SDG Curriculum Mapping project report 2022/23

Contents

Introduction

The goals

The [UN Sustainable Development Goals](#) (SDGs) are a set of 17 goals created by the United Nations in 2015. The goals work towards eradicating the world's most prominent social, environmental and economic issues. The framework aims to identify key areas of basic services that signatories can work towards improving by 2030. Success is measured annually using a global indicator framework and data produced by national statistical systems, as well as information collected at regional level. This is collated and presented in annual progress reports found on the [UN's SDG website.](#)

The University of Liverpool is committed to the SDG accord after signing in January 2020 and are subsequently working to embed all aspects of the goals across the institution. The Education for Sustainable Development working group aimed to develop and implement a program that educated and enabled students, graduates and staff to develop awareness, enable opportunities and make their own contribution to a sustainable future.

After a highly successful 2021-2022 mapping project, Curriculum Mapping became a key focus of the ESD working group, with the aim of creating a project that gives insight into all modules taught across the institution. The 2021-22 project report provided a baseline understanding of how sustainability is embedded into learning, as well as clear recommendations for improvements for the 2022-23 project which included amendments to the scoring and method of the project. As the project was found to be effective, though with slight improvements needed, it was decided that revisions would be made and the 2022-23 project would work as a pilot for the new methodology.

Aims

Students Organising for Sustainability (SOS) developed Curriculum Mapping so that students can identify and asses their learning and ensure that the education they receive is inclusive of all Sustainable Development Goals as well as associated teaching methods and learning. Liverpool Guild of Students have run the program since 2020 with the aim of providing students with the opportunity to gain autonomy over their education and develop their knowledge on sustainability.

University of Liverpool students have expressed a strong desire to have sustainability embedded into their course modules so that they can ensure they are approaching future careers in a sustainable way. NUS' 2022 skills survey asked, 'to what extent, if at all, do you agree that universities / colleges should be obliged to develop student's sustainability skills as part of their courses', to which 83% of students agreed or strongly agreed. By identifying the extent to which the SDG's are embedded in the curriculum, areas of best practice and improvement can be identified and act upon.

The Curriculum Mapping Project aims to:

• Provide information to the University on the extent to which the SDGs are currently embedded into a sample of curricula

• Map the curriculum on a larger scale, providing the groundwork to be able to replicate or adjust the mapping across different departments across the University

• Identify areas of best practice which can then be published as case studies

• Inform module leaders and module approval boards of the potential for the embedding the SDGs into their delivery plans with the aim of enhancing relevance to current issues arising from social, environmental, and economic sustainability

• Provide an opportunity for students to take a lead on influencing the change in their curriculum and pushing the University to take a more impactful approach to sustainability in Higher Education

• Provide an opportunity for students to participate in SOS-UK Curriculum Mapping Training that will allow them to develop auditing, critical evaluation and analysing skills that will further their knowledge in SDGs.

Method

Training

The SDG Curriculum Mapping project was developed by Students Organising for Sustainability (SOS). In contrast to 2021-2022's use of a shared spreadsheet for the mapping process, this year the student volunteers were asked to use an online form to submit their findings from mapping their modules. The form asked students to share information about their modules, including which semester, term, week, level of study, module name and code and faculty the module belongs to. The form allows students to score their modules against the 17 SDG's, wider aspects of learning and methods of learning.

Throughout the academic year 65 students signed up to be a mapping volunteer, of which 41 students received training by SOS. The training involves an introduction to the UN's SDG's and background information on the project and the importance of integrating the SDG's into education.

The students are encouraged to explore the SDG's using examples from different modules and real-life experiences outside of education as well as considering the benefits and limitations of the goals.

Mapping

As per the recommendation from the 2021-22 project leader and ESD working group, the scoring method was amended to align with the ITU scoring system. Student mappers were also required to score their modules on a weekly basis. Their scores were based off the teaching they had received in any seminar, lecture, reading, assessment or other form of learning they had experienced for that module. The decision to take this approach to mapping was made so that students could map as they experienced their module, ensuring that the scores were a realistic reflection of how well sustainability is embedded.

During the training, SOS offered some tips that would ensure students have an easy, high quality mapping experience.

- Make a note of which weeks you have already mapped so mapping isn't repeated
- Set personal reminders so that weeks are not missed and we have a full set of data
- During your lectures/assessments, you may want to make note of content or teaching methods you notice that are in line with the mapping criteria

Figure 1. Curriculum Mapping method comparison

In the 2021-22 Mapping project, 11 students were trained and mapped 331 modules. They were recommended to at least map the modules experienced in their current year. In order to achieve HEAR award, students were expected to have participated in the 2 hour training session and to have completed 5 hours (roughly 50 modules) of mapping. Students were asked to make use of module descriptions found on the University Website to identify how well sustainability was embedded within modules. This resulted in a lack of depth and quality data, another reason that students were asked to map on a weekly basis using the formal curriculum taught that week for the 2022-23 project. Figure 1 shows the differences in method between the 2021-22 project and the 2022-23 project.

Table 1. Number of modules mapped in 2021-22 and 2022-23 project

Faculty	2021-2022 Project	2022-2023 Project	
	Modules	Modules	Submissions
Science and Engineering	165	89	736
Humanities and Social Science	166	48	319
Health and Life Sciences	0	10	58

Table 1, presents the number of modules mapped in the 2021-22 mapping project compared to the modules and submissions mapped in the 2022-2023 project. Although the number of modules mapped decreased, the volunteers went into more depth in their analysis of the modules by submitting scores for each module on a weekly basis.

