FROM SUSTAINABILITY AWARENESS TO DESIGN COMPETENCE: GRADUATE, LECTURER AND PRACTITIONER PERSPECTIVES ON INTERIOR DESIGN EDUCATION IN CYPRUS

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INTRODUCTION

Increasing environmental concerns have established sustainability as a key priority within Interior Design education, as designers influence material selection, resource consumption, indoor environmental quality, occupant wellbeing and long-term environmental performance[12]. Despite its growing significance, sustainability is frequently addressed through individual modules or specific design projects rather than being systematically integrated throughout the curriculum.

This paper presents the methodological approach and preliminary empirical findings of a broader research investigation examining sustainability integration within Interior Design education in Cyprus. Drawing on a qualitative case study of Alexander College, the research compares graduates', lecturers' and professional practitioners' understanding, experiences and perspectives concerning sustainability in education and professional practice.

The findings are based on semi-structured interviews with twelve participants: five recent Interior Design graduates, two lecturers and five professional practitioners operating in Cyprus. By examining similarities and differences across these groups, the study investigates sustainability understanding, curriculum integration, design application and professional expectations. The findings contribute to identifying educational and professional gaps that will inform the subsequent development of a Sustainability Assessment Matrix (SAM) and an evidence-informed pedagogical framework.

Sustainability in Interior Design Education

International organisations increasingly recognise sustainability as an essential educational priority rather than an optional component of individual disciplines[34]. Within Interior Design education, sustainability encompasses more than environmental performance, incorporating wellbeing,

resilience, ethical responsibility and long-term ecological considerations[5]. Accordingly, graduates are expected to acquire not only technical expertise but also the critical thinking skills, ethical understanding and sustainability competencies necessary to respond to complex environmental and societal challenges[5].

Despite increasing awareness of its importance, sustainability continues to be unevenly integrated into Interior Design education, frequently appearing in individual modules or specific projects rather than being developed through a sustained pedagogical approach[67]. Research conducted across different educational settings highlights both the potential and the difficulties associated with curriculum integration. Afacan (2014) illustrated how the Sustainable Design for Interiors course at Bilkent University in Turkey incorporated sustainability through project-based learning and collaboration with industry, allowing students to apply sustainable design principles to realistic design challenges. Conversely, El-Zeiny (2012) identified a lack of systematic sustainability integration across Interior Design programmes at five Egyptian universities, attributing this to limited educator expertise, restricted curricular provision and insufficient institutional support.

Collectively, these studies indicate that meaningful sustainability integration requires more than the inclusion of relevant subject content; it also depends on coordinated curriculum development, institutional commitment and the knowledge and capabilities of educators. Sustainability should therefore be developed as an ongoing design competence throughout Interior Design education rather than being confined to separate curricular topics[89].

European Sustainability Frameworks and Educational Gaps

European policies increasingly recognise sustainability as a fundamental graduate competence rather than knowledge restricted to specialised disciplines. The European Commission's GreenComp framework identifies systems thinking, futures literacy, critical reflection and collaborative problem-solving as key competencies for responding to interconnected environmental, social and economic challenges[10].

This perspective is supported by UNESCO's Education for Sustainable Development agenda and the QAA's Education for Sustainable Development Guidance, both of which emphasise integrating sustainability throughout curriculum development, teaching, learning and assessment instead of limiting it to separate modules[34]. In Interior Design education, this involves incorporating sustainability into studio-based activities, technical education and design decision-making processes.

Professional certification frameworks, including LEED and BREEAM, further support these principles by encouraging evidence-based decisions concerning material selection, energy performance, indoor environmental quality, resource efficiency and lifecycle considerations[1112]. Consequently, graduates are expected not only to demonstrate conceptual knowledge of sustainability but also to substantiate their design choices through established professional standards[12].

Nevertheless, these frameworks offer limited direction regarding the practical integration of sustainability throughout Interior Design curricula. Their implementation consequently relies on institutional priorities, curricular organisation and educator expertise, while existing research continues to identify inconsistencies and fragmented approaches to sustainability education[613]. This demonstrates the importance of investigating how sustainability frameworks are incorporated into educational practice and understood through students' learning experiences.

