



Curriculum Analysis for ESD - Keyword Analysis for 2025/26

Hazel Kerr, Andrew Reeves

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Executive Summary

Introduction

This report presents the findings of the 2025/2026 academic year Education for Sustainable Development (ESD) keyword analysis. This builds on findings for the 23/24 and 24/25 academic years, and aims to measure the engagement with ESD topics, concepts and practices across DMU's programme and module offerings.

ESD is understood as the knowledge, skills, values, attitudes and behaviours needed for educators and students to make responsible choices for sustainable development in society. Each of the 935 programmes and 7,060 modules available in the 25/26 academic year were analysis against three sets of keywords with a custom Python script, assessing titles, descriptions and learning outcomes for presence of ESD-related keywords.

- “Core” keywords are holistic concepts of sustainability, addressing social, economic and environmental dimensions such as “responsibility”, “sustainability” and “SDGs”.
- “Extended” keywords cover only one of the three dimensions above, such as “environmental” or “equality”, and are inclusive of the “Core” keywords
- “All” keywords are the broadest set, covering sustainability topics, pedagogic approaches and learner competencies for sustainable development, and are inclusive of the “Core” and “Extended” keywords.

Headline Findings

Approximately half of DMU's programmes appear to engage holistically with sustainability and the SDGs (as measured by ‘core’ keywords), which rises to approximately 80% engaging with at least some aspects of ESD (as measured by all keywords). Specific results are as follows:

- Core ESD engagement continues to increase
 - Programmes: 48% of programmes engage with at least one core keyword (up from 30% in 23/24 and 46% in 24/25)
 - Modules: 20% of modules engage with at least one core keyword (up from 15% in 23/24, the same as 24/25)
- Extended keyword engagement, indicative of some engagement with the sustainable development agenda, remains stable
 - Programmes: 67%, compared to 64% in 23/24 and 68% in 24/25
 - Modules: 45%, compared to 54% in 23/24 and 45% in 24/25
- All keyword engagement, indicative of engagement with at least some aspects of ESD, has declined.¹
 - Programmes: 77%, down from 92% in 23/24, same as 77% in 24/25
 - Modules: 68%, down from 85% in 23/24 and up from 67% in 24/25

Faculty Highlights

Faculty	Strongest Area	Development Opportunity
BAL	Highest programme engagement	Increase module-level core ESD coverage
HLS	Strongest module performance	Increase explicit core sustainability language
TAC	Strong programme examples	Lowest overall engagement levels

¹ This may be due to a change in interpretation of data and will be explored further following on from this initial report.

In addition, an exploration of an alternative method of keyword analysis using AI tools was undertaken. Appendix B details the methodology used to perform the keyword analysis using CoPilot. There are some potential advantages to moving to an AI tool-based keyword analysis method, including removing requirements for specialist software and accessibility for those without coding experience. Full recommendations are available in Appendix B.

Recommended Actions

1. Share good practice from highest-performing programmes: assess best-performing programmes in more detail and elaborate on key factors behind the strong performance
2. Support TAC faculty enhancement activities: engage further with TAC faculty module and programme leaders to enhance ESD within TAC offerings
3. Continue tracking core ESD growth annually: continue to assess core ESD engagement, alongside extended keyword and all keyword assessments for wider context, for 26/27. Consider a switch to using MS CoPilot for keyword analysis from 26/27 onwards.
4. Investigate the apparent decline in “All” keywords from 2023/24 and whether this represents a genuine change in engagement or is due to a change in reporting/analysis

Introduction

The United Nations Sustainable Development Goals Target 4.7 states that by 2030, all students should develop skills and knowledge that facilitates sustainable development and is based in principles of sustainability.

This report details the findings of a curriculum keyword analysis of DMU programmes and modules to determine the engagement with Education for Sustainable Development (ESD). The analysis goes beyond considering alignment with the UN Sustainable Development Goals (SDGs) and associated topics/concepts, also considering ESD as being defined by pedagogic approaches and the competencies learners develop through ESD.

This analysis was initially performed for the 23/24 academic year, comparing to the 21/22 academic year to determine the impact of the move to block teaching, and subsequently for the 24/25 academic year. This report presents the findings from the 25/26 academic year.

The Python-based “Curriculum Analysis” script was used to produce web-based (JavaScript) and CSV outputs for 935 programmes and 7,060 modules offered at DMU in the 25/26 academic year, covering undergraduate and postgraduate courses.