The 2021-22 project did not receive any results for Faculty of health and Life Sciences. It was identified that the faculty do not always use "modules" to describe the teaching received by students which may have caused students studying a Health and Life Science to not consider the project applicable to their studies. To remedy this, the Guild worked with the faculty to develop training and a framework that mapped the Suprathemes and Themes taught to Health and Life Science students. Additionally, specific Health and Life Science training sessions were organised and targeted marketing was sent through both faculty and Guild communication channels. 5 medical students were trained and one student completed the mapping project resulting in 10 different themes being mapped.

The results

SDG Findings

Students were asked to score their modules based on the extent that the 17 SDG's were included in their teaching each week. This was done using the ITU scoring system. They decided whether the SDG's have either not been covered at all in that week's teaching (0), been introduced in teaching (1), been taught (2) or been taught and utilised in teaching (3).

Figure 2. Percentage of modules that have not covered, introduced, taught or utilised the 17 SDG's
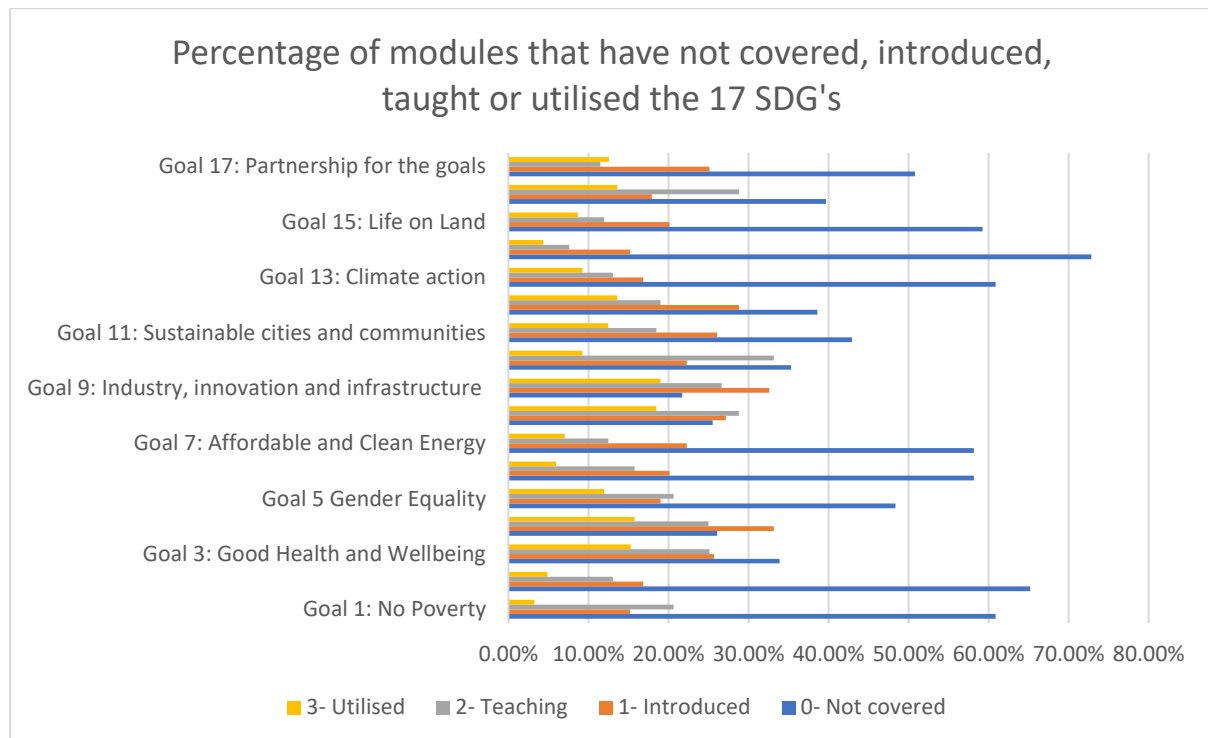

Figure 2, presents the percentage of modules mapped in the 2022-2023 project that have either "not covered", "introduced", "teaching" or has "utilised" the 17 Sustainable development goals. Goal's 14, 2, 13 and 1 have the least inclusion within the modules, in comparison to Goal 9, 4 and 8 which have significantly introduced, taught and utilised the SDG's.

