific curricula	Courses or sessions within a degree programme that specifically focus on sustainability in relation to the field. May be credit-bearing and/or elective.
4. Designed into existing disciplinary core curricula	Teaching teams embed sustainability into the structure and learning outcomes of all core modules of a degree programme, rather than limiting it to isolated topics. All students are exposed and receive credit.
5. Cross-disciplinary curricula incorporated into degree programmes	Credit-bearing courses that integrate multidisciplinary knowledge and unite students from various degree programmes to co-create solutions to real-world sustainability challenges.

Source: Based on Vogel et al. (2023, p.27).

Vogel et al.’s (2023) systematic review of ESD in HEIs considers these approaches a continuum, with one being the most straightforward and inexpensive but least effective and four and five representing the most effortful and costly but effective options. However, the 115 empirical publications they reviewed frequently provided insufficient contextual information to precisely determine the approach used. Irrespective, they argued case study findings often cannot be generalised because students’ existing knowledge, learning preferences, and expectations, which vary across educational and disciplinary contexts, influence them. We

agree but believe constructing replicable ESD initiatives to test across settings is possible. The pilot ESD intervention we report may be an example.

Vogel et al. (2023) also found that many case studies inadequately explained the pedagogical underpinnings of their teaching practices. This hinders understanding about how the techniques used might promote the IDGs.

1.2. Purpose and Aims

Thus, the purpose and aims of this case study are two-fold:

1. To enable ESD practitioners to assess if/how our pilot initiative can be reproduced/adapted in other settings, and the potential value of doing so, we aim to comprehensively report its context, including background, development, implementation, and exploratory qualitative analysis.
2. To provide hypotheses for future research about whether and how our initiative may help students develop IDGs, we aim to 1) describe its underpinning pedagogy, 2) retrospectively and subjectively map its learning activities to the IDGs, and 3) retrospectively explore student feedback in relation to these tentative mappings and the ESD literature.

2. Context

The IMPACT (Inspiring Movements for Progressive Action and Change Together) Project is a one-day workshop launched by teaching team members of the Global Mental Health (GMH) Master of Science (MSc) Programme in the School of Health and Wellbeing (SHW) in the College of Medical, Veterinary, and Life Sciences (MVLS) at the University of Glasgow (UoG). The workshop supports students to create a change campaign targeting a field- and SDG-related issue of their choice. As a new, voluntary, sustainability-focused learning session attached to a specific degree programme, it is most consistent with Approach Three in Table 2.

The IMPACT Project has always aligned with the ESD definition, but the original terminology used to describe it reflected the UoG's (2021) Learning and Teaching Strategy, which differs slightly. The authors learned about the IDGs after the pilot. Therefore, the workshop activities and pilot analysis questions were not explicitly informed by them; the mapping and student feedback exploration was retrospective.

2.1. Background

In March 2024, the Director-General of the World Health Organization (WHO) was awarded an honorary doctorate by the UoG. While visiting, he encouraged SHW students to participate in a social media campaign concerning negotiations for the Pandemic Agreement, adopted in May 2025 (WHO, 2025). After supporting this, the facilitator identified by the initials MW proposed to the GMH team that change campaigning opportunities be embedded in the curricula. Student feedback was solicited via the 23-24 GMH programme evaluation in May 2024. Change campaigning activities (e.g. social media campaigning, petitioning, organising awareness-raising events, writing to people with influence, etc) were listed and students rated their agreement with the following statements:

1. Universities should support students to engage in the activities listed during and as part of their studies (i.e. not just as an extracurricular activity or in post-graduation careers).
2. I would value more support to engage in the activities listed during and as part of the GMH Programme.

Of the ten responses received, 90% (n=9) strongly agreed or agreed with both. The remaining student neither agreed nor disagreed. A lack of activity-related knowledge, skills, and/or confidence emerged as the top barrier to campaigning, with qualitative insights revealing:

the course is fabulous in sharing the What (is the challenge) and the Why it exists (biopsychosocial challenges). what the course does not do, is offer guidance as to How students can drive change.

After analysing this feedback, the team decided to schedule a pilot IMPACT workshop for June 2024.

2.2. Workshop Development Process

2.2.1. Stakeholder Consultation

Advance HE and the Quality Assurance Agency (QAA; 2021) recommend consulting diverse stakeholders, including students and alumni, to ensure initiatives align with wants and needs. A collaborative student-staff session took place to outline the workshop direction. A GMH alumnus and current postgraduate research student participated and contributed audiovisual material shown during the workshop. A GMH student was invited but unable to attend. However, they provided ideas informally, and audiovisual material they created for the team's decolonisation project (see Sharp et al., 2025) was used. Two lecturers on the UoG Science Communications MSc shared relevant practical skills, including using social media and podcasting, enabling interdisciplinary knowledge exchange, encouraged by Advance HE & QAA (2021).

Beyond this session, colleagues who support student enterprise and the MVLS' Graduate Skills Award, which facilitates and formally recognises students' extracurricular activities, provided pre-existing resources. The facilitators, identified by initials MW, AF, and LS consulted these when developing the workshop.

Advance HE and QAA (2021) highlight the value of community knowledge beyond academia. Gina Martin's (2019) book, 'Be the Change', strongly shaped the workshop content. Gina is a public member who successfully campaigned to make upskirting, the non-consensual taking of photos or videos beneath people's clothing, a sexual offence in England and Wales. Gina was invited to contribute audiovisual resources but declined due to time constraints.