This analysis will present the strengths and gaps in programmes and modules, and the extent to which sustainability is covered holistically across the DMU curriculum, addressing economic, social and environmental sustainability. Three keyword lists were used to assess the programme and module titles, descriptions and learning outcomes for engagement with sustainable development.

- “Core” keywords are holistic concepts of sustainability, addressing social, economic and environmental dimensions such as “responsibility”, “sustainability” and “SDGs”.
- “Extended” keywords cover only one of the three dimensions above, such as “environmental” or “equality”, and are inclusive of the “Core” keywords
- “All” keywords are the broadest set, covering sustainability topics, pedagogic approaches and learner competencies for sustainable development, and are inclusive of the “Core” and “Extended” keywords.

Institution-Level Results

Metric	Result
Programmes analysed	935
Modules analysed	7,060
Core keyword engagement (Programmes)	47.9%
Core keyword engagement (Modules)	20%
Extended keyword engagement (Programmes)	67%
Extended keyword engagement (Modules)	45%
All keyword engagement (Programmes)	77.2%
All keyword engagement (Modules)	68%

Figure 1 shows the comparison between engagement with core, extended and all keywords across the 25/26 academic year for both programmes and modules, compared to the 23/24 and 24/25 results:

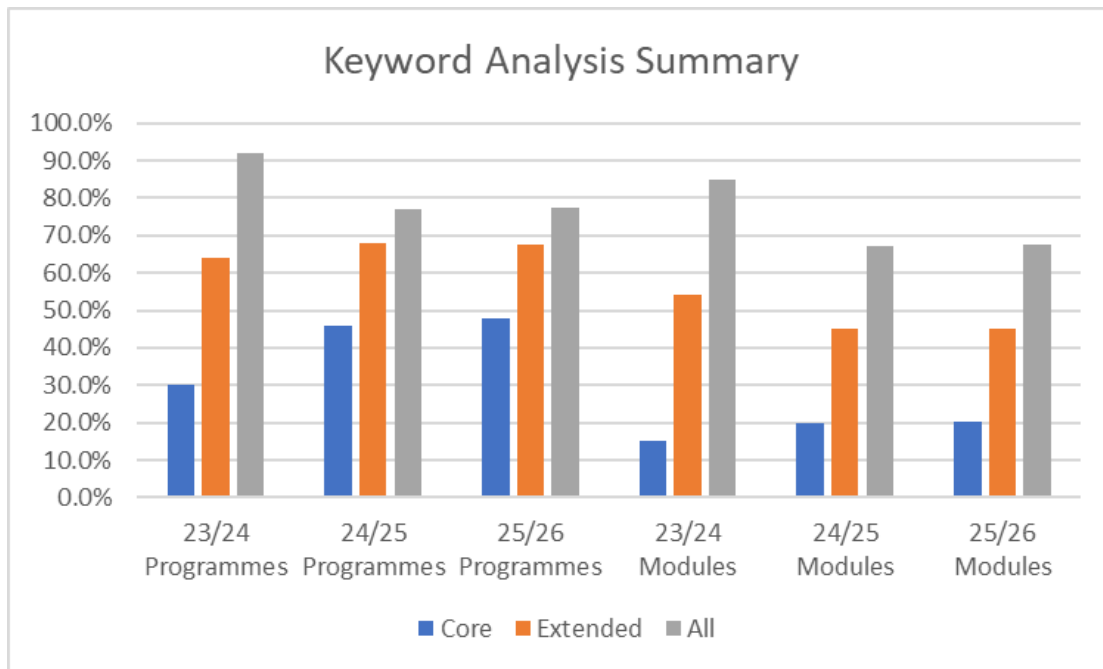


Figure 1: 23/24, 24/25 and 25/26 comparison across keywords for modules and programmes

From the results, we can see a reasonable rise in engagement with core keywords in programmes across the three years, and a smaller rise in engagement with modules. Extended keywords also show a small increase in programmes, but a small decrease in modules. However, “all” keywords show a drop in engagement for both programmes and modules from the 23/24 academic year to the 24/25 and 25/26 academic years.