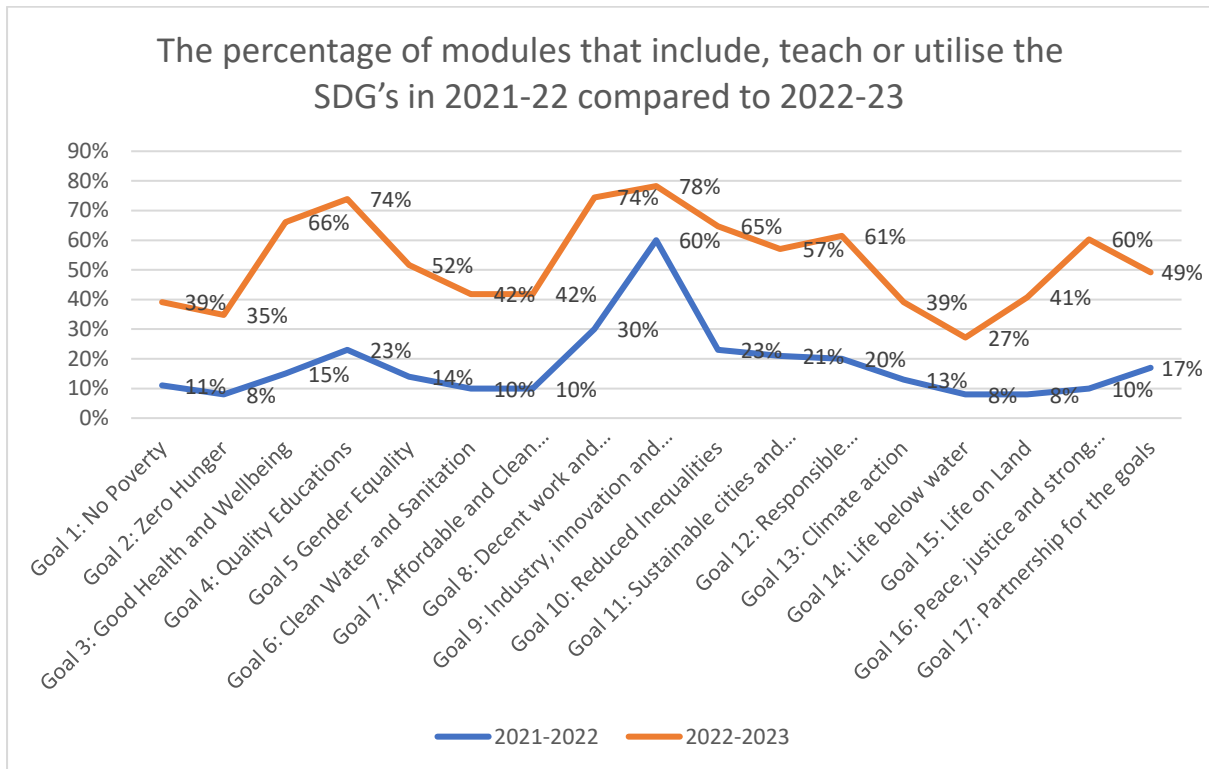Figure 3: The percentage of modules that include, teach or utilise the SDG's in 2021-22 compared to 2022-23

Figure 3, depicts a comparison between the 2021-22 and 2022-23 project findings. There are clear trends within the two years , as Industry, Innovation and Infrastructure are significantly taught and utilised within the majority of modules that were mapped in both years. Life below water and zero hunger are the SDG's least embedded across the two years. The overall the percentage of modules that include the SDG's has increased in the 2022-23 project by an average of 35%. However, less modules were mapped but, in more depth, therefore providing a more realistic depiction of how well the SDG's are embedded.

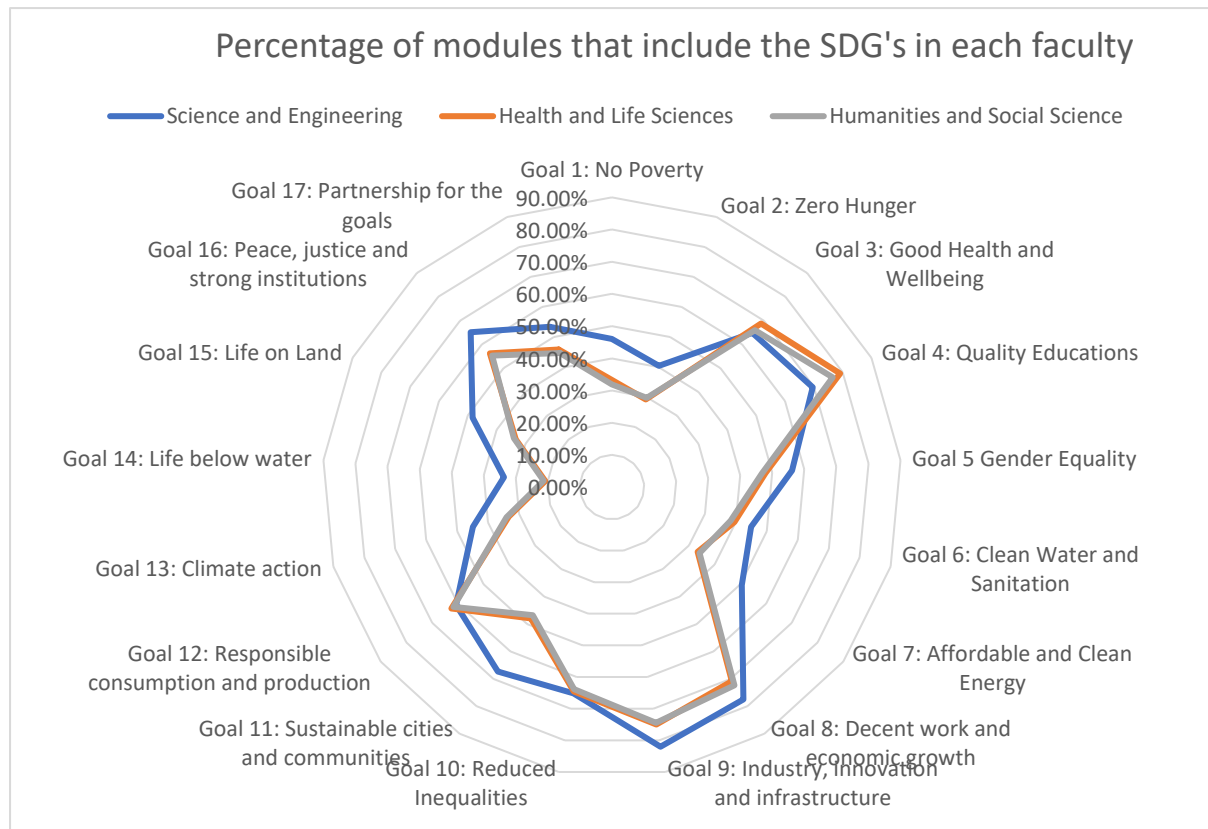Figure 4: Percentage of modules that include the SDG's in each faculty

