

Awareness and Needs of Students in the Field of Sustainable Design

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Abstract: University educators in interior design have a pivotal role in shaping future professionals who are equipped to address pressing environmental challenges. As the discourse on climate change intensifies, it is imperative that interior design education aligns with the principles of sustainable development. The construction industry significantly impacts the environment, and interior design projects are no exception. To mitigate this, educators must instill in students a deep understanding of sustainable practices, including reuse, recycling, the adoption of eco-friendly and locally sourced materials, and the integration of energy-efficient technologies. By incorporating sustainable design courses into interior design education, universities can equip future professionals with the knowledge and skills needed to develop resource-efficient, climate-responsive, and ecologically responsible designs. This article will explore the importance of integrating sustainable design principles into interior design curricula through a comparative study conducted by Samarkand State Architecture and Construction University (Samarkand, Uzbekistan). By analyzing the survey results from this institution, the research aims to develop effective educational programs that equip students with the necessary knowledge and skills to address ecological challenges in Uzbekistan while fostering a new generation of environmentally conscious designers.

Keywords: interior design, sustainable development, recycled materials, energy-efficient technologies.

1. Introduction

Interior designers also play a significant role in the interior environments of homes, the workplace, and public buildings. During the past 25 years, designers have come to more fully appreciate the complexity of the profession and the far-reaching effects of their decisions. The natural and designed worlds are intimately intertwined in ways yet to be fully understood. The designers' choices have consequences on the health and well-being of existing and future generations, as well as the earth on which they work, reside, and play. This awareness is reiterated in the Native American proverb, "We don't inherit the Earth from our ancestors, we borrow it from our children." This perspective highlights the urgent need for green practices in design with the understanding that what interior designers create today will leave a lasting legacy on future generations. Together, these awarenesses focus