



Transforming the Curriculum for sustainable development and life cycle assessment



Nottingham Trent University

SDG focus

- ☑ Goal 4 - Quality education
- ☑ Goal 11 - Sustainable cities and communities
- ☑ Goal 12 - Responsible consumption and production

What did you do?

The School of Architecture, Design, and the Built Environment (ADBE) has a strategic objective to embed sustainability throughout its curriculum and align our teaching with the United Nations Sustainable Development Goals (SDGs) and the UNESCO Sustainability Competency Framework. This forms part of NTU's wider sustainability curriculum review and reflects the university's strategic commitment to addressing global challenges and equipping graduates with the sustainability knowledge and skills increasingly demanded in higher education. Our distinctive school approach has seen us [partner with leading industry partner Morgan Sindall](#) to support the development of their life cycle assessment tool, Carbonica, into an educational resource for the HE sector. Alongside this, ADBE have launched the [Centre for Sustainable Construction and Retrofit](#) to bring particular focus and attention to the low carbon skills gap in the built environment.

Approach and Methodology

ADBE adopted a rigorous three-phase approach to this curriculum transformation:

Phase 1: Mapping the Curriculum

A comprehensive review was conducted to map undergraduate courses and modules against

the SDGs. This mapping exercise highlighted some inconsistencies between learning outcomes, module content, and assessment. It also identified areas of strength and revealed opportunities for further integration of sustainability content across disciplines. This phase enabled the School to address these inconsistencies, ensuring that each module learning outcomes were properly aligned with relevant sustainability elements.

Phase 2: Collaborative Curriculum Design

Using a Delphi approach, ADBE engaged its academic experts to co-develop sustainability-focused learning units. This collaborative process fostered ownership and ensured disciplinary relevance, resulting in a shared framework for embedding sustainability within existing programmes. Academics from each department in the School agreed on shared content for Levels 4, 5, and 6. Each level will include 5 credits of sustainability content. A particular focus has been on the use of life cycle assessments with some of the content co-developed and supported by Morgan Sindall and access to their new educational tool, Carbonica, which was co-developed with support from NTU in an Innovate UK funded research project.

Phase 3: Implementation of Shared Learning Units

ADBE has designed shared sustainability learning units for each undergraduate level; Levels 4, 5, and 6. Each of these modules will be undertaken by all students at the respective level, ensuring consistency and coherence in sustainability education across the School's 17 undergraduate programmes. Importantly, each module is aligned with the UN SDGs and the UNESCO Sustainability Competency Framework to ensure relevance and impact and has had industry input.

Currently, we are collaborating with the NTU Flex team to develop these modules as flexible, online content, which will be rolled out starting from the 2025–26 academic year. This approach will enhance accessibility and flexibility, enabling all students to engage with sustainability regardless of their specific discipline.

What were the benefits and outcomes?

1. **Enhanced student confidence and engagement:** Students will be well-prepared to tackle sustainability challenges in their respective fields.
2. **Improved staff collaboration and cross-disciplinary learning:** This initiative has fostered a much stronger sense of shared purpose across ADBE departments.
3. **Alignment with national and international sustainability agendas:** All 17 undergraduate programmes now include modules explicitly mapped to the UN SDGs and the UNESCO Sustainability Competency Framework, ensuring relevance to professional expectations and enhancing graduate employability.
4. **Accessible and flexible learning:** The development of flexible, online modules will greatly improve accessibility for students, enabling them to engage with sustainability education regardless of their individual disciplines or circumstances.

What barriers or challenges did you encounter in embedding sustainability into your learning and teaching practice and how did you overcome them?

While the project has achieved significant progress, it has also revealed challenges, including balancing disciplinary depth with the breadth of sustainability topics, and staff capacity. Despite these, the collaborative approach and strong institutional support have laid the foundation for continuous improvement.

What are your conclusions and recommendations for others?

ADBE's experience demonstrates a meaningful, evidence-based approach to embedding the SDGs into higher education. By systematically integrating sustainability across all undergraduate levels through shared, flexible online modules, the School is preparing graduates not only to understand but also to act for sustainable development, an essential step towards transformative education for a sustainable future.

This approach has created a solid foundation for long-term impact by fostering student engagement, promoting staff collaboration, and ensuring alignment with global sustainability goals, including the UNESCO Sustainability Competency Framework. By equipping students with the knowledge, skills, and values necessary for responsible citizenship and professional practice, ADBE is contributing to the realisation of a more sustainable, equitable, and inclusive society.

Importantly, the methodology developed by ADBE is transferable and can be adapted by other schools within the university, offering a scalable model for embedding sustainability education across a broad range of disciplines. As the School continues to refine its practices and expand its reach, its commitment to sustainability education will not only benefit its own community but also support broader efforts to achieve the SDGs and the transformative vision set out by UNESCO for education in the 21st century.

Web link to further information:

[Architecture, Design and the Built Environment | Nottingham Trent University](#)

The first developed unit for level 5: <https://now.ntu.ac.uk/d2l/home/1103839#>