2.2.2. Reflexivity & Ethics

While considerable effort was made to involve students, staff of various backgrounds, and the community given the short development timeframe, a lack of diversity existed otherwise. All authors possess multiple characteristics that largely protect them from social injustice (e.g. White, Scottish- raised and educated, cis-gendered, heterosexual identities). They understood that students participating in the workshop were more diverse. In 23-24, 39 (81.0%) of the 48 on-campus GMH students were international.

The IMPACT Project operates under the SHW's generic ethical approval for the evaluation of Scholarship of Teaching and Learning (SoTL) activities, granted by the MVLS Ethics Committee (Project Number: 200240024). However, the authors recognised factors that may disproportionately impact certain groups. Stress could occur if students with marginalised identities or trauma felt obliged to tackle issues with personal effects, and not all students come from countries with freedom of expression. To ensure the workshop was safe and empowering for everyone, students were not required to publicly share their work and could opt to support other students in campaign design, rather than create their own, although no participant took this approach.

2.2.3. Materials

The workshop content was prepared and presented with Articulate Rise 360, an e-learning authoring software. Students received access to the materials at the workshop start, with ongoing access afterwards.

Some activities suggested students use Copilot, Microsoft's artificial intelligence (AI) tool, to support idea generation. The UoG and scholars like Kamalov et al. (2023) propose that since AI use will likely become a demanded workplace skill, students should be taught to use it responsibly. Students have free, secure Copilot access via their UoG account.

To minimise costs, existing university resources were leveraged whenever possible. For example, some activity templates were hand drawn, photocopied, and given to workshop attendees on the day; others were created with Microsoft Word or PowerPoint and embedded into the content for download, although paper copies of the Word templates were also available. Additionally, students were presented with pen and paper for some activities, and SDG tile cards for one activity were printed and laminated using UN website icons.

Catering and workshop items, including prizes for one activity, were purchased using a small MVLS' College Equality, Diversity, and Inclusion Committee fund.

Production of the GMH alumnus' and student's audiovisual material was paid for via a separate fund that enables collaboration between the GMH teaching team and an independent videographer to generate films for programme-wide use in which contributors apply real-life experiences to course content.

2.3. Implementation

2.3.1. Participants

All 48 23-24 on-campus GMH students were invited three weeks in advance via Moodle to secure a free ticket through Bookitbee. Students were only offered free lunch and refreshments as incentive. Seven (14.6%) students enrolled; only three (6.3%) attended. Of these three (6.3%) participants, two identified as female (66.7%) and one as male (33.3%). Their nationalities were Indian, Indonesian, and Malaysian.

2.3.2. Procedure

The one-day workshop occurred on the main campus from 9am to 5pm. The day comprised three main sections, detailed in the first column of Table 3. These were sequenced to scaffold learning (Wood et al., 1976). For example, Section One outlined foundational concepts (e.g.

campaign stages) applied in the second (e.g. during campaign planning), and the outputs of Section Two problem identification and solution design activities were built on in three activities pertaining to campaign communication.

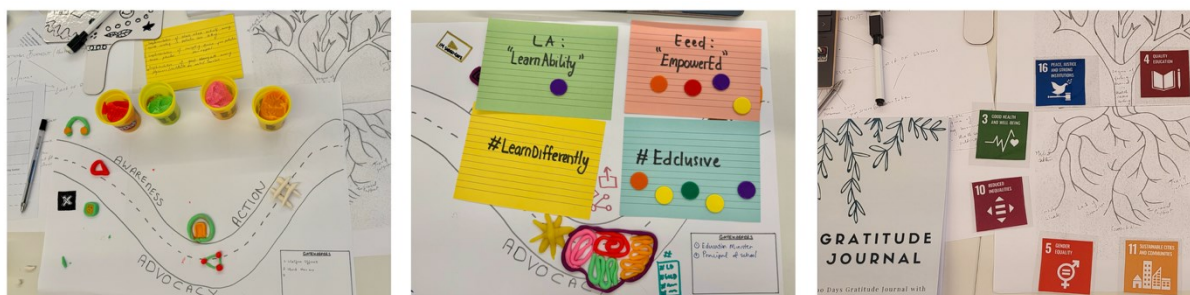
TABLE 3. WORKSHOP SECTIONS, LEARNING METHODS, AND MAPPED IDGs

Workshop Section	Learning Methods	Mapped IDGs
Section 1: Introduction to Change Campaigning Gina Martin's (2019) three campaign stages (awareness, advocacy, and action) were explained. A game involving matching campaign activities to campaign stages was employed to consolidate understanding. The benefits of change campaigning were contextualised with real campaigns. Challenges were discussed, and students created a campaigning self-care plan.	Traditional Lecturing; Gamification; Group Debate; Self-Reflection	Self-Awareness; Presence; Perspective Skills; Sense-Making; Connectedness; Communication Skills; Optimism
Section 2: Planning a Change Campaign Students discussed ethical considerations regarding choosing a campaign topic, before engaging in practical activities to: 1) select a target issue; 2) enhance understanding of its causes; 3) determine an innovative solution by reflecting on existing campaigns addressing similar topics; and 4) plan change-campaigning activities needed to apply the solution.	Peer Learning; Group Discussion; Reflection; PBL; PjBL; Gamification; Group Debate	Inner Compass; Integrity & Authenticity; Self-Awareness; Critical Thinking; Complexity Awareness; Long-Term Orientation & Visioning; Humility; Inclusive Mindset & Intercultural Competence; Trust; Creativity
Section 3: Implementing a Change Campaign Students were supported to use social media as the first step in campaign implementation. Activities included developing branding materials and effective messaging, preparing for resistance through role-playing, and creating an initial social media post.	Gamification; PjBL; Group Discussion; Peer Learning; Group Debate; Role Play; Traditional Lecturing; Self-Reflection; Peer Interaction	Inner Compass; Integrity & Authenticity; Openness & Learning Mindset; Perspective Skills; Appreciation; Empathy & Compassion; Communication Skills; Co-Creation Skills; Inclusive Mindset & Intercultural Competence; Mobilisation Skills; Courage; Perseverance

Source: Own compilation.