Sustainability Integration in Cyprus

Although research addressing sustainability in Cyprus has grown substantially during the past decade, investigations specifically focusing on sustainability within Interior Design education remain scarce [1415]. Existing literature has concentrated largely on sustainable architecture, environmental consciousness and wider sustainability discussions, offering limited understanding of how sustainability is conceptualised, delivered and evaluated within Interior Design programmes[161718].

Ioannou-Kazamia and Lapithis (2020) suggest that sustainability integration within Cypriot Interior Design education continues to be inconsistent, with its implementation frequently influenced by individual lecturers rather than coordinated institutional approaches. Their research also identifies a shortage of empirical investigations addressing sustainability in both Interior Design education and professional practice across Cyprus.

Similarly, studies examining the Cypriot built environment emphasise the importance of incorporating sustainability throughout design education and professional practice. [19] together with [16], maintain that environmental responsibility should be embedded across design curricula instead of being restricted to separate theoretical modules. Research addressing climate change, bioclimatic architecture and community resilience further highlights the increasing environmental pressures affecting Cyprus [1716]. Nevertheless, this literature remains primarily concerned with architecture and offers only indirect evidence regarding sustainability integration within Interior Design education.

As a result, important questions persist concerning how Interior Design students perceive, encounter and implement sustainability during their educational development. This paper contributes to addressing this research gap through the presentation of preliminary empirical findings from the Alexander College case study.

RESEARCH DESIGN & METHODOLOGICAL FRAMEWORK

Previous research has frequently examined curricula, teaching practices and student experiences independently, with limited consideration of how sustainability competencies develop throughout education and influence graduates' professional readiness[2021].

To address these gaps, the wider doctoral research employs a qualitative multi-method case study approach incorporating cross-sectional and longitudinal components to investigate sustainability integration comprehensively[222324]. Combining curriculum analysis with qualitative perspectives from different stakeholders enables comparisons between educational intentions, teaching practices, student experiences and industry expectations[2526] Methodological triangulation supports research credibility by identifying consistencies and discrepancies across these sources[2724].

The present study forms the initial empirical phase of the wider research investigation, examining similarities and differences in sustainability understanding, educational experiences, teaching practices and professional expectations. Given its small, context-specific sample, the analysis prioritises qualitative interpretation rather than statistical generalisation[2228].

Research Aim / Research Question	Research Objective	Methodological Approach	Research Participants / Data Source
Overall Research Aim: To investigate how sustainability is articulated, experienced and embedded within Interior Design education in Cyprus, and to develop a Sustainability Assessment Matrix (SAM) that will inform a pedagogical framework for the systematic integration of sustainability as a core design competence.	Investigate sustainability integration across curriculum, pedagogy and educational experiences.	Qualitative multi-method case study incorporating cross-sectional and longitudinal components, document analysis, semi-structured interviews, cross-analysis and methodological triangulation.	Curriculum documentation, educators, students (Years 1–4), recent graduates (alumni), employers and Interior Design projects from two higher education institutions.
RQ1. How is sustainability articulated and embedded within Interior Design curricula in selected Cypriot institutions?	**Objective 1.** Examine how sustainability is articulated and positioned within Interior Design curriculum documentation.	Curriculum and document analysis of programme structures, learning outcomes, assessment criteria and studio projects.	Programme documentation, module descriptors, learning outcomes, project briefs and assessment criteria.
RQ2. How do Interior Design educators understand and approach the integration of sustainability within their teaching practices?	**Objective 2.** Explore educators' understandings of sustainability and approaches to its integration within teaching practice.	Semi-structured interviews exploring sustainability understanding, curriculum delivery, pedagogy and assessment.	Interior Design educators.
RQ3. How do Interior Design students and recent graduates understand, interpret and evaluate sustainability within and beyond their educational experience?	**Objective 3.** Investigate how students and recent graduates understand, apply and evaluate sustainability throughout their educational journey and preparedness for professional practice.	Semi-structured interviews, complemented by longitudinal tracking of a selected student cohort over four consecutive years to examine how sustainability understanding and application develop over time.	Students (Years 1–4), a selected longitudinal student cohort, and recent graduates (alumni).
RQ4. What tensions, gaps and alignments emerge between curriculum intentions, pedagogical approaches and student experiences, and how can these inform the development of a Sustainability Assessment Matrix (SAM) and a pedagogical framework for the systematic integration of sustainability within Interior Design education?	**Objective 4.** Identify tensions, gaps and alignments between curriculum intentions, pedagogical approaches, student experiences and professional expectations.	Cross-analysis and methodological triangulation of curriculum documentation and stakeholder interviews.	Curriculum documentation, educators, students (Years 1–4), recent graduates (alumni) and employers.
Research Outputs	**Objective 5.** Develop a Sustainability Assessment Matrix (SAM). **Objective 6.** Develop an evidence-informed pedagogical framework for the systematic integration of sustainability within Interior Design education.	The SAM will have two complementary applications: (1) a **Project Evaluation Tool** for assessing the integration of sustainability principles within Interior Design student projects, and (2) an **Evidence-Based Diagnostic Approach** that will inform the development of the pedagogical framework.	Findings from curriculum analysis, stakeholder interviews, longitudinal tracking and Interior Design projects.