Figure 4, presents a breakdown of the percentage of modules that have embedded the SDG's to some degree in each Faculty. Health and Life Sciences and Humanities and Social Science have very similar percentage of modules that include each SDG, particularly excelling in Quality Education compared to Science and Engineering. However, Science and Engineering takes the lead on many other SDG's including Goal 9 and 7 which divert from other trends within the Figure.

Table 2. Highest Scoring Modules from each Faculty

Module	Faculty	Score out of 64
Human Health and Impact Assessment	Science and Engineering	64
Environmental Assessment of Policies, Plans, Programs and Projects.	Science and Engineering	63
Clinical Forensic Psychology	Health and Life Sciences	42
Lifespan Development Health and Wellbeing	Health and Life Sciences	40
Strategic Purchasing Management	Humanities and Social Science	55
Human Osteoarchaeology	Humanities and Social Science	40

Human Health and Impact Assessment (ENVS611) is the highest scoring module of the 2022-2023 project with full marks for the whole criteria. The student that mapped this module said, "The module focused on the impacts [of the environment] on human health and well-being. There was a

vast inclusion of environmental concerns including the SDGs and how they are mapped in human health assessment." Additionally, within the notes, the students described a range of methods of teachings and wider aspects including, guest lectures, SDG framework study and integrating the teaching into project and plans.

Wider Aspects

Although the focus of the project is to determine the extent that the SDG's are included in teaching, the wider aspects of learning are equally important when applying sustainability to students' courses and future careers. Table 3 offers the description of each wider aspect included in the mapping audit. The wider aspects have been used in the project as they go beyond the sustainable development goals by introducing skills that will ensure students can understand and use sustainability principles holistically.

Table 3. Descriptions of the Wider Aspects used within module teaching

Wider Aspect	Description
Understanding Sustainable Development	Covers a holistic understanding of sustainable development within the context of the subject
Seeing the Bigger Picture	Students develop systems thinking or futures thinking skills, helping them to critically engage with and understand the bigger picture.
Ethics and Values	Students use or apply an ethical framework in relation to their subject.
Collaborative Problem Solving	Students work together with others to address a real-world issue.
Critical Thinking Skills	Students learn skills to help them analyse and critique information.
Challenge Business and Usual	Students encounter different-paradigm ways of thinking, e.g. circular economy in field of design; doughnut economics in business, or directly experience a different paradigm (e.g. via a study trip)
Take Real-World Action	Students have a chance to take real-world action to support sustainable development (through activities with real-world impacts done through the course, such as placement or project). Not just using real-world problems to trigger thinking (which would be covered via developing competencies above).

Figure 5. Percentage of modules that include wider aspects of learning

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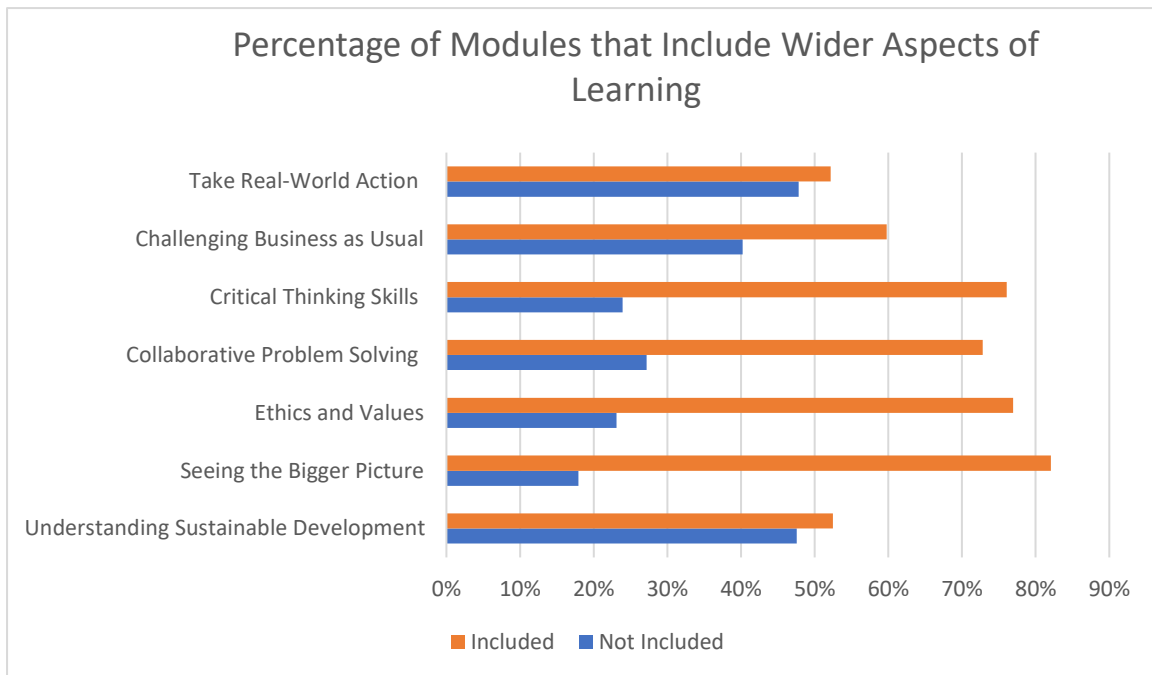
Figure 5 presents the percentage of modules that include or do not include wider aspects of learning. The wider aspects of learning that were included the least across all modules were Taking Real World Action and Understanding Sustainable Development. In comparison, over 80% of modules were found to include Seeing the Bigger Picture.