The first column in the Appendix A table chronologically details the activities in each section, alongside their scheduled durations. An asterisk indicates that activity materials or outcomes are depicted in Figure 1, a montage of the IMPACT resources in use.

FIGURE 1. MONTAGE OF IMPACT RESOURCES AND ACTIVITY OUTCOMES



Source: Own compilation.

During practical activities, facilitators MW, AF, and LS circulated the room. The attendees appeared engaged, regularly discussing ideas and queries with the facilitators and each other, irrespective of whether the activity required it.

The activities largely involved learning about and applying campaigning information and tools to disciplinary topics. Since disciplinary topics were not the focus, we suggest the workshop could be applied elsewhere. The workshop resources are available here: <http://bit.ly/47UW2SJ>. They can be used or adapted for non-commercial purposes with notification and credit. Please contact the authors for post-publication updates or additional details.

The resources include guidance about undertaking campaigning activities not engaged in during the workshop but identified as important through stakeholder consultations.

2.4. Exploratory Qualitative Analysis

To minimise aforementioned concerns about emotional strain and self-expression, the pilot analysis focused on whether students found the workshop valuable and empowering. Students were invited to complete an anonymised, paper-based feedback form before leaving the workshop. They were informed that their anonymised feedback might be included in the research team's ongoing analysis and dissemination of the IMPACT Project. To minimise survey fatigue, only two open-ended questions were included:

1. Which parts of the workshop were most valuable, and which were not? Please explain your responses.
2. Has the workshop empowered you to engage in change campaigning in the future? If so, in what ways do you envision using the skills and knowledge gained? If not, please explain why and offer insights into what you would change to make it more empowering.

The responses were collated in a Microsoft Word document and used to inform refinements.

All participants highlighted the value of the workshop, and their enjoyment and appreciation of the approaches used:

I thoroughly enjoyed each part of today's session... the activity-based approach... was a wonderful experience... Keep doing this kind of workshop it really helps. (Participant [P] 1)

I love how interactive this workshop is!!! I learned a lot, but it doesn't feel like school. (P2)

I think every part was valuable... it has been so much fun... I feel like a lot of thought and care has been put into this... I appreciate it. (P3)

P2 additionally offered constructive feedback, including to incorporate the Ishikawa/Fishbone diagram (Kumah et al., 2024) and the Urgency, Seriousness, Growth tool (Amartya, 2020). These have since replaced or been integrated into existing activities.

The week after the pilot, AF and LS (MW was unavailable) debriefed and reviewed the workshop based on perceptions about the flow of the day and student understanding. They observed that some students had difficulty understanding the different campaign stages. 'Stages' were rephrased to 'components' to emphasise non-linearity and were contextualised with campaign examples. More time was allocated to introducing them. Some Section Two activities that felt repetitive were also given more time and streamlined, while certain Section Three activities were reduced in duration, having not taken as long as anticipated.

3. Underpinning Pedagogy

Evans and Ferreira (2020) assert it is unlikely that any one pedagogical approach is most effective for ESD. However, consensus exists that active, experiential, and participatory learning are important (Vogel et al., 2023). The second column of Table 3 indicates the specific active, experiential, participatory, or other learning methods applied in each workshop section. Appendix A (second column) further breaks these down by workshop activity and clarifies whether the method(s) employed were active, experiential, participatory, or a combination.

3.1. Active Learning & Constructivism

Active learning (AL) encompasses tasks in which students do things and contemplate what they are doing, rather than receiving information through traditional lecturing (Bonwell & Eison, 1991; Freeman et al., 2014). AL is often described as rooted in constructivism (Doolittle et al., 2023), a learning theory with many interpretations, but most subscribe to the core idea that learners build knowledge by linking prior understanding with new experiences; knowledge cannot be passively imparted. Piaget's cognitive constructivism attributes less emphasis to the role social interaction plays in this, while Vygotsky's social constructivism stresses the importance of collaboration (Sjøberg, 2010).

The IMPACT workshop involves minimal traditional lecturing, mostly at the beginning to set context. AL methods incorporated include group discussion and debate, reflective practices, role play, educational gamification (the incorporation of game-like elements and design into learning activities; Manzano-León et al., 2021), problem-based learning (PBL), and project-based learning (PjBL; Darmawan et al., 2024; Istiningsih et al., 2024; Martínez Casanovas et al., 2022). PBL involves students exploring identified problems, before proposing solutions, with educators offering guidance as necessary (Eggen & Kauchak, 2012). PjBL shares this approach but further requires students to devise a concrete plan or product to deliver their solutions (Darmawan et al., 2024).

3.2. Experiential Learning & Experiential Learning Theory

Experiential learning (EL) constitutes approaches offering real-world learning opportunities (Backman et al., 2019). EL is informed by Kolb's (1984) Experiential Learning Theory (ELT), which proposes that learning is a cyclical process comprising four stages:

1. **Concrete Experience:** Learners encounter a new experience or a familiar one in a novel way.
2. **Reflective Observation:** Learners reflect on how the experience relates to their prior knowledge or perspectives.
3. **Abstract Conceptualisation:** Learners' reflections inform the creation or refinement of ideas, concepts, or theories.
4. **Active Experimentation:** Learners apply their new ideas, concepts, or theories to novel situations, adapting them in practice.