Figure 1: Alignment of the wider study's research aim, questions and objectives with its methodological approach and data sources.

Case Study Context and Participant Selection

Interior Design education in Cyprus comprises relatively few academic programmes, generally characterised by small student cohorts. This paper examines Alexander College as the initial institutional case within a broader research investigation involving two higher education institutions in Larnaca: Alexander College and the American University of Cyprus. These institutions were selected to provide contrasting educational contexts for investigating sustainability across curricula, teaching approaches and student experiences. Alexander College has delivered Interior Design education since 1993, representing one of Cyprus's longest-established programmes, while the American University of Cyprus introduced its programme in 2022, offering a comparison with a more recently developed curriculum (Figure 2). Their differing institutional backgrounds and limited student populations support an in-depth qualitative case study approach, prioritising contextual understanding and participants' educational experiences over statistical generalisation[2426].

Institution	Interior Design Programme	Programme Duration	Approximate Total Interior Design Student Population	Approximate Number of Students by Year	Role within the Research Study
Alexander College	BDes (Bachelor of Design with specialisation in Interior Design)	Four years	Approximately 21 students	Year 1: 7 Year 2: 7 Year 3: 2 Year 4: 5	First institutional case study and focus of the present paper
American University of Cyprus	Bachelor of Interior Design	Four Years	Approximately 18 students	Year 1: N/A Year 2: N/A Year 3: N/A Year 4: N/A	Second institutional case study within the wider research study

Figure 2. Overview of the Interior Design programmes forming part of the broader research study.

Interview Protocol Development and Test-Bed Refinement

The semi-structured interview protocols were developed iteratively, drawing on the literature review, research aims, questions and qualitative case study methodology. The questions explored participants' sustainability understanding, educational experiences, teaching practices, design applications and professional expectations. Open-ended questions and follow-up prompts encouraged detailed reflections and practical examples while maintaining alignment with the research objectives[2930].

Before the main data collection, the interview protocols underwent test-bed refinement involving a fellow researcher from the University of Portsmouth, an Interior Design lecturer from the University of Nicosia in Cyprus and a professional industry practitioner. Their feedback informed improvements to question wording, sequencing and follow-up prompts, strengthening clarity and suitability across educational and professional contexts. This process supported the refinement of the interview protocols for the different stakeholder groups[2930].

Data Analysis

Interview data were analysed using Braun and Clarke's (2006) six-phase thematic analysis, involving familiarisation, initial coding, theme identification, review and refinement, theme definition and reporting.

Following transcription, interviews were reviewed repeatedly to identify recurring patterns in sustainability understanding, educational experiences, teaching practices and professional expectations. Reflective notes supported preliminary observations, while initial inductive codes were generated from participants' responses rather than predetermined analytical categories[3132].

The five interview domains guided data collection rather than functioning as predetermined coding categories. Initial inductive coding informed the development of five themes from the graduate interviews, which subsequently provided a starting point for analysing lecturer and practitioner accounts. These themes were reviewed and refined through comparisons across the three participant groups, identifying convergent and divergent perspectives concerning sustainability education and professional practice. Representative quotations were retained to illustrate the integrated themes and support their interpretation[313328].