Faculty-Level Results

Figure 2 shows core, extended and all keyword engagement in programmes, separated into the three primary faculties at DMU:

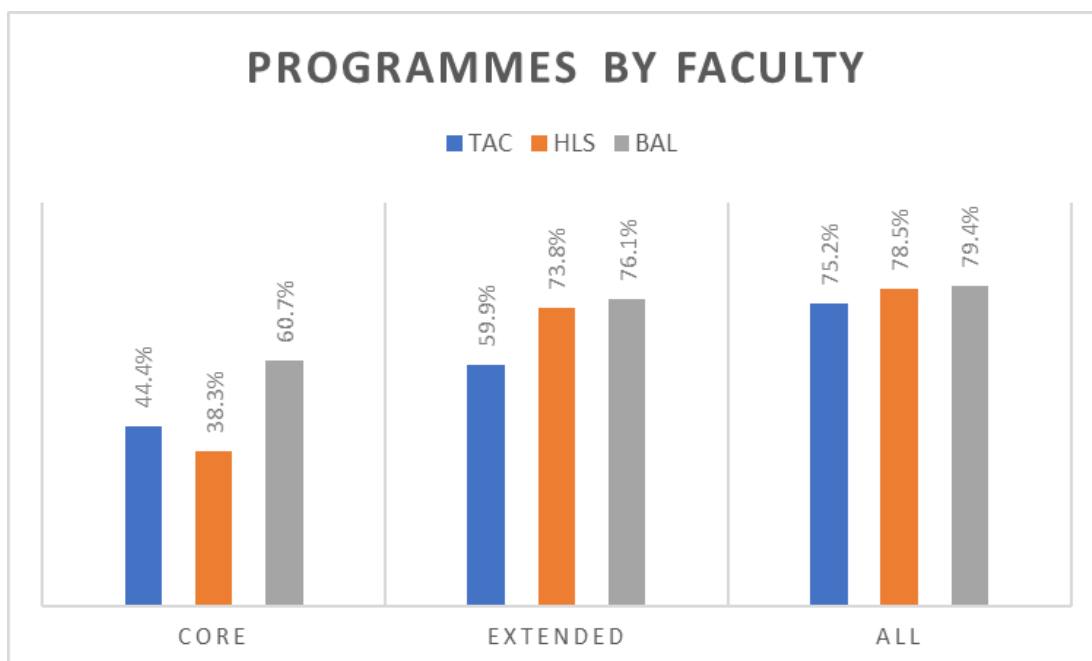


Figure 2: % of programmes engaging with core, extended and all keywords by Faculty

Figure 3 shows the same comparison, but for modules:

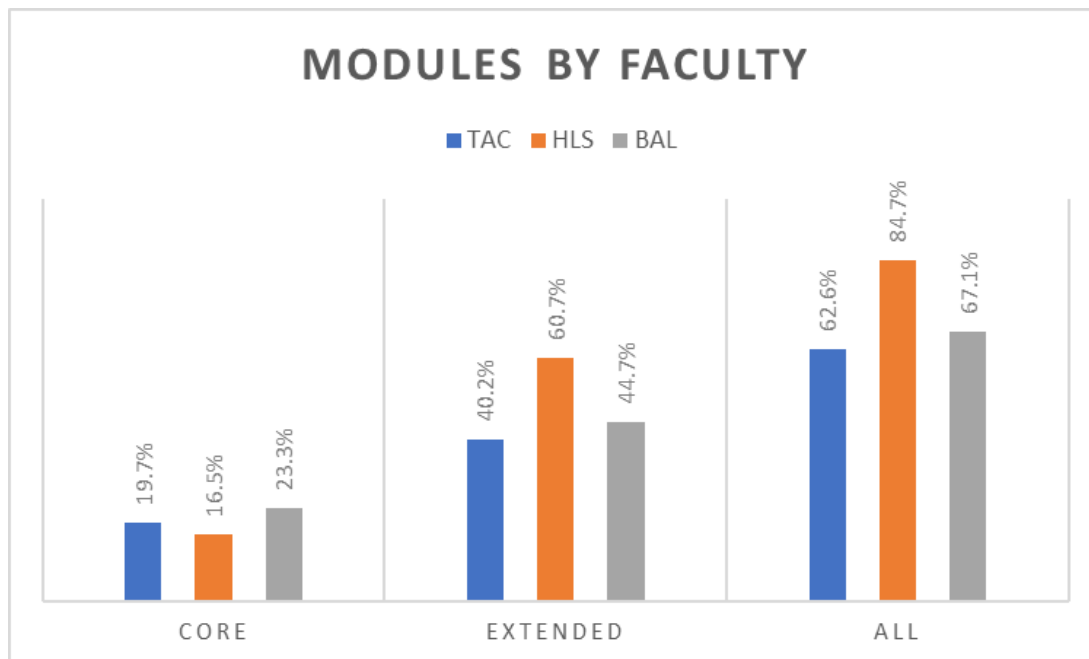


Figure 3: % of modules engaging with core, extended and topic-based keyword by Faculty