Martínez Casanovas et al. (2022) asserts that EL is a form of AL. While any AL activity incorporating real-world engagement or simulations can be considered EL, the most reported manifestations are PjBL and PBL (Backman et al., 2019).

The entire IMPACT workshop can be considered PjBL, as it supports students to create a concrete product (a change campaign) to address real-world challenges. In doing so, students move through all four stages of Kolb's (1984) cycle. Learners encounter authentic campaigns (concrete experience), consider them in relation to past experiences and knowledge about an issue they care about (reflective observation), develop new ideas for change (abstract conceptualisation), and create campaign materials to begin implementing their ideas (active experimentation).

Nevertheless, some IMPACT activities are more clearly experiential than others; only these are coded as EL in Appendix A. Section Two and Three activities focused on campaign road mapping and implementation are categorised as PjBL, while Section Two activities supporting issue identification, cause-effect analysis, and solution generation are denoted as both PBL and PjBL. One solution generation activity invites real-world community engagement through supporting existing campaigns' social media profiles and petitions. Others draw on or simulate authentic experiences to support campaign planning and communication.

3.3. Participatory Learning & Transformative Learning Theory

Participatory learning (PL) is often but not always another form of AL, which emphasises collaboration for knowledge construction, thereby aligning with social constructivism (Arega & Hunde, 2025). It includes group discussion or debate but also activities that promote peer learning (Dara & Kesavan, 2025). The videos contributed by a GMH student and alumnus exemplify this, although it should be noted these are passive, not active, in nature. PL activities can be those encouraging peer or community interaction and may aim beyond knowledge acquisition to socioemotional development (Dara & Kesavan, 2025), such as in the 'Scroll of Motivation' activity (see Appendix A), which involved students collectively creating a page full of supportive messages for each other.

PL is underpinned by Mezirow's (1978, 2009) Transformative Learning Theory (TLT). TLT posits that significant learning occurs when a person identifies assumptions and expectations (termed 'frames of reference') that guide their thoughts, feelings, and behaviours in problematic ways and shifts them to be more inclusive, discerning, and flexible. This process requires critical reflection on personal and others' frames of reference, achievable through dialogue. The IMPACT workshop provides several opportunities for this. For example, the ethical discussion before choosing a campaign topic invites students to examine their values and contemplate their role as change agents. Moreover, TLT is exemplified in the 'Not Always as Easy as Waving a Magic Wand' activity (see Appendix A), in which students share their campaign idea with peers role-playing the opposition. Students' views are deliberately challenged through peer dialogue, leading to perspective refinement through co-created rebuttals. Students can apply new frames of reference during subsequent campaign planning and public communication tasks.

4. Retrospective IDG Mapping

4.1. Methods

MW developed the workshop activity summaries in Appendix A. For each activity, MW and LS independently examined Jordan et al.'s (2021) definition of each IDG, recording only those they could justifiably link to the activity based on its purpose and/or content. They considered the activity summary, their experience of developing and delivering it, and, if needed, the relevant workshop materials. MW compared and synthesised both coders' records. In rare misalignments, MW re-engaged with Jordan et al.'s (2021) definitions to preliminarily decide whether to retain or discard the IDG. This was discussed with LS for final consensus.

4.2. Outcomes

All IDGs were deemed relevant to at least one workshop activity. For brevity, for each workshop section, the third column of Table 3 displays examples of the links considered strongest or those showing the broad applicability of the IDGs. Appendix A (column three) elaborates on which workshop activity/activities within each section these IDGs were mapped to and why.

5. Retrospective Student Feedback Exploration

The retrospective exploration of students' pilot feedback in relation to the IDGs involved secondary coding of existing anonymised data and was considered minimal risk. The work was conducted under the SHW's generic ethical approval for SoTL activities (Project Number: 200240024).

Separately, MW and LS reviewed six feedback items (the three students' responses to the two pilot analysis questions). For each, they reflected on each IDG definition by Jordan et al. (2021). IDGs perceived as potentially evident in the feedback item were noted if the coder could provide a well-reasoned explanation. MW collated the records, resolving disagreements using the same process as the IDG mapping exercise.

Student feedback hinted that participation could potentially help develop several IDGs. Two participants referred to cognitive expansion, which could reflect developments in complexity awareness:

...I was given a chance of going beyond and thinking beyond... (P1)

...it really pushed me to use my brain more... (P3)

Complexity awareness involves systems thinking (Jordan et al., 2021), the ability to comprehend interconnections between elements of a system and evaluate how changes to one affect others (Wiek et al., 2011). Following PjBL, enhanced systems thinking has been documented among students of sustainability science (Birdman et al., 2022b), accounting (Sales de Aguiar & Paterson, 2018), and engineering (Ostuzzi & Hoveskog, 2020), although gains depended on overt support to synthesise interdisciplinary knowledge in the latter. While this was an implicit not explicit characteristic of the IMPACT workshop, the feedback suggests it is feasible our PjBL event might positively impact systems thinking/complexity awareness. The literature also supports our mapping of complexity awareness to activities involving problem and solution exploration, features of PjBL.