Figure 6. Percentage of modules that include wider aspects of learning in each faculty
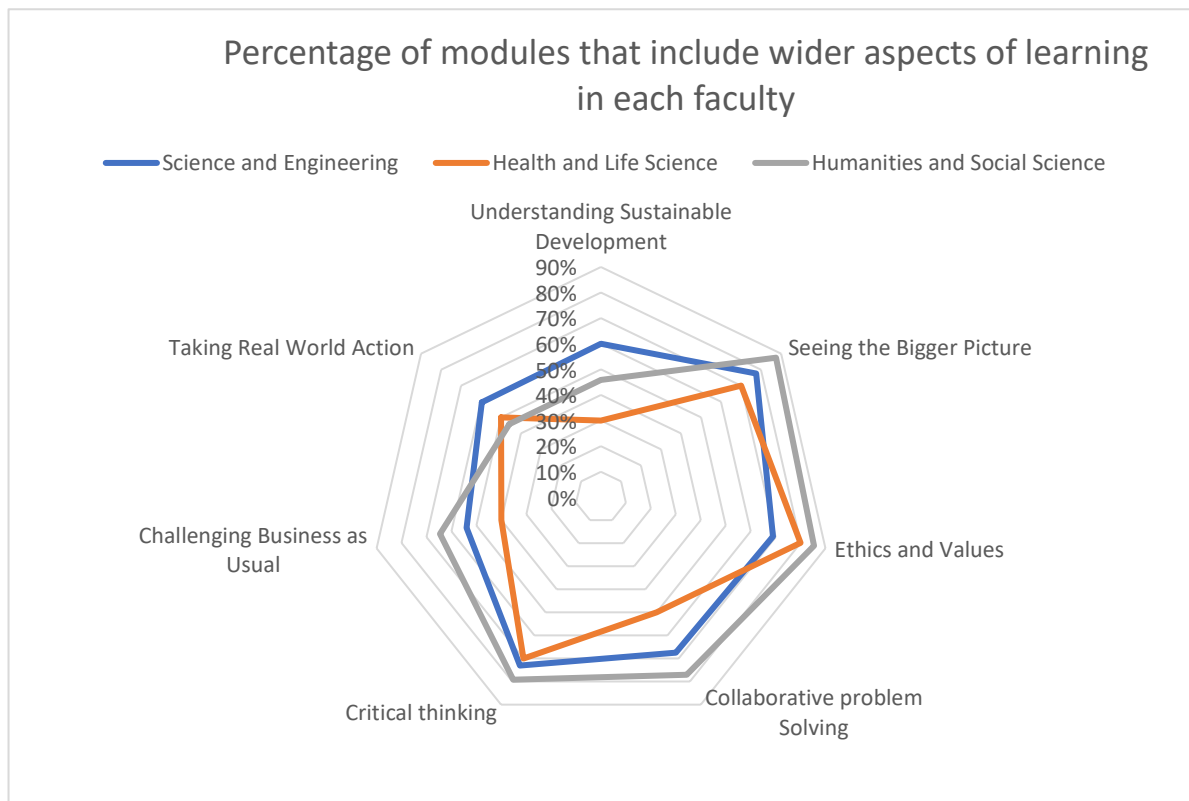
Figure 6 breaks down the percentage of modules that include wider aspects of learning by faculty. Science and Engineering was found to include Challenging Business as usual the least with only 54% of modules include it. But, like Humanities and Social Science, Science and Engineering significantly excelled in including aspects of Seeing the Bigger Picture and Critical thinking. Only 46% of Humanities and Social Sciences modules were found to include Taking Real World Action and Understanding Sustainable Development, and similarly, Health and Life Science included Understanding Sustainable Development the least with it only being found in 30% of modules.

Methods of Learning

Methods of Learning is an important aspect for Curriculum Mapping because the data can offer examples of how SDG's are being integrated in different ways. The more diverse the learning methods, the more inclusive the teaching is when accommodating both the array of SDG's and the learning styles of students. Using a range of Methods of Learning can be of particular benefit to subjects that are more linear in their teachings, and wouldn't typically include sustainability within the module. Case studies and experiential project work enable students to utilise their teachings in situations where sustainability issues occur. Therefore, it is vital to identify how well Methods of Learning are integrated so that they might be utilised appropriately.