Top-Performing Programmes and Modules

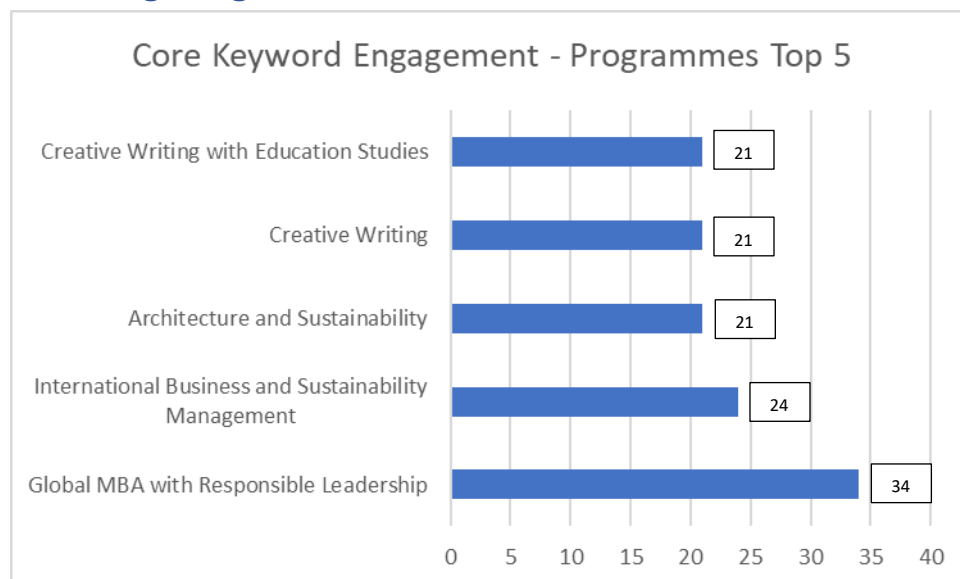


Figure 4: Top-performing programmes in core keyword engagement

- The Global MBA with Responsible Leadership discusses responsible management approaches, in terms of both people-centred leadership and sustainable business practice, as well as explicitly mentioning aligning business practice with the sustainable development goals (responsible x15, sustainable x6, sustainability x5).
- International Business and Sustainability Management promotes sustainable business practices and business ethics, as well as sustainability reporting, compliance and planning (sustainability x12, sustainable x9).

- Architecture and Sustainability focuses on design strategy and building physics for sustainable architectural practice (sustainability x18, sustainable x3).
- Creative Writing explicitly mentions ESD and the UN SDGs, and how they have been integrated into course design for addressing gender equality, sustainable resource use, and society and the economy (SDG x7, sustainable x6, sustainability x6).
- Creative Writing with Education Studies also integrates several SDGs into its course description and module highlights, and explores topics on place, planet, leadership and sustainability (SDG x7, sustainable x6, sustainability x6).