PjBL with real-world connections and plentiful interaction has been associated with strategic-thinking competency (Birdman, et al., 2022a), an ability to engage with others to plan and execute actions (Wiek et al., 2011). Given that strategic-thinking competency involves collaborative design, the authors consider co-creation skills one of its IDG counterparts. One participant appeared to demonstrate co-creation skills through their innovative ideas for workshop improvement, but these may have been already possessed, rather than honed through attendance:

...Maybe for the practical parts, if someone already has a campaign, instead of asking them to do it from scratch, ask them to analyse their own movements... (P2)

Still, our mapping of co-creation skills to ‘Branding Your Change Campaign’ (see Appendix A), a PjBL activity involving peer interaction to mutually design materials, appears supported by Birdman, et al. (2022a).

Experiential, participatory PjBL has also been linked to interpersonal competency (Birdman et al., 2022a), an ability to empathetically communicate, negotiate, and collaborate with others, as well as an openness to learning from diverse perspectives with understanding and respect (Wiek et al., 2011). Providing strong opportunities for peer interaction and exchange seem particularly important (Birdman et al., 2021; Konrad et al., 2020). It is, therefore, promising that IDGs we deem relevant to interpersonal competency (openness and learning mindset, perspective skills, empathy and compassion, communication skills, and inclusive mindset and intercultural competence) were frequently mapped to activities in which students respectfully dialogued about opposing views or affirmed each other’s contributions. P3 seemed to refer directly to the ‘Matching Campaign Activities to Campaign Stages’ game (see Appendix A), mapped to perspective skills (the capacity to seek, comprehend, and apply dissimilar views; Jordan et al., 2021), when they showed an ability to perceive that distinctions between campaign stages can be subjective:

...differentiating between awareness, advocacy, and action was mind blowing. How complex/mixed it can be.

Konrad et al. (2020) linked reflective practices to self-awareness, while T.J. Martin et al. (2021) found in an architectural context that Socratic dialogue was associated with improved critical thinking. In Socratic dialogue, a philosophical question is posed, followed by group exploration, during which participants make claims, with examples, to work towards a shared understanding (Mahoney et al., 2023). The ethical discussion in Section Two was not explicitly intended to be Socratic dialogue, but it shared elements in practice, as well as reflection. Aligned with the literature, critical thinking and self-awareness were mapped to this activity, as well as integrity and authenticity and humility, which are closely related to self-awareness (Jordan et al., 2021). The discussion task was not referenced in the feedback, so we cannot infer if it contributed to the possible improvements in critical thinking components (alongside communication skills and sense-making) reported by P3:

...I've learned to breakdown my ideas, expand them, and to briefly explain them in an impactful way...

The logical ordering inherent to the 'Creating a Roadmap' activity (see Appendix A), was a form of backcasting, in which students imagined a desired campaign outcome before planning necessary steps to realise it. Gardiner and Rieckmann (2015) observed that backcasting improved anticipatory competency, the capacity to construct a vision for the future and identify actions to manifest it (Wiek et al., 2011). Anticipatory competency appears to share similarities with long-term orientation and visioning, the IDG this activity was mapped to.

Finally, Weinberg et al. (2020) assert that TLT-aligned activities, in which learners' frames of reference are challenged, are crucial for supporting personal confrontation and self-concept examination. Our activity exemplifying TLT, 'Not Always as Easy as Waving a Magic Wand', was mapped to inner compass, integrity and authenticity, perspective skills, and courage, all of which the authors consider relevant to Weinberg et al.'s endeavour. Their study of student teachers found that TLT-aligned activities empowered personal changes, but self-concepts rarely shifted such that students viewed themselves as change agents. By contrast, it appears plausible that at least one IMPACT workshop participant might have experienced such a shift:

...it has encouraged me to engage in campaign! And I am hoping to start my page... Today I surprised myself... (P1).

5.1. Strengths

This case study offers a well-received ESD initiative, informed by multiple stakeholders and grounded in evidence-based pedagogy, for practitioners to experiment with. Our assertion that the IMPACT workshop could be cross-disciplinary is bolstered by the fact that a Global Health MSc student successfully participated alongside GMH students during its second delivery, although we acknowledge these are closely related fields. For those adapting or developing their own version of the workshop, this case study offers valuable insights about our process.

5.2. Limitations

The low attendance rate prevents conclusions about the acceptability and accessibility of the workshop and, therefore, its sustainability and scalability. However, later offerings to the 24-

25 and 25-26 on-campus GMH cohorts saw 21 of 38 (55.3%) and 14 of 34 (41.2%) students participate.

Reflecting on the lower pilot number, our early assumption was that this may have been due to timing, plus a lack of formal timetabling and email reminders. It was offered during summer, when students have minimal contact and are completing dissertations. It has since been offered during semesters one (25-26) and two (24-25), when students have weekly face-to-face learning sessions. For these cohorts, the workshop appeared on timetables, and the invitations were followed by email reminders to encourage sign-ups and attendance.

While attendance substantially increased from the pilot to the 24-25 and 25-26 academic years, optimising it further would be beneficial. A non-mandatory question added to the 24-25 GMH programme evaluation asked students who did not attend to explain why. Eleven (28.9%) of the 38 on-campus GMH students completed the evaluation. Of these, one indicated they had not attended but did not supply a reason. Data is not yet available for the 25-26 cohort, but any insights will be used to enhance acceptability and accessibility.