DATA COLLECTION AND INTERVIEW PROCEDURES

The study involved twelve participants across three groups: five recent graduates of the four-year BDes Interior Design programme at Alexander College, representing the entire graduating cohort; two Interior Design lecturers, comprising the programme's complete teaching staff; and five professional practitioners from small Interior Design studios in Cyprus. Semi-structured interviews were used to investigate sustainability understanding, curriculum integration, teaching approaches, design application and professional expectations. The inclusion of these three groups enabled a comparative examination of sustainability education and its relationship with professional practice.

The researcher's position as a lecturer facilitated institutional access and participant recruitment. Participants were informed about the study's purpose, voluntary participation, confidentiality and withdrawal procedures. Written informed consent was obtained before each interview.

The semi-structured interview protocols were organised into five overarching domains: sustainability understanding, educational integration, design application, professional preparedness and future development (Table 1). These domains provided a common analytical foundation while allowing questions to be adapted to the experiences of graduates, lecturers and practitioners. Open-ended questions and follow-up prompts encouraged participants to elaborate on their experiences and perspectives[293033].

Interview Domain	Focus of Questions and Prompts	Methodological Purpose
1. Sustainability Understanding and Professional Background	**Graduates:** Definitions of sustainability, prior awareness and development of knowledge throughout the programme. **Lecturers:** Sustainability literacy, teaching experience, professional development and confidence. **Practitioners:** Professional background, sustainability understanding and experience within Interior Design practice.	To examine how sustainability is conceptualised across educational and professional contexts and identify similarities and differences in participants' knowledge and experience.
2. Sustainability Integration in Education and Practice	**Graduates:** Modules, studio projects, teaching approaches and consistency of sustainability learning across Years 1–4. **Lecturers:** Curriculum positioning, teaching strategies, learning outcomes and integration across modules. **Practitioners:** Sustainability considerations in professional projects, design processes and decision-making.	To investigate how sustainability is incorporated into curriculum delivery, educational experiences and professional practice, identifying areas of alignment and divergence.

3. Applying Sustainability and Evaluating Design Decisions	**Graduates:** Application of sustainable materials, environmental strategies, assessment tools and evidence-based design decisions. **Lecturers:** Sustainability teaching in studio projects, assessment criteria, feedback and student progression. **Practitioners:** Material selection, environmental performance, professional standards, technical evidence and project constraints.	To examine how sustainability knowledge is translated into practical design decisions and evaluated within educational and professional settings.
4. Graduate Preparedness and Industry Expectations	**Graduates:** Confidence, technical knowledge, professional readiness and perceived competency gaps. **Lecturers:** Student capabilities, progression, assessment and preparedness for employment. **Practitioners:** Graduate competencies, recruitment expectations, professional responsibilities and gaps between education and practice.	To compare perceptions of graduate preparedness and identify differences between educational outcomes and professional competency requirements.
5. Challenges, Curriculum Development and Future Directions	**Graduates:** Learning barriers, curriculum improvements and recommendations for stronger sustainability integration. **Lecturers:** Institutional support, curriculum limitations, teaching resources and future development. **Practitioners:** Industry challenges, Cyprus-specific conditions, educational collaboration and emerging sustainability requirements.	To identify shared challenges, opportunities and recommendations that may inform the development of the Sustainability Assessment Matrix (SAM) and an evidence-informed pedagogical framework.

Theme 1: Developing Sustainability Understanding Across Educational and Professional Contexts

All graduates (100%) recognised sustainability as important to Interior Design, although their understanding varied. Three (60%; Graduates A, C and E) primarily associated sustainability with material selection, recycling and resource conservation. Graduate A described it as “using sustainable materials that last in the long term,” while Graduate E emphasised “organic or natural materials.” Conversely, Graduates B and D (40%) demonstrated broader understandings incorporating environmental, social and economic considerations, Indoor Environmental Quality, renewable energy and long-term performance.