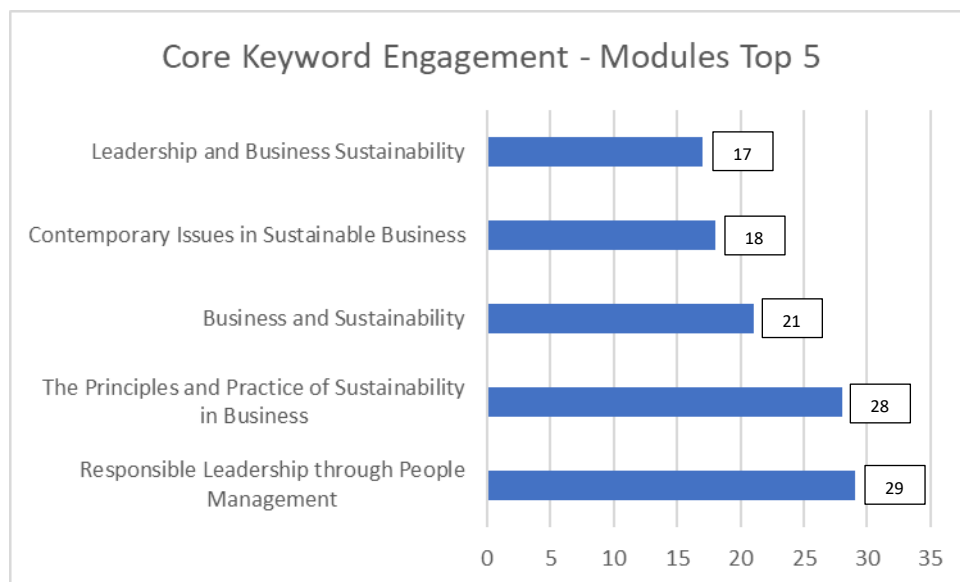


Figure 5: Top-performing modules in core keyword engagement

- Responsible Leadership through People Management introduces the principles and practice of people management, and strategies for fostering ethical leadership in organisations (responsible x13, sustainable x10).
- The Principles and Practice of Sustainability in Business teaches sustainable business practices from social, environmental and economic perspectives, and corporate social responsibility and responsible business ethics (sustainability x22, sustainable x4).
- Business and sustainability focuses on sustainable business practices, and holistic sustainable education in a business context (sustainability x11, sustainable x4, responsible x4).
- Contemporary Issues in Sustainable Business covers global sustainability practices, the political economy of sustainability, and governance and implementation in sustainable business (sustainable x10, responsible x4).
- Finally, Leadership and Business Sustainability discusses talent management and development and how business contribute to the realisation of a more sustainable world (sustainable x10, responsible x4).

Discussion & Trends

Key Findings and Future Opportunities

- DMU aspires for ESD to be addressed across all taught programmes – this would likely mean at least ‘Extended’ and ‘All’ results being close to 100% and likely most programmes using some ‘Core’ concepts explicitly.

- Continue to pursue opportunities to enhance engagement with module leaders and programme leaders for ESD growth within these offerings and continue to make ESD engagement a requirement of programme validations.
- Continued increase in core ESD engagement in programmes
 - Strong programme performance in core keywords institutionally, but flattening growth in module core keyword engagement
- Continued strong performance in Business and Law across programmes and modules
 - Consistently highest-performing faculty across all three keyword lists
- Strong individual examples of ESD-engaged provision
 - Global MBA with Responsible Leadership, offered at DMU London, is best-performing programme. Responsible Leadership with People Management, offered through BAL, is best-performing module

Institutional Opportunities

- Share best practice from high-performing programmes and module
 - Engage directly with programme and module leaders of high-performing offerings to enhance institutional progress
- Encourage explicit inclusion of ESD language
 - Enhance core, extended and topic-based keyword provision in programme and module descriptions where relevant, and continue engagement with leaders on programmes and modules for meaningful integration of ESD concepts into teaching
 - Consider linkage to validation processes to ensure ESD commitments are reflected in programme/module summary information that informs this analysis

Recommendations on Future Analysis

- Appendix B offers an exploration of an alternative methodology for keyword analysis for ESD, using the Copilot LLM tool available to all DMU staff instead of the custom Python script used in this analysis
 - There are some potential advantages in using Copilot for this task, including speed of analysis (~3 hours to generate results vs. ~2 days to generate results), removing the requirement for specialist software (Python), enabling use of multiple-word keywords (e.g. “social justice”, “sustainable development” and removing the need for coding knowledge in Python to run the curriculum analysis script.
 - The methodology detailed in Appendix B can be used to generate the CSV files and an equivalent of the JS file presentation from the original Python script, without the web-enabled component of the JS files. Further analysis of the CSV files can also be performed via Copilot to generate outputs like the ones presented in this report
 - It appears viable and effective to conduct future keyword analyses for ESD using LLM tools such as Copilot instead of using the existing Python script, with lower up-front capacity requirements for staff, and equivalent outcomes.