Given the low attendance rate, and that neither the workshop nor pilot analysis questions were designed with the IDGs in mind, the depth and reliability of our findings warrant cautious interpretation. Firstly, the three students' perspectives cannot be assumed to be generalisable, and the small sample may have amplified social desirability bias (providing positive feedback to please facilitators). Secondly, our retrospective IDG mapping and feedback exploration employed pragmatic rather than fully standardised analytic methods due to the hypothesis-generating purpose, constrained scope of the available student feedback, and proportionality considerations (i.e. the level of rigour aligned with the small scale and pilot nature of the study). This renders our interpretations vulnerable to researcher confirmation bias (a tendency to identify connections aligned with personal hopes and expectations), post-hoc attribution (perceiving links not intentionally embedded), and construct validity issues (the feedback items were not well-suited for measuring IDG development). In addition to the increased risk of false IDG connections, the lack of construct validity, combined with the small sample size, may also explain why several mapped IDGs were not reflected in students' feedback. While the feedback offers insights into the perceived value of the workshop, our interpretations of it in relation to the IDGs, and our IDG mappings, should be regarded as hypothetical and incomplete.

Interpretations of how our IDG mappings relate to the ESD literature are further weakened by the fact that specific AL, EL, and PL methods are applied variably across settings and a lack of agreement exists about how to define the skills and qualities ESD aims to promote (Vogel et al., 2023). Jordan et al. (2021) noted that the IDG framework bears similarities to others (e.g. Center for Vaeredygtighed, 2021; Dawson, 2020; Rimanoczy, 2020; Wamsler et al., 2020, 2021; Wamsler & Restoy, 2020; Warwick et al., 2017; Wiek et al., 2011). These have yet to be systematically compared against the IDGs (Jordan et al., 2021), and greater clarity over terminology is needed (Vogel et al., 2023).

5.3. Future Directions

Given the limitations, our student feedback interpretations and IDG mappings should be rigorously assessed in future research to determine whether and how the IMPACT workshop

promotes IDG development. Consideration should be given to how the entire workshop hones the relevant skills and qualities, as well as its individual tasks to tease out active ingredients.

To strengthen the evidence base, larger samples, consistent competency definitions, and appropriate evaluation tools should be engaged. Evaluation challenges are prevalent across the ESD literature, not only due to conflicting terminology. Value changes can be harder to determine, especially as they have historically been out of scope for HEIs. Furthermore, currently, self-report data, subject to social desirability bias, is relied on. Valid assessment tools should be developed, and self-report data triangulated with that obtained through other sources like educator observation (Vogel et al., 2023).

The lack of standardised evaluation metrics, combined with under-describing of ESD initiatives and diversity in how pedagogical methods are implemented, makes it difficult to compare the effectiveness of ESD initiatives, beyond considering their relative positions on Vogel et al.'s (2023) integration approach continuum (see Table 2). However, this is an important future research avenue. We are hopeful that, as an Approach Three, the IMPACT workshop is a robust, valuable option for ESD practitioners unable to implement Approaches Four or Five. However, the UoG (n.d.) is developing 50-100 credit-bearing, interdisciplinary courses providing EL opportunities to examine and tackle SDG-related concerns. The IMPACT Project may expand into one such course, evolving it into an Approach Five, underpinned by a whole-institution approach and ideally involving community partners in design and delivery. This is deemed the most effective route for ESD integration in HEIs (Vogel et al., 2023). Rather than relying on retrospective mapping, future iterations of the IMPACT Project (or any ESD initiative) should deliberately and systematically embed IDG-related competencies into activity design.

Finally, future work should ensure equity of access for online distance learning students. After the pilot, a student-staff partnership with all three participants led to the development of an asynchronous version for online distance learning GMH students. This launched in March 2025 but was poorly utilised by the 30 students enrolled. Asynchronous workshop models pose unique challenges, especially in facilitating PL (Tetu et al., 2025), and future work must explore and address barriers. Although these students were similarly invited to explain non-participation in the 24-25 programme evaluation, only one (3.3%) completed it. They indicated they had not participated but did not explain why.

6. Conclusion

This case study aimed to comprehensively outline the IMPACT Project for ESD practitioners to explore its utility elsewhere. We further aimed to describe its underpinning pedagogy, retrospectively map its activities to the IDGs and explore student feedback in relation to the mappings and ESD literature, to generate future research hypotheses. Potential for the development of 15 of 23 IDGs was tentatively indicated by our student feedback exploration and literature review. However, all interpretations and IDG mappings must be rigorously evaluated through future iterations of the workshop, including across contexts.

For ESD practitioners interested in replicating the IMPACT Project, practical guidance regarding contextual adaptations, resource requirements, facilitator preparation, and viable participant numbers and scalability considerations are available in Appendix B. Limited staff time and financial constraints pose barriers to implementation in different institutions. However, introducing/adapting and evaluating the IMPACT workshop, rather than developing

a new ESD initiative, could make efficient use of limited university resources, as the development burden has already been shouldered. Nevertheless, applying ESD initiatives, ours or others', requires ongoing funding and training support. When institutional policies and strategies do not emphasise ESD or its values, such support is less likely. Like Vogel et al. (2023), we urge senior management in HEIs to make ESD an institutional priority to ensure an advanced understanding about how to facilitate progress towards SDG target 4.7, and the SDGs more broadly.

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Appendices

Appendix A. Workshop Overview, Pedagogy, and IDG Mapping

Workshop Activity	Underpinning Pedagogy	Mapped IDGs & Justifications
Section 1: Introduction to Change Campaigning		
Welcome to IMPACT (15 mins) Facilitators and attendees introduced themselves. The workshop plan was outlined.	N/A	N/A
Introduction to Change Campaigning (5 mins) ‘Campaign’ was defined, and Gina Martin’s (2019) campaign stages (awareness, advocacy, action) were explained.	Traditional Lecturing	Sense-Making: Deconstructs social movements to identify patterns.
*Matching Campaign Activities to Campaign Stages (15 mins) Students voted using whiteboard paddles and markers for which campaign stage best matched each of ten example activities, justifying their choices to the group.	AL: Gamification AL+PL: Group Debate	Perspective Skills: Supports understanding that the same entity can be variably interpreted. Communication Skills: Offers practice listening to others and skillfully articulating one’s own understandings.
Benefits of Change Campaigning (15 mins)	Traditional Lecturing	Connectedness: Highlights the value of belonging to a larger movement and making community contributions.