Table 4: Description of the Methods of Learning used within module teaching

Methods of Learning	Description
Case Studies	Real-life examples of sustainable development issues - from local to global - and how these have been, or might be, addressed, introduce students to the concept of sustainability in practice. Case studies may be particularly useful in disciplines where the links with sustainable development are not immediately obvious.
Stimulus Activities	Providing a prompt (such as a poem, dance, artwork, quotation, piece of music or newspaper article) can stimulate discussion or reflection on a sustainability topic. Stimulus activities are well suited to group work and can be open-ended, encouraging students to extend their thinking beyond the confines of their own discipline.
Simulation	Activities and projects that simulate real-life situations and encourage students to participate can help develop focused thinking around sustainable development issues, and can contribute to the formation of students' own attitudes and the social norms that they find acceptable. Such activities include role plays, debating, mock trials and gaming, and they can be used across a range of disciplinary and interdisciplinary contexts to help students develop appropriate professional behaviours.
Experiential Project Work	Experiential, interactive, or participatory activities enable students to engage with

	sustainability issues at a number of levels, not only in relation to their discipline, but also in terms of reflecting on their own values, attitudes and accepted social norms. Working through issues in an authentic setting is also valuable for identifying potential interdisciplinary or transdisciplinary links. Place-based learning can also be used effectively to embed sustainability in the curriculum.
Problem-based Learning	Problem-based learning approaches can be used to good effect in teaching and learning about sustainability, since they provide opportunities for student-led, collaborative work which can be focused on a real-world problem or issue.

Figure 7 presents the percentage of modules that included Methods of Learning (as described in Table). The Figure suggests that Experiential Project Work and Simulation were found the least across the modules assessed by students. Problem Based Learning and Case Studies were used the most across the modules.

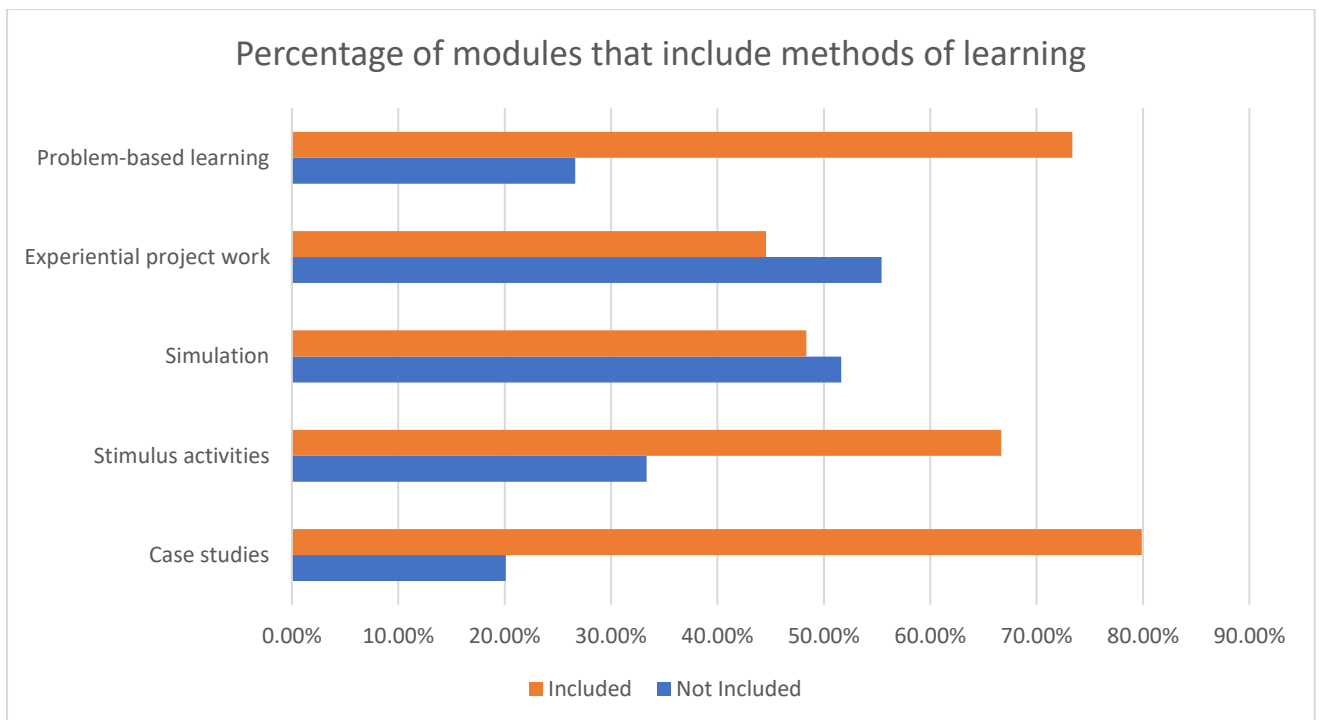Figure 7. Percentage of modules that include methods of learning

Figure 8 breaks down the percentage of modules that include methods of teaching by faculty. Each Faculty takes a similar approach to the methods used in teaching as Stimulus Activities and Case Studies are used significantly more across all faculties.