These broader perspectives aligned with Lecturer A’s description of sustainability as “a package, a whole set of principles,” and with Practitioners A and C (40%), who emphasised durability, reuse, environmental performance and occupant wellbeing. Practitioner A similarly highlighted design decisions that “respond responsibly to environmental, social and economic considerations throughout their lifecycle.” Lecturer B recognised sustainability beyond material selection but placed greater emphasis on materials, spatial considerations and lifecycle performance. In contrast, Practitioner B (20%) focused on “environmentally friendly materials, recycling, saving energy,” reflecting the

narrower interpretations of some graduates. Practitioners D and E (40%) acknowledged wider environmental responsibilities but prioritised practical and commercial considerations.

Theme 2: Sustainability Integration Throughout Interior Design Education and Professional Practice

Four graduates (80%) considered sustainability learning dependent on individual lecturers and studio projects rather than consistently integrated throughout the programme. Graduates A and D (40%) described limited integration during earlier years, identifying sustainability as "optional" or "sporadic." Graduate D considered Year Four the point when it became "a necessity," while Graduate B described its gradual development into "something that I automatically thought about." These experiences reflected contrasting lecturer perspectives: Lecturer A identified increasing sustainability emphasis across successive modules, whereas Lecturer B argued that sustainability "should be part of the culture of Interior Design projects" rather than confined to specific assignments.

Inconsistencies in teaching and guidance further influenced learning experiences. Graduate A reported insufficient academic support, while Graduates D and E identified differences between lecturers. Lecturer B reinforced these concerns, stating that "if the lecturer does not push, mention or have a requirement for the projects, nobody will care enough to mention sustainability."

Comparable limitations emerged in professional practice, where four practitioners (80%; B, C, D and E) reported no consistently applied sustainability process. Practitioner C acknowledged that "we don't have a formal sustainability checklist that we apply to every project," while Practitioners D and E described limited procedural integration. Practitioner B emphasised client requirements, budgets and deadlines. Conversely, Practitioner A (20%) advocated incorporating sustainability "from the briefing and concept stage," aligning with Lecturer B's emphasis on integrating sustainability from the beginning of the design process.

Theme 3: Applying Sustainability in Design Practice and Decision-Making

All graduates (100%) reported applying sustainability strategies in studio projects, although their influence on design decisions varied. Four (80%) identified Container Housing as particularly significant. Graduate A described it as "the first time I felt that sustainability became a central part of the design rather than simply being mentioned," while Graduate D valued its introduction of environmental principles and technical approaches. Graduate B also identified the Bus Station project, whereas Graduate C considered sustainability knowledge to have developed progressively.

Differences emerged in the breadth of application. Graduates B and D (40%) described integrating material performance, Indoor Environmental Quality, renewable energy, water harvesting and occupant wellbeing, whereas Graduates C and E (40%) emphasised recycling and material selection. Graduate C acknowledged that "if sustainability wasn't required, then it didn't really influence me," reflecting Lecturer B's concern that students sometimes approached sustainability as "just ticking a box." Conversely, Lecturer A identified progression "from theory to practice," supported by tutorials, material specifications and technical drawings.

Similar differences appeared in professional practice. Practitioner A (20%) described integrating environmental considerations throughout briefing, specification and technical development, reflecting the more comprehensive approaches reported by Graduates B and D. Practitioner C (20%) emphasised balancing "design quality, environmental impact, durability, cost, availability, client expectations and technical feasibility together." Conversely, Practitioners B, D and E (60%) prioritised commercial feasibility and project requirements, with sustainability receiving varying

attention according to practical constraints. These perspectives highlight the distinction between incorporating sustainability into design intentions and demonstrating its application through technically and commercially feasible decisions.

Theme 4: Graduate Preparedness and Industry Expectations

All graduates (100%) recognised sustainability as professionally relevant, although four (80%) expressed concerns about their preparedness, particularly technical knowledge and the ability to justify sustainability decisions. Graduate B highlighted the challenge of being able to "explain and justify" design choices, while Graduate C considered their knowledge introductory. Graduate E described LEED, BREEAM and VOC measurements as systems that "sound like nuclear physics. They have not been taught to us."