Diverse case studies of successful campaigns at local, national, and international levels exemplified individual and community benefits.		Optimism: Promotes confidence that positive outcomes can be achieved.
Challenges of Change Campaigning & Drafting a Self-Care Plan (25 mins) Evidence-based wellbeing risks were outlined. Students contemplated personal stress signals based on past experiences and planned how to respond if they manifest while campaigning.	AL+EL: Self-Reflection	Self-Awareness: Assists deeper understanding of stress responses to aid self-monitoring. Presence: Facilitates responding to stress with conscious care.
Break (10 mins)		
Section 2: Planning a Change Campaign		
The Power of Storytelling (10 mins) In a video, a GMH alumnus shared how storytelling enhanced a local campaign addressing challenges faced by care-experienced youth.	PL: Peer Learning	Trust: Shows how sharing personal or community stories can build audience trust.
Reflecting on Storytelling Considerations & ‘Universal’ & Non-Human Issues (15 mins) The group discussed ethical concerns around campaigning without personal experience of an issue and balancing empowerment and risk when inviting others to share stories.	AL+PL: Group Discussion, Reflection	Integrity & Authenticity: Supports reflection on the ethical responsibility of representing issues truthfully and respectfully. Self-Awareness: Generates insights about personal campaigning motivations. Critical Thinking: Prompts power dynamic analysis and reflection on ethical nuances. Humility: Promotes consideration of supporting, rather than launching, campaigns if not the appropriate person to lead. Inclusive Mindset & Intercultural Competence: Encourages sensitivity to others’ identities and the need for ethical representation.
Getting Issue-Specific (20 mins) Students reflected on the SDGs and created a flow chart to distil a broad issue they were passionate about into smaller problems and sub-problems. AI could facilitate this. Participants selected the sub-problem most important to them to target through their campaign.	AL+EL: PBL/PjBL	Inner Compass: Involves values-driven decision-making about which problem to address.
*Mapping Causes & Consequences (20 mins) Students completed a tree diagram, writing the causes of their problem in the roots and consequences in the canopy.	AL+EL: PBL/PjBL	Complexity Awareness: Aids visualisation of interrelationships between causal factors and consequences.
Break (5 mins)		
Exploring Solutions & Supporting Existing Change Campaigns (30 mins)	AL+EL: PBL/PjBL	Humility: Supports recognition that others’ work can strengthen one’s own ideas.

Students explored, and were invited to support, social media campaigns and/or petitions to expand their ideas of solutions to the causes of their problem.		
*Getting Solution-Specific (10 mins) Based on the previous activity, students proposed a novel solution on an index card. Ways to achieve novelty included targeting new settings or demographics. The feasibility of the solution and its relevance to GMH was justified on the back of the card.	AL+EL: PBL/PjBL	Creativity: Inspires innovation in solution design.
*Linking Solutions to the SDGs (10 mins) From 17 tile cards representing the SDGs, students selected those their solution could support. Relevant tiles were laid around the index card, with choices justified to the group. A prize was awarded to the individual with the most applicable SDGs.	AL+EL+PL: Gamification, Group Debate, PBL/PjBL	Complexity Awareness: Promotes realisation that one solution can advance multiple SDGs, with interdisciplinary effects.
Lunch Break (50 mins)		
*Creating a Roadmap (40 mins) Supplied with a roadmap template, colouring pens, and modelling clay, students drew or created symbols representing change campaigning activities they will undertake. They arranged these in a logical sequence aligned with Gina Martin's (2019) campaign stages to visualise a path to success.	AL+EL: Gamification, PjBL	Long-Term Orientation & Visioning: Cultivates future thinking by planning actions for envisioned change. Creativity: Facilitates visual expression of campaign ideas using creative methods.
Section 3: Implementing a Change Campaign		
*Branding Your Change Campaign (25 mins) Using AI for campaign name inspiration, students recorded their top two on index cards and moved around the room to place a token next to their preferred option for each attendee. This process was replicated for hashtags. Students then created simple logos using AI and sourced royalty-free images to build a visual identity for their campaign's online presence.	AL+EL+PL: Gamification, PjBL	Co-Creation Skills: Involves shared feedback to mutually refine ideas.
Break (5 mins)		
Developing an Elevator Pitch (30 mins) The five key elements of an elevator pitch were contextualised with an example. Students drafted each element with timed prompts determined by complexity (one or four minutes). Extra time was given at the end to address	AL+EL+PL: Group Discussion, PjBL	Communication Skills: Enables clear, concise, persuasive argument expression.