Figure 8. Percentage of modules that include methods of learning in each faculty

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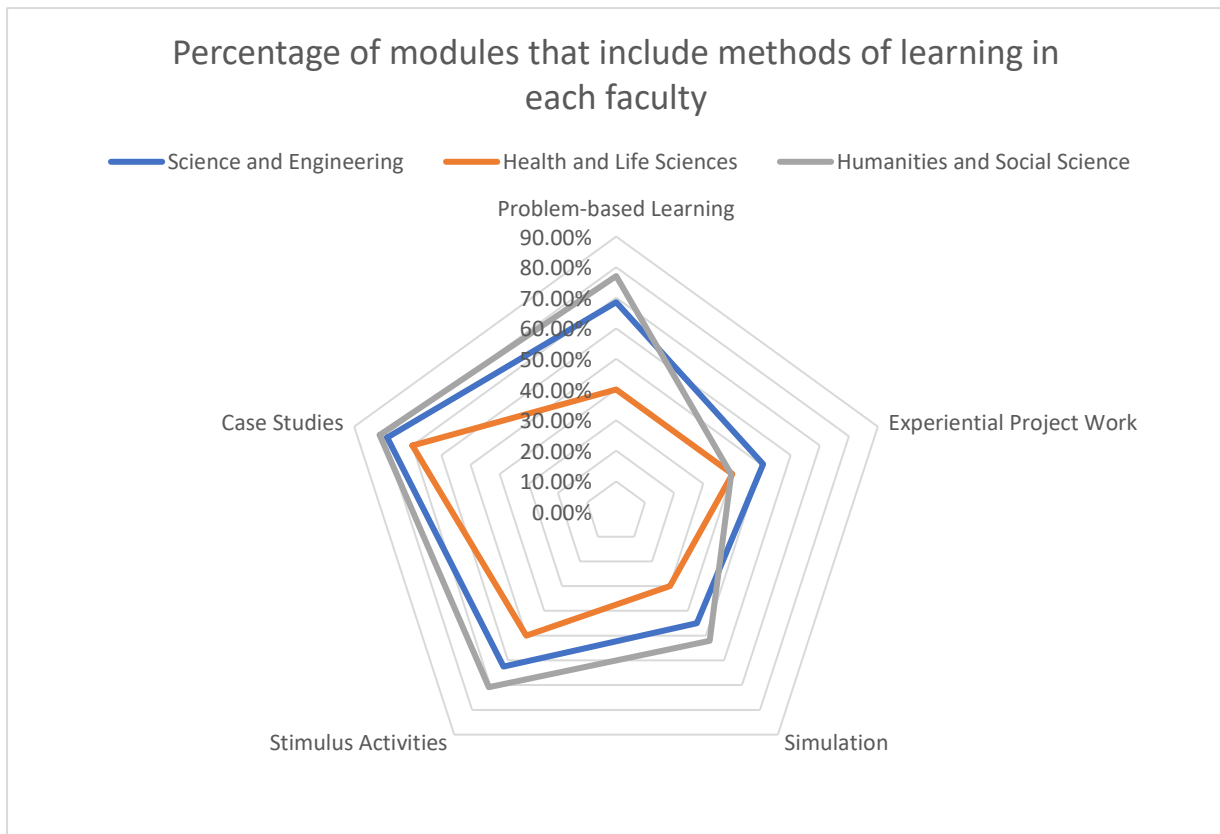
Interdisciplinary Learning

Interdisciplinary learning, a new aspect of the criteria compared to the 2021-2022 project, features within 55% of the modules across the faculties. Figure 9, offers a breakdown of how interdisciplinary learning is embedded within each faculty.

Figure 9. Inclusion of interdisciplinary learning across each faculty
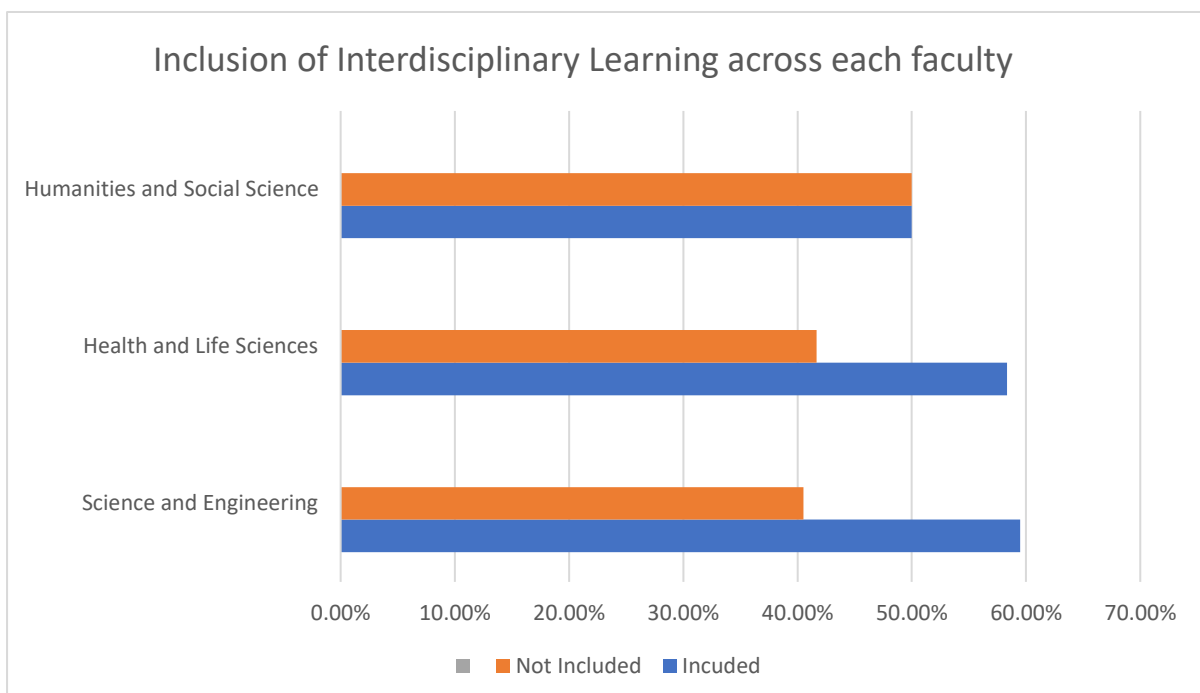
Further comments

Students were encouraged to make use of the "notes" section within the criteria for any questions, detail, and observations about the module they were scoring each week. This was highlighted as an important aspect of the mapping process as final details explained students rational for scoring in a particular way as well as understanding whether students feel there were missed opportunities for embedding sustainability. All comments from students are saved here.