These concerns aligned with lecturers' assessments, although their interpretations differed. Lecturer A considered graduates capable of addressing elementary sustainability principles but argued that "real projects will help them move from the elementary level to the professional level." Lecturer B expressed stronger concerns about technical understanding and practical application, reflecting Practitioners A and C's (40%) emphasis on evidence-based environmental decisions, material evaluation and the ability to justify sustainability claims. Practitioner A argued that "design rationale is necessary, but increasingly it is not sufficient on its own," highlighting the importance of technical evidence.

Conversely, Practitioner B (20%) prioritised technical drawings, software proficiency and construction knowledge over specialised sustainability competence, stating, "I don't specifically expect sustainability knowledge when I employ a graduate." Practitioner D similarly emphasised commercial and technical responsibilities, while Practitioner E normally recruited designers with at least five years of experience and therefore did not directly assess recent graduates. These contrasting expectations indicate that professional readiness encompasses both sustainability knowledge and broader technical competencies, although their relative importance varies across practices.

Theme 5: Challenges, Curriculum Development and Future Directions

Three graduates (60%; B, D and E) identified institutional limitations involving resources, guidance and technical learning opportunities, while Graduate A separately highlighted insufficient academic support. Graduate D stated that "the university did not provide the necessary resources." All graduates (100%) recommended earlier and progressively structured sustainability education, with Graduate D advocating its inclusion as "a core component of the programme." These recommendations aligned with Lecturer B's argument that sustainability should be introduced "from Year 1," while Lecturer A emphasised "a permanent and continuous support basis," including staff development and professional engagement.

Practitioners similarly advocated stronger connections between education and realistic professional conditions. Practitioners A, C and D (60%) emphasised technical decision-making, material evaluation and feasibility, reflecting the graduates' demand for more practical learning opportunities. Practitioner C recommended, "Give them a budget. Give them products that are actually available. Ask them to compare alternatives and justify what they selected." Practitioner A supported industry-led projects, placements and workshops, while Practitioner D highlighted technical and commercial constraints. Practitioners B and E (40%) also recommended projects incorporating realistic budgets, locally available materials and technical requirements.

Across these perspectives, curriculum continuity, institutional support and practical application emerged as complementary priorities. Cyprus-specific constraints involving supplier availability, procurement costs and construction feasibility further highlighted the importance of preparing students to evaluate sustainability decisions within realistic professional conditions.

INTERVIEW INSIGHTS – COMPARISON & CONTRAST

Comparison across the three participant groups revealed both shared concerns and contrasting expectations regarding sustainability in Interior Design education and practice. Graduates, lecturers and practitioners recognised its importance, yet differed in how comprehensively they understood and applied sustainability principles. Graduates demonstrated varying levels of knowledge and confidence, while lecturers identified inconsistencies in curriculum integration and the translation of theoretical understanding into design decisions.

A significant alignment emerged between educational and professional experiences. Both lecturers and practitioners highlighted the limitations of treating sustainability as an additional consideration rather than integrating it throughout the design process. However, professional expectations differed: some practitioners prioritised evidence-based environmental decision-making, whereas others emphasised technical competence, budgets, client requirements and commercial feasibility.

These findings indicate a gap between sustainability awareness, educational application and professional expectations. Graduates advocated earlier and more structured learning, lecturers emphasised curriculum continuity and institutional support, and practitioners recommended realistic projects incorporating material availability, technical specifications and financial constraints. Collectively, these perspectives suggest the need for a more systematic, practice-informed pedagogical approach, providing an empirical foundation for the subsequent development of the curriculum framework.

CONCLUSION

This preliminary investigation supports the suitability of a qualitative multi-method case study approach for examining sustainability integration across educational and professional contexts. The comparative findings establish an initial empirical foundation for the wider doctoral research, highlighting the need for stronger alignment between curriculum delivery, sustainability competence and professional expectations.

Subsequent research will incorporate curriculum document analysis, cross-sectional investigation, longitudinal cohort tracking and a second institutional case study. Triangulating these sources will inform the development and subsequent validation of the Sustainability Assessment Matrix (SAM) and an evidence-informed pedagogical framework aimed at embedding sustainability as a core

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