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SDGs & the City: Co-designing a Model for Postgraduate Research Hackathons

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Abstract

Glasgow Caledonian University London is a postgraduate satellite campus delivering a range of Masters Programmes covering fashion, luxury, marketing, finance, business and management. Glasgow Caledonian University's mission, as the University for the Common Good, is to deliver social benefit and impact. Being the first university to adopt the United Nations Sustainable Development Goals (UN SDGs) as the framework for research, the SDGs are central to both teaching and learning strategies. This paper introduces the context, aspirations and practices of a small team working to integrate sustainability into a post-graduate research module.

The Introduction to Research Methods Module is delivered to all GCU London post-graduate students, necessitating a broad approach that takes account of the wide range of disciplines our students' study. Our aspiration in joining the Learning Design and ESD Bootcamp was to frame learning within the context of the SDGs and by so doing create authentic and impactful ways of exploring predominant research philosophies and practices. Our desire for our students to get head, hands and hearts-on with research meant a re-design to include more active learning opportunities. The resulting curriculum development applied the CoDesignS ESD Toolkit to disrupt the standard delivery of a postgraduate research methods module and created opportunities for students from diverse disciplines to explore local and global sustainability challenges and work together taking trans-disciplinary approaches in a series of SDG-focused Research Hackathons.

Keywords

education for sustainable development, learning design, teaching, research, hackathon, ESD toolkit

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Resumen

La Universidad Caledonian de Glasgow en Londres es un campus satélite de posgrado que ofrece una variedad de Programas de Maestría que abarcan moda, lujo, mercadeo, finanzas, negocios y gestión. La misión de la Universidad Caledonian de Glasgow, como la Universidad para el Bien Común, es generar un impacto y beneficio social. Al ser la primera universidad en adoptar los Objetivos de Desarrollo Sostenible (ODS) de las Naciones Unidas como marco para la investigación, los ODS son fundamentales tanto en las estrategias de enseñanza como de aprendizaje. Este artículo presenta el contexto, aspiraciones y prácticas de un pequeño equipo que trabaja para integrar la sostenibilidad en un módulo de investigación de posgrado. El Módulo de Introducción a los Métodos de Investigación se imparte a todos los estudiantes de posgrado de GCU Londres, lo que requiere un enfoque amplio considerando la diversidad de disciplinas estudiadas por nuestros alumnos. Nuestra aspiración al unirnos al Bootcamp de Diseño de Aprendizaje y ESD fue enmarcar el aprendizaje dentro del contexto de los ODS y, al hacerlo, generar formas auténticas e impactantes de explorar las principales filosofías y prácticas de investigación. Nuestro deseo de involucrar a nuestros estudiantes activamente en la investigación llevó a un rediseño que incluyera más oportunidades de aprendizaje activo. Durante el Bootcamp, se elaboró un currículo innovador mediante el uso de la Herramienta de Diseño Curricular CoDesignS ESD. Este enfoque transformó la metodología convencional de impartir un módulo de métodos de investigación de posgrado y brindó oportunidades a estudiantes de diferentes disciplinas para investigar desafíos de sostenibilidad a nivel local y global. Juntos, emplearon enfoques transdisciplinarios en una serie de Hackathons de Investigación centrados en los Objetivos de Desarrollo Sostenible (ODS).

Palabras clave

educación para el desarrollo sostenible, diseño de aprendizaje, enseñanza, investigación, hackathon, CoDesignS ESD Toolkit

Part 1. The Learning Design

> ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education. ESD is holistic and transformational education which addresses learning content and outcomes, pedagogy and learning environment. It achieves its purpose by transforming society (UNESCO, 2017).

The learning design described in this case study was created by Professor Natascha Radclyffe-Thomas EdD, Professor Antony Morgan PhD, Habeeb Mustafa MA and Laia Cargol MSc for a 15-credit M-Level module in Research Methods delivered at Glasgow Caledonian University London (GCU London).

Background

Glasgow Caledonian University (GCU) was the first university to adopt the Sustainable Development Goals[1] (SDGs) as the framework for its research. Research Centres focusing on issues of social, environmental, and economic sustainability within engineering, social science, and public health subjects, however, postgraduate students based at its London satellite campus have few opportunities to engage with the researchers behind GCU's sustainable development-related publications and policy reports.