Identifying gaps and opportunities

Many of the modules included comments about missed opportunities for including SDG's, particularly when modules were making use of case studies. One student felt this would particularly help the module.

Computer Science: *This module can improve by indirectly referencing to the SDG's through case studies.*

Environmental Management: *This lecture was based on biodiversity and habitat loss, possibly a missed opportunity to link further the impacts of climate change on this and provide real life examples.*

Principles of International Law: *I think it could have been useful to give some real-life examples of where individuals have impacted the development of international law or asked students to comment of how they would change the current structure of the law to make it more progressive*.

Physics: *As usual with these physics' modules, there's a missed opportunity to incorporate the SDGs into the problems in workshop classes*.

Identifying successes

Although most comments highlighted missed opportunities for embedding sustainability into the teaching, students were also able to recognise successes in teaching the SDGs, methods and wider aspects.

Computer Science: *Ethics and Values of Privacy protection was the ultimate trump card that this module holds, which is highly commendable.*

Introduction to People Management: *Particularly strong as this week focused specifically at looking at the bigger picture to take part in a debate, which was good practise for real life. A lot of the SDGs were considered when creating are points for and against contemporary management, taking into account the effects this has on organisations.*

Suggestions from students

Whilst the main suggestions from students involved using case studies to link concepts to real life sustainability situations, some students had alternative suggestions.

Physics: *This module was entirely focused on mathematics and didn't deviate to explore the SDGs. To implement them more, the module could go in depth about the applications of the mathematics we learn.*

Computer Science: *5% Graded marks could be allocated for this module based on activities which involves sustainability.*

Overall the comments highlighted that where students felt their modules lacked in embedding sustainability, they themselves identified how their modules link. When asked how the mapping project might benefit students in the future, one student said, "Embedding SDGs and ESD methodologies can benefit by helping to understand its importance and will help me to implement this in my workplace". The curriculum Mapping training and mapping process develops an understanding of the SDG's and how they connect to real world situations.

Having the opportunity to reflect and think critically about their modules from this perspective enabled students to develop and identify skills required to conduct the analysis of their module. One student identified these skills as, "interpersonal, reviewing and evaluating, time management and self-management", whilst another student highlighted that they "learned that teaching has a larger purpose than just exams and assignments."

Conclusion

Successes

- Thorough and detailed analysis of modules that provides a more realistic overview of how well sustainability is embedded into modules.
- Across all the modules, there was an increase in inclusion of the SDG's compared to what was found in the 2021-22 project.
- 10 themes were mapped from Health and Lifesciences compared to 0 in 2021-22 as a result of targeted training and specified mapping form that is tailored to the needs of medical students.
- The mapping findings display clear patterns of which SDG's, Wider aspects and Methods of Learning are less embedded across each faculty.
- Higher number of students engaging in the project than the 2021-22 project.
- Students provided lots of detailed feedback on what their module involved, how well it embedded the criteria, what they felt could have been done better and the type of learning they received. Overall this provided a thorough view of how the project can benefit students and how successful their modules are in preparing them for their future.

Limitations

- Some students gave feedback that they found it hard to dedicate time to mapping weekly
- Some students did not map every week of learning so modules could not be analysed or compared based on weeks due to inconsistencies.

Recommendations

- Continue to organise opportunities for students to map within a meet-up session to provide the opportunity for students to dedicate specific time to map as well as having project leaders their to support and answer queries.
- Provide a "diary function" to help students track which weeks have been mapped.

- Create a strategy for expanding the project and using the findings to improve modules that are not fulfilling the criteria.

Overall the mapping project has been a huge success with 28 students mapping 147 modules across all three faculties. The project encouraged modules to be critically analysed in more depth which in turn enhanced students skills and consolidated their learning. Whilst some students felt it could be difficult to dedicate time to the project, the monthly Mapping and Pizza sessions provided a dedicated hour that students could map and get support if needed. Half of the students that participated in the project also attended the mapping and pizza sessions.

The improvements implemented from the 2021-22 report recommendations, and the contribution of the ESD working group, ensured that the pilot project was successful. Although less modules were mapped compared to the 2021-22 project, feedback from students around dedicating time, as well as a drop-off in interest from the 13 students that attended training, suggests that an engagement and project support strategy could improve the number of students participating. The HEAR continued to act as a successful incentive for completing the project. However, mapping 24 weeks of modules takes more than 7 hours required for the HEAR and therefore, to further the success of the project, it might be worthwhile considering additional incentives to ensure the project received full sets of data. Despite this, the project offered more insight into modules than the previous two years that Curriculum Mapping has taken place and proves a successful tool in improving ESD at the University of Liverpool and improving students knowledge of sustainability.