unfinished sections and discuss challenges with peers and facilitators.		
Not Always as Easy as Waving a Magic Wand (60 mins) The importance of being prepared for resistance was overviewed, and a video of a GMH student talking about their experience was shown. Students were invited to deliver their elevator pitch while playfully waving a magic wand, with peers role-playing respectful opposition. Rebuttals to counterarguments were co-developed.	PL: Peer Learning AL+EL+PL: Gamification, Group Debate, Role Play	Inner Compass: Requires commitment to something greater than oneself to defend campaign. Integrity & Authenticity: Rebuttal co-development encourages sincere reflection on critique. Openness & Learning Mindset: Encourages willingness to learn about alternative views. Perspective Skills: Facilitates understanding of and active engagement with opposing views. Courage: Inspires confident defense of beliefs and actions when facing resistance.
Online Safety Considerations (5 mins) Students learned to distinguish respectful online debate from harassment. Practical guidance and resources for seeking support were provided.	Traditional Lecturing	Perseverance: Provides resilience-supporting tools for use during experiences that deter engagement.
Using Elevator Pitches to Create Summary Social Media Posts (25 mins) Students transformed elevator pitches into campaign launch social media posts using a PowerPoint template and branding materials curated earlier. Information was provided about which formats work best for different platforms.	AL+EL: PjBL	Communication Skills: Advances the crafting of messages tailored to different audiences. Mobilisation Skills: Promotes strategic consideration of actions to build public interest.
Next Steps (5 mins) Students set a 24-hour timer to reflect on readiness to campaign. Next steps were suggested for those who after this decided to launch their campaign.	AL+EL: PjBL, Self-Reflection	Integrity & Authenticity: Supports decisions driven by personal values and capacity, rather than external expectations.
Scroll of Motivation (15 mins) Each student wrote their name at the bottom of a sheet of paper. A 'scroll of motivation' was created by passing each paper to their neighbour, who wrote a supportive message about the student's ability to effect meaningful change. After folding the paper to hide their message, they passed it to the next person. This continued until each attendee received their own paper back.	AL+PL: Peer Interaction	Appreciation: Cultivates gratitude by recognising others' change-making contributions and potential. Empathy & Compassion: Promotes kindness towards group members. Co-Creation Skills: Builds a collaborative, trust-based campaigning network. Inclusive Mindset & Intercultural Competence: Nurtures a sense of belonging and valuing of diverse contributions.
Feedback & Invitation for Future Involvement (10 mins) Students were thanked for their participation, asked to complete a brief	N/A	N/A

feedback form, and invited to join the team to refine and facilitate future workshop iterations.

Source: Own compilation.

Appendix B. Practical Guidance for Replication

Factor	Details & Recommendations
Contextual Adaptations	The Global Health MSc student who participated in an on-campus workshop with GMH students was advised to replace any mention of ‘GMH’ with ‘Global Health’, which worked well. As such, in preparation for offering the next asynchronous IMPACT workshop across the SHW, the only adaptation made has been to replace all references to ‘GMH’ with ‘your field’. In this instance, the authors believe this is sufficient, but we recognise that all SHW degree programmes are health related. While the examples illustrating key concepts in the workshop resources are not uniquely health-focused, practitioners from very different, non-health-related fields may wish to introduce examples more relevant to their discipline. Additionally, while the IMPACT workshop attends to campaigning safety, practitioners in countries other than the UK, especially those with weaker human rights protections, are advised to ensure the information and advice provided is culturally relevant and does not expose students to unacceptable risks. Finally, the IMPACT workshop in its current form follows UoG conventions and signposts students to resources and software specific to or supported by the UoG. Practitioners elsewhere may need to alter the presentation and linked resources and software to align with their institutions’ preferences.
Resource Requirements	Time: The amount of adaptation required will vary by context, so specific details about the amount of time needed for this cannot be provided. However, for reference, we estimate that developing and refining the on-campus workshop materials has taken our team 120-150 hours to date. We anticipate that making even significant adjustments would take far less time. In addition to adaptation, approximately one hour per workshop is needed to ensure enough template documents have been printed and that an adequate number of workshop items (see Appendix A) are in possession or have been ordered. Preparing SDG tiles takes a further 20 minutes per set to print, cut, laminate, cut again, and secure in stacks. Roughly one hour is needed either side of the workshop to prepare and clear the space. Facilitating the workshop takes eight hours, including lunch. Post-workshop debriefs and reviews require 1-2 hours. The amount of time needed to address any resulting actions would vary based on student feedback and facilitators’ impressions, and the adaptation cycle would recommence. Personnel: We recommend a minimum of two facilitators, ideally one

	being a student partner. Funding: The cost per hour of facilitators' time depends on the number of personnel, their salary, and the institution.
Facilitator Preparation	Facilitators should be familiar with AL, EL, and PL methods. If they are not confident with these approaches, we recommend seeking relevant institutional or external training sessions, consulting guides such as Advance HE's (2025) <i>ESD Curriculum Design Toolkit</i>, and shadowing or co-facilitating an IMPACT workshop before leading one.
Viable Participant Numbers & Scaling-Up Considerations	While it was possible to facilitate the workshop with three students, to maximise PL, we recommend delivering it to at least 5-10 students at a time. The highest number of students who have participated in a single on-campus IMPACT workshop so far has been 14. This was manageable, although there was insufficient time to complete all activities. The facilitators polled the students on whether they wished to complete the 'Creating Summary Social Media Posts' or the 'Scroll of Motivation' activity (see Appendix A); they chose the latter. Thus, to scale up for cohorts larger than around 15, utilising breakout groups for some PL activities may be beneficial, particularly the 'Not Always as Easy as Waving a Magic Wand' exercise, which could take a significant amount of time if every student volunteered to present. We have never encountered this scenario, but it is important to prepare for it. For even larger cohorts (30+), we expect that additional facilitators may be necessary, or the asynchronous version of the workshop may be more appropriate.

Source: Own compilation.

Declaration Statements

Conflict of Interest

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Data Availability

Data supporting the conclusions of this study can be made available upon reasonable request from the corresponding author.

Ethical Statement

The authors confirm that they have obtained the necessary permissions from their respective universities to publish the case studies included in this manuscript.

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