Appendix A: Methodology

The data sources used for this analysis are the programme and module descriptors for DMU course offerings in the 25/26 academic year. Data from the module and programme descriptions, the learning, teaching and assessment strategies, and the learning outcomes were included in this analysis, with other module/programme data being excluded. These data were then analysed via the Python Curriculum Analysis script against three sets of keywords covering terms related to sustainable development:

Core Concepts: keywords that are indicative of explicitly addressing the holistic sustainability/sustainable development agenda, with multiple sustainability dimensions being addressed. *Examples: sustainable, responsible, sustainability, regenerative*

Extended Concepts: keywords that are indicative of some aspects of sustainability/sustainable development, with at least one sustainability dimension being addressed, inclusive of “Core” keywords. *Examples: ethical, justice, circularity, environmental*

All Concepts: Keywords suggesting engagement with topics relating to sustainability (e.g. *poverty, carbon*), pedagogic approaches (e.g. *intersectional, transdisciplinary*), or wider sustainability competencies (e.g. *reflective, gender, futures*), inclusive of both “Core” and “All” keywords

The Python Curriculum Analysis script was run via Python 3.14.6 for Windows on Windows 11. All commands were executed via the Windows Command Prompt. Two plain-text file inputs were used: one for the list of DMU programmes and descriptions, and one for the list of DMU modules and descriptions. Six script runs overall were performed, three for each data set to cover core concepts, extended concepts and topics/pedagogy/competencies, with outputs in JavaScript and CSV files. JavaScript files were used for keyword-in-context inspection and verification, and CSV files were used for numerical analysis of the corpus. CSV files were converted into XLSX format prior to data processing.

Following the initial script runs, duplicate entries were identified. From 935 total programme entries and 7,060 total module entries, 545 unique programmes and 4,629 unique module titles were found. For the Excel-based analysis, all entries were maintained, due to unique module and programme codes being provided for each entry. For the top 20 analysis, where duplicate modules or programmes were found, one entry from the module/programme was taken forward. These duplicates were identified through examining the programme or module code to identify which programme/course the entry relates to, and through examination of the JavaScript output for confirmation of the duplicate. This analysis covered the total number of keywords mentioned across each keyword set for each programme/module, the number of programmes/modules that had zero mentions, and the total percentage of modules/programmes with at least one mention. High-performing modules and programmes were also identified, with the top 20 modules/programmes being extracted. These results were also broken down by faculty, covering the primary three faculties at DMU Leicester, being Business and Law (BAL), Health and Life Sciences (HLS), and Technology, Arts and Culture (TAC).

The full dataset is available upon request, email hazel.kerr@dmu.ac.uk for further information

Appendix B: Curriculum Analysis using AI Tools

Previously, the curriculum analysis process for ESD at DMU has used a custom Python script. This process has been tested using MS CoPilot, which is both more accessible and user-friendly on DMU hardware, with equivalent outputs. The process to follow is:

1. Open and log in to MS CoPilot or your LLM of choice. This process and prompt has been tested with CoPilot, but should be applicable to other LLMs.
2. Two plain text files are required to run the prompt, being a keywords file, and a source material file. For the 25/26 analysis, three keyword files were used, being a “core concepts” file, a “extended concepts” file and a “topics, pedagogy and competencies” file, equivalent to the “Core”, “Extended” and “All” keywords lists above. Two source material files were used, being 0324ModuleSpecificationforAcademics and 0325ProgrammeSpecificationforAcademics. Add one source material file (for example, the programmes file) and one keyword file (for example, the “core concepts” keywords) to the prompt session.
3. For the example in #2, the prompt used would be “Read both text files: create an Excel spreadsheet with the keywords from the Core Concept text file as column headers, and the programme codes from the programme specification text file as rows. Then, for each programme within the programme specification sheet, populate the spreadsheet with how many times each keyword occurs in the programme specification file for each programme, using 0 for no occurrence, and an integer number matching the number of times the keyword occurs. Only examine the text in the sections titled "Learning, Teaching and Assessment Strategies", "Structure and Regulations" and "Learning Outcomes" when counting keywords.”.
4. CoPilot (or the LLM you are using) will then output an Excel spreadsheet to these specifications, saving it to your OneDrive if using a work account, or offering you a download if not. Analysis can then be performed on the Excel file, as you would for the files generated using the Python approach previously.
5. The second step is to emulate the keyword-in-context analysis of the JS output of the Python script. To do so, first, follow steps 1 and 2 above again. Then, use the prompt: “Read both text files: create a Word file that shows text in the sections titled "Learning, Teaching and Assessment Strategies", "Structure and Regulations" and "Learning Outcomes" for each programme, organised with headings by programme code and title, and highlights the text that matches the keywords for each of the sections. Use a different highlighter colour for each keyword.”. This can be repeated for modules, alternative keyword sets etc.
6. CoPilot (or the LLM your are using) will then output a Word file to these specifications, saving it to your OneDrive if using a work account, or offering you a download if not. This file will be very large and may take some time to open. The file will have the three sections specified in the prompt for each module/programme in the submitted file, with separate colours of highlight (specified at the top) for each of the keywords. This file can then be searched within.
7. This Word file can be used to generate the top-20 lists used in previous analyses as well. The prompt “Read the attached word file. Report back, using the programme code and programme name, the 20 programmes with the greatest number of highlighted words in their "Learning, Teaching and Assessment Strategies", "Structure and Regulations" and "Learning Outcomes" sections. Provide this information in a three-column table, with programme code, programme name and the count of highlighted words as the three columns, with programmes as rows.” generates a table as specified.