Our team, comprising two academics, a learning designer, and a postgraduate student, were excited to be selected for the 2022 Learning Design and ESD Bootcamp (ALDESD, 2023). In our bid we outlined an ambitious task to rethink a 15-credit cross-disciplinary Masters' Module, Introduction to Research Methods (IRM). Designed to introduce students from a wide range of disciplines to postgraduate research, IRM runs twice a year taken by students from seven distinct Programmes. Students take IRM in their second trimester of study alongside three other 15-credit modules which differ according to their major discipline area e.g., fashion, luxury, marketing, business, management and finance. IRM runs in a blended format with three contact hours per week delivered over a 12-week trimester plus tutorials. Online lectures bring the entire student body together with external and internal faculty in a multi-disciplinary learning space. Subject-specific seminars are delivered on campus, or online for distance-learning students, in student-led sessions grouped by Programme of study facilitated by discipline specialist faculty. In common with many UK Higher Education Institutions (HEI), our postgraduate cohort is primarily international. The cohort size at the time of the Bootcamp was approximately 120 although subsequently student numbers increased substantially.

Module Content

IRM introduces students to knowledge and skills relevant to pursuing critical inquiry: how to formulate research questions, plan research projects, collect and analyse data, and write research reports. Students compare and contrast research paradigms enabling them to choose appropriate methodologies and methods, and consider practical, ethical and philosophical issues for developing and conducting research. The range of GCU London students' disciplines is broad, but central to all curriculum development is the University's mission, as the University for the Common Good, to deliver social benefit and impact through teaching and research under the University's Strategy 2030 (GCU, n.d.a).

Our role as academics means, whether acknowledged or not, we are gatekeepers of knowledge, deciding what and how we teach, albeit operating within the constraints of an industrialised HE system. IRM precedes students' final independent research project/dissertation and we hoped to inspire students to generate trans-disciplinary research questions explicitly focused on the SDGs. Although the Module already included elements of sustainability, joining the Bootcamp allowed us to use the CoDesignS ESD Toolkit (CoDesignS ESD, 2023) to conduct a thorough review and redesign to fully embed ESD (QAA and Advance HE, 2021).

For our transformed Module we wanted students to develop capacities and skills required of effective sustainability researchers. In our experience, students (and sometimes

[1] The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals https://sdgs.un.org/goals

academics) are mostly passive recipients of research (Healey and Jenkins, 2009). That is, the visible aspects of research come in the form of term papers, books, journal and mainstream media articles, policy papers, public talks, or lectures. By only encountering the end products, the process of research itself remains opaque, unknown, and unquestioned. Sipos et al. (2008) state that sustainability education cannot rely on transmission models but should create learning experiences that 'facilitate personal experience for participants resulting in profound changes in knowledge, skills and attitudes related to enhancing ecological, social and economic justice' (Sipos et al., 2008:74). Their concept of transformative sustainability learning (TSL) necessitates sustainability-oriented higher education empowering individuals 'to change their frames of reference or worldviews' (Sipos et al. 2008:71) achieved through the organizing principles of trans-disciplinary study engaging with a student's head (cognitive), hands (practical) and heart (values).

The SDG Research Hackathon: Module Delivery and Assessment

In addition to the Toolkit's tools and frameworks, we adopted the 5 Principles of Making Learning Visible (MLV) (see table 2) i.e., 'learning is purposeful, social, emotional, empowering, and representational' (Krechevsky et al. 2013:54). Inspired by Bootcamp presentations and workshops, a significant learning design challenge for our team was how to transform IRM to foster a heads-on, hands-on and hearts-on 'triad of engagement' (Sipos et al., 2008:73) whilst working within the constraints of existing validated Learning Outcomes (see Table 1). If we wanted students to get head, hands and hearts-on with sustainability research we needed to abandon a transmission approach and design more active learning opportunities. Our team brainstormed the entire trimester's delivery to envision the scaffolding of new activities and approaches (see Figure 1).

Table 1: Introduction to Research Methods Learning Outcomes: representing the knowledge and/or skills students should have acquired on completion of the module.

Learning Outcomes	**SDG Learning Outcomes**	**Action**
Critically assess research gaps. Generate research aims and objectives applicable for an appropriate research project relevant to your field of study	Critically analyse research gaps in relation to SD	What needs to be done and why?
Design a research project to answer a particular research question	Generate research questions to deliver SD	How will the research be carried out?
Evaluate and apply appropriate research methodologies and methods	Evaluate the appropriateness of various methods to deliver SD impact	Which research methodologies suit your research questions?
Synthesise a range of information	Reflect on individual and group learning experiences and identify opportunities for further development	How do you make sense of the data you collect?
Demonstrate the ability to plan, execute and present a research project	Produce creative and engaging digital artefacts to promote SDG research to diverse audiences	How will you convincingly communicate your

		research findings to a wide audience?

The most significant reconceptualization was for a series of interactive Research Hackathons linking our students with GCU's Research Centres so students could relate their understanding of sustainability as a theoretical concept to real-world research. Hackathons are designed to run over short periods of time and are '…intended to be high-energy events, devised to create engagement, and develop inspiration for participants' (Lyons et al., 2021, p. 3). Emerging from the field of tech, they are used in industry to bring teams together to 'hack' innovative solutions for existing challenges and frequently include competitive elements.

Table 2. The Five Principles of Making Learning Visible (adapted from Krechevsky et al. 2013)

Learning is Purposeful	Relevant to learners, teachers, the discipline and the larger community
Learning is Social	Knowledge develops in sharing and reflection mediated through social exchange
Learning is Emotional	Teachers and learners have a range of emotions and learning is fostered by emotional connection to a topic
Learning is Empowering	Students should lead their own learning and teachers be free to respond flexibly and create teachable moments
Learning is Representational	In addition to text and numbers, learning can be revealed across multiple formats e.g. image, quotes, video, audio

Our Research Hackathons focused on different SDGs targeting the cognitive domain and critical thinking (see table 3). Short webinars hosted by GCU London IRM faculty introduce GCU Researchers. Each GCU Researcher presents their research, approach, questions, methods, and outcomes followed by an in-conversation where students are encouraged to interact with the GCU Researcher using the functions of the online classroom. Each of the research-led webinars are supported by a Research Hackathon Resource Pack of relevant academic papers, methods videos, industry commentary, mainstream media pieces, objects, cultural projects, and oral histories to help students develop problem-solving and systems thinking by completing a series of Research Hackathon Challenges in their seminar sessions. Reflective writing in the form of a blog is designed to make explicit how contemporary academic research relates to sustainability, and help students consider where their own academic, personal, and professional interests lie.

Table 3. SDGs included in the Research Hackathons

Sustainable Development Goal	Knowledge Area
SDG 3 Good health and well-being	Ensuring healthy lives and promoting well-being for all
SDG 4 Quality Education	Access to quality and inclusive education and skills training
SDG 5 Gender Equality	Women's participation and representation in all areas of social and civil society
SDG 8 Decent work and economic growth	Productive employment and decent work for all
SDG 12 Responsible consumption and production	Supporting environmentally and socially conscious consumption
SDG 17 Partnerships for the goals	Partnership and cross sector and cross country collaboration

Taking part in the Research Hackathons provides unique opportunities for students from diverse disciplines to explore local and global sustainability challenges. Students focus on specific SDGs within each of the Research Hackathons (see Table 3) and can highlight the links between them. For example, we identified a Researcher based at the Yunus Centre for Social Business and Health (GCU, n.d.b) to give an overview of their research on Community Wealth Building a person-centred and place-based model of economic development (aligned with SDG3 and SDG8). For another, we invite the Deputy Director of the WiSE Centre for Economic Justice (GCU, n.d.c) to give an overview of their research on equality, gender, and social justice issues (aligned with SDG5). In another, a recent PhD researcher delivers a webinar focusing on her work addressing SDG3, SDG8 and SDG 12. With SDGs at the core of each Research Hackathon they foster the key competencies of systems thinking, future thinking and critical thinking (see Figure 2).

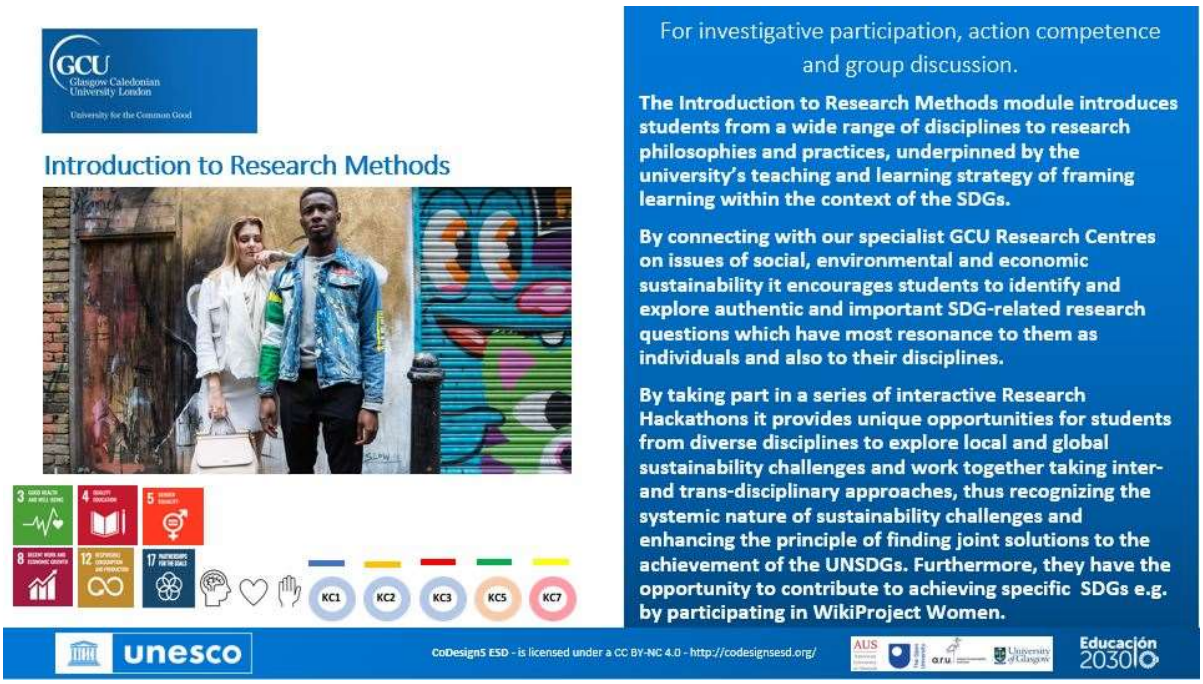

Figure 1. Overview of the Learning Design – CoDesignS ESD (2021)

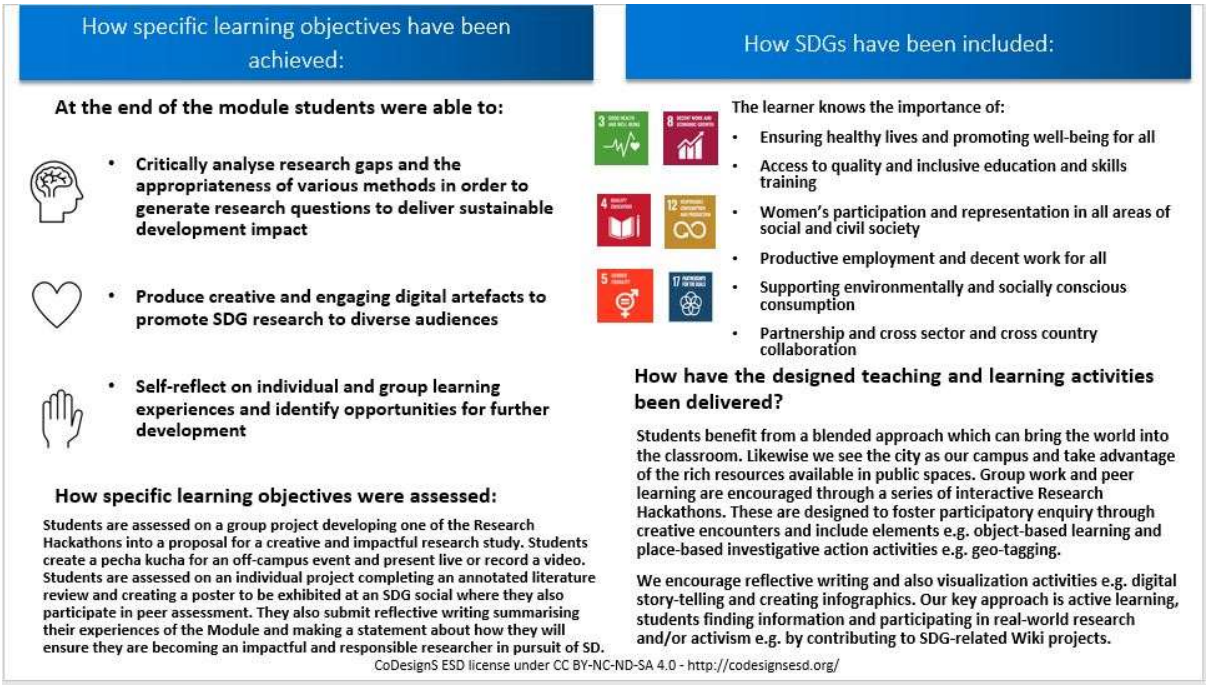

Figure 2. Learning Objectives and SDGs – CoDesignS ESD (2021)

Positioned as our campus is in an historic area of London surrounded by extremes of both wealth and poverty, we utilise our neighbourhood extending learning beyond the classroom both physically and digitally. We designed a series of Research Hackathon participatory data gathering activities in the form of SDG dérives (phygital sustainability treasure-hunts) where students work off-campus in small interdisciplinary groups using the city streets as a learning landscape (Tasler and Dale, 2021). Developed by Debord, a founding member of the Situationist International, the purpose of a dérive, or city-space wander, is for participants to examine 'familiar urban spaces with a different set of eyes' (de Souza e Silva and Hjorth, 2009:609). In the first dérive students use the lens of the 5Ps of the SDGS: People, Planet, Prosperity, Peace, and Partnership (UNSDG, 2022) to explore the surrounding area. They are directed to look for key buildings and areas and research their historical importance and what impact they may have had (and still have) on the SDGs. For example, how rapidly erected tenement housing at the turn of the century helped to establish migrant communities in the early 1900s and beyond. Students use their research to create a sustainability-issues map using geo-tagging on Google Maps and each group prepares a short visual summary of their findings and writes an illustrated blog post to present to their peers.

In the Gender Equality Research Hackathon students take part in an SDG5 (In)visible Women dérive inspired by Perez's concept of Invisible Women (Criado-Perez, 2020) and the UK-based gender equality in civic statues project inVISIBLEwomen (n.d.). Students research street names, business names, blue plaques and civic statues by gender using geo-tagging creating a gender-gap map. On return to campus each group prepare a short visual summary of their findings and complete a Making Women Visible activity e.g. by participating in the WikiProject Women which addresses the under-representation of women and women's perspectives on Wikipedia (WikiProject Women, n.d.) thereby contributing to SDG5.

Working in multi-disciplinary problem-solving groups, Research Hackathons encourage artefact creation e.g., data visualisation and scaffold the learning of collaboration skills through team-working in simulations and real-world learning targeting the behavioural domain and developing the key competencies of collaboration and problem-solving, thus adding to students' employability attributes (Morley, 2020; Suominen et al., 2018). Weekly reflective practices target the socio-emotional domain and support the development of the key competence of Self-Awareness. Research Hackathons support the formative assessment tasks and two summative assessments. A group project and an individual assignment allow students to demonstrate their ability to summarize, synthesize, analyze, evaluate, contextualise, and respond to complex information and issues. The group project develops one of the Research Hackathons into a research proposal presented as a pecha kucha. For the individual assessment, students build on groupwork creating an individual annotated literature review and research poster and writing a reflective piece summarising their IRM experiences.

Part 2. The Learning Design Process

> If our collective goal is a more sustainable present and future, we must manifest, encourage and impart values that contribute towards that goal. (Sipos et al., 2008, p. 70).

GCU London is located in an historic building in London's Shoreditch, in the shadow of the city of London and surrounded by the bustle of Whitechapel and Spitalfields Markets. Spitalfields is a site of immigration and industry, its history and current cultural diversity meant place was a significant factor in our collective work and we adopted the group moniker 'SDGs and the City.' Our team represents diverse experiences and expertise. Our Lead Academic Professor Natascha Radclyffe-Thomas is an international educator recognized across the sector for pedagogic research and ESD implementation; Natascha's work addresses several SDGs with a focus on SDG5 and SDG12. Our Learning Technologist Habeeb Mustafa is a qualified teacher with instructional experience across age groups specialising in technology and learning design focusing on gamification and VLEs. Habeeb was invaluable in researching and prototyping a clear, enhanced, and more engaging student learning journey. Our student, Laia Cargol Martinez was completing her dissertation for MSC Fashion and Lifestyle Marketing at the time of the Bootcamp. Laia has worked with non-profits in applied communications focusing her studies on innovative tech solutions for sustainable development issues. Since the outcome should be student-centred we benefitted from Laia's experience as a GCU London postgraduate student and job seeker, in particular the reflection she brought from having recently completed the pre-existing IRM Module. IRM Module Lead Professor Antony Morgan, completed our team bringing extensive experience of public health and collaborative relationships; Antony's work addresses several SDGs focusing on SDG3. The team was mentored by Adam Harding and Dr Romas Malevicius (see Figure 3).

Figure 3. The 'SDGs and the City' Team and Bootcamp Mentors

Differing levels of pedagogic experience and familiarity with the SDGs meant a key challenge was framing our work to be meaningful for us all, individually, and collectively. We agreed these objectives:

- To transform a multi-disciplinary IRM module to fully embed sustainability and the SDGs;
- To make explicit the links between the 17 SDGs and students' subject disciplines;
- To help students recognize the relevance of each individual goal and the connections between the SDGs;
- To work with students and colleagues to co-create engaging learning materials to be delivered in blended and online courses to diverse remote and local cohorts;
- To support the development of competencies for sustainability by connecting formal and informal learning related to sustainability;
- To ensure legacy impact, and create an exemplar curriculum design template that celebrates the SDGs and fosters student engagement.

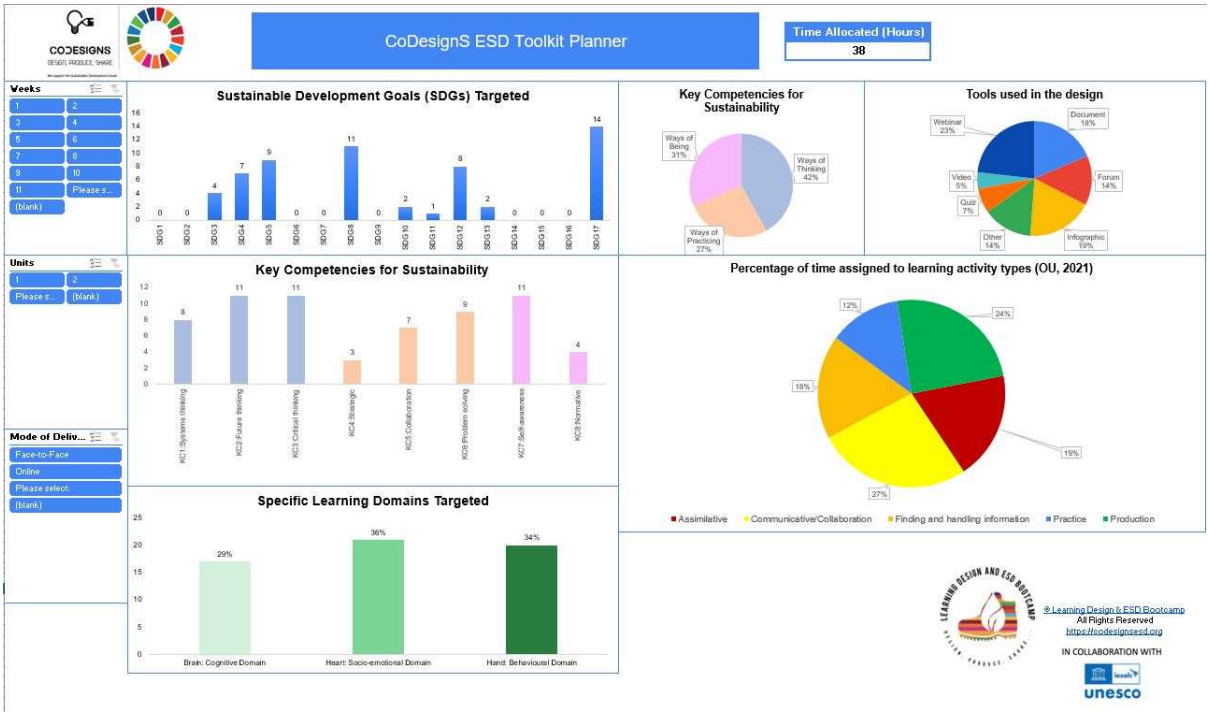

Figure 4. The CoDesignS ESD Toolkit Planner Dashboard (CoDesignS ESD, 2021)

We followed the steps of the redesign work sequentially, from initial analysis to ideation. Attending the Bootcamp online, virtual mentoring sessions and blended team meetings helped us experience firsthand the same variety of learning environments as our students. The Toolkit Planner was helpful to prompt reflection on our activities and delivery modes across a complex Module. We found it really interesting – and somewhat surprising – to see the different elements coming together as reflected in the Dashboard. Since none of us has ever worked with such a focused and detailed curriculum planning tool, we made several adjustments as we started to input our activities and could see the Dashboard start to take shape. In the early part of development, with a majority of assimilative activities, it was not surprising to see more focus on brain over heart. We used this insight and discussions with our mentors, to adjust the early content and adapt the following weeks to balance learning domains. We felt the high percentage of communicative/collaboration reflected our focus on groupwork, discussion and problem-solving designed to encourage interdisciplinary study. As expected, ways of thinking was the largest proportion on the Key Competencies for Sustainability and the Cognitive Domain was the highest of the Specific Learning Domains Targeted since the early part of the module necessitates more knowledge delivery. On first review the opportunity for Practice was low which we addressed through the Research Hackathons - we didn't want students just talking about research, we wanted them to be practising and refining research skills.

Reflections (incorporating team members' views)

We viewed our team as agents of change, working with an active learning methodology to deliver transformative pedagogies to develop sustainability and global citizenship attributes. We designed learning experiences and assessments to help students design impactful research that addresses the challenges of sustainable development, during

their studies at GCU London and beyond. We transformed an existing validated module to include social, environmental, and economic sustainability. The benefits of bringing academics together with a student and a learning technologist in the Bootcamp was extraordinary and facilitative for sharing ideas on how to incorporate sustainability into the curriculum. Having a post-graduate student with contemporary industry experience in our team helped us to design authentic and valuable learning experiences that support personal development and enhance employability. Laia found the experience extraordinary: 'to have the opportunity to learn from professionals… and to share ideas on how to incorporate sustainability into the student curriculum…. Having access to knowledge about sustainability and more specifically sustainability in fashion… (was) an eye-opener… The Bootcamp gave me an excellent insight into different learning techniques that have helped me in my current job'.

Our experiences and approach can provide a roadmap for colleagues from any discipline to engage meaningfully with the SDGs. This was a big challenge, but not insurmountable. Working with trans-disciplinary approaches helped surface the systemic nature of sustainability and enact the principle of finding joint solutions to the achievement of the SDGs (SDG17) imparted through our SDG Research Hackathons. As such, the Toolkit helped conceptualise an entire Module. Others wanting to adopt our approach should consider what resourc–s - people, organisations, and expertise – they can engage to design and deliver meaningful engagement with the SDGs and allow time to plan and play, asking 'what if?', 'how might we?' and 'why not?' The answer to successful implementation is seen when students can identify and explore those relevant andauthentic SDG-related research questions which are most important to them as individuals (see Table 4).

Table 4. Examples of students' research topics generated through the new IRM Module

An exploration of the positive impact of microinsurance in Ghana
Investigating the opportunities and challenges facing women in politics in Nigeria: a case study.
Diversity, equality and inclusion: a critical evaluation of the top 5 UK retail companies
How effective are India's current plastic packaging management practices in achieving sustainability?
Analysing the attitude-behaviour gap of generation Z on sustainable luxury fashion consumption in India

To view our team video please visit: https://www.youtube.com/watch?v=WfFzOLKmAmE

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