Discussion & Recommendations

- Keyword analysis using AI tools, such as CoPilot which is available to DMU staff, seems to produce reliable results equivalent to the Python script used in previous analyses
- The process of performing the analysis requires less technical knowledge of using Python, as well as using standard tools available to all DMU staff without additional software requirements
- Using CoPilot in place of the custom Python script to perform future keyword analyses of DMU curricula is recommended, provided the user is confident in prompting LLMs accurately, and time is taken to verify the results are free from errors

Appendix C: Full List of Keywords

Core Keywords

Regenerative
Responsible
Responsibly
Responsibility
SDG
SDGs
UNSDGs
Sustainable
Sustainably
Sustainability
Unsustainable

Extended Keywords

Regenerative	Disempower	Ethics	Intersectionality	Unfairness
Responsible	Disempowering	Equal	Just	Unjust
Responsibly	Discriminate	Equality	Justice	Vulnerable
Responsibility	Discrimination	Equitably	Prejudice	Vulnerability
SDG	Discriminatory	Equity	Racial	Wicked
SDGs	Diverse	Fair	Racism	Permaculture
UNSDGs	Diversity	Fairness	Racist	Ecofeminism
Sustainable	Empower	Holistic	Resilience	Ecofeminist
Sustainably	Empowering	Holistically	Resilient	Degrowth
Sustainability	Empowerment	Humane	Social	Ecoliteracy
Unsustainable	Ecological	Humanistic	Socially	Ecoliterate
Anti-racist	Ecologically	Inclusion	Stewardship	
Circular	Environmental	Inclusive	Systems	
Circularity	Environmentalism	Inequalities	Transdisciplinary	
Decolonial	Environmentally	Inequality	Transdisciplinarity	
Decolonise	EDI	Inequitable	Transformative	
Decolonising	ESD	Inequity	Transformational	
Decolonize	ESG	Injustice	Unequal	
Decolonization	Ethical	Intergenerational	Unethical	
Decolonisation	Ethically	Intersectional	Unfair	

All Keywords

Regenerative	Equality	Vulnerable	Carbon	Ecoclimatology
Responsible	Equitably	Vulnerability	Climate	Eco-friendly
Responsibly	Equity	Wicked	Climate-conscious	ecolabelling
SDG	Fair	Permaculture	Climate-resilient	eco-labelling
SDGs	Fairness	Ecofeminism	CO2	Ecology
UNSDGs	Holistic	Ecofeminist	Congesting	Ecosystem
Sustainable	Holistically	Degrowth	Congestion	Ecosystemic
Sustainably	Humane	Ecoliteracy	Conservation	Ecotoxicology
Sustainability	Humanistic	Ecoliterate	Conserve	Educational
Unsustainable	Inclusion	Acidification	Consumption	Educational
Anti-racist	Inclusive	Activism	contaminate	Electrification
Circular	Inequalities	Activist	contaminating	Emissions
Circularity	Inequality	Addict	Contamination	Endangered
Decolonial	Inequitable	Addiction	Corrupt	Energiewende
Decolonise	Inequity	Afforestation	Corruption	Energy
Decolonising	Injustice	Ageism	COVID-19	Epidemic
Decolonize	Intergenerational	Agri-Food	CSR	Epidemiology
Decolonization	Intersectional	Agroecology	Decarbonisation	Eradicate
Decolonisation	Intersectionality	Agroforestry	Decarbonise	Eradicating
Disempower	Just	AIDS	Deforestation	Eradication
Disempowering	Justice	Alcoholic	Degradation	Eutrophication
Discriminate	Prejudice	Alcoholism	Democratization	E-waste
Discrimination	Racial	Anemia	Democratize	Exploit
Discriminatory	Racism	Anemic	Deprivation	Exploitation
Diverse	Racist	Anthropocene	Deprive	Exploiting
Diversity	Resilience	Anthropogenic	Desalination	Extinct
Empower	Resilient	Antifouling	Desertification	Extinction
Empowering	Social	Biobased	Disabilities	Extremism
Empowerment	Socially	Biodegradable	Disability	Extremist
Ecological	Stewardship	Biodegrade	Disaster	Fairtrade
Ecologically	Systems	Biodiverse	Disaster-prone	Feminism
Environmental	Transdisciplinary	Biodiversity	Disaster-resilient	Feminist
Environmentalism	Transdisciplinarity	Bioeconomy	Disparities	FGM
Environmentally	Transformative	Biomass	Disparity	Fossil-fuel
EDI	Transformational	Biomaterials	Diversification	Freshwater
ESD	Unequal	Biofuel	Diversify	Gender
ESG	Unethical	Biomimicry	Doughnut	Gender-based
Ethical	Unfair	Bribe	Drought	Gendered
Ethically	Unfairness	Bribery	Ebola	Gender-responsive
Ethics	Unjust	Bribing	Eco	Genocide

Gentrification	Migrant	SDG14	Water-borne	Empathetic
GHG	minigrid	SDG15	Welfare	Empathy
Globalisation	Mini-grid	SDG16	Wellbeing	Ethics
Governance	Misogynist	SDG17	Well-being	Futures
Green	Misogynistic	SDG2	Wildlife	Integration
Greenhouse	Misogyny	SDG3	Authentic	Integrative
Greenwashing	Mortality	SDG4	Enquiry-based	Interconnect
Groundwater	Nature	SDG5	Failure	Interconnected
Healthcare	Numeracy	SDG6	Game-based	Interconnectedness
HIV	Nutrition	SDG7	Group-based	Interconnection
Homophobia	Obesity	SDG8	Narrative-centred	Interconnections
Homophobic	Overconsumption	SDG9	Play-based	Interdisciplinary
Homosexuality	Overfishing	Sexism	Playful	Inter-personal
Humanitarian	Over-fishing	Sexist	Problem-based	Inter-relationships
Hunger	Pandemic	Slash-and-Burn	Real-life	Intra-personal
Hydroelectric	Peace	slavery	Real-world	Joined-up
Illiteracy	Peaceful	Slum	Real-world	Multidisciplinary
Immigrant	Peacekeeping	Smart-grid	Scenario-based	Normative
Immigration	Photovoltaic	stigma	Self-assess	Norms
Inclusiveness	Polio	stigmatize	Self-review	Participation
Indigenous	Polluting	Suicide	Serious	Participatory
Industrial	Pollution	Terrorism	Service-learning	Perspectives
Industrialisation	Poverty	Terrorist	Simulation	Perspectivity
Landfill	Pro-environmental	Torture	Simulations	Positionality
LDC	Prostitution	Trafficking	Storytelling	Precautionary
LDCs	Reforestation	UN	Synoptic	Problem-solving
Literacy	Refugee	Undernutrition	Stimulus	Reflect
Literate	Renewable	Underrepresentation	Experiential	Reflection
Low-carbon	Renewables	Unemployed	Anthropocentric	Reflective
Malnutrition	Renewably	Unemployment	Adaptability	Responsive
Marginalised	Resources	UNESCO	Adaptable	Self-awareness
Marginalization	Resource-Use	UNFCCC	Anticipatory	Self-reflection
microcredit	Rights	Violence	Collaborating	Strategic
micro-credit	Sanitation	Violent	Collaboration	Systemic
Microenterprise	scarcity	War	Collaborative	Systemically
micro-enterprise	SDG1	Warfare	Collaboratively	Uncertainty
Microfinance	SDG10	Waste	Compassionate	Values
microgrid	SDG11	Wasteful	Complexity	Values-driven
Micro-grid	SDG12	Wastewater	Creativity	Vision
Microplastics	SDG13	Water	Criticality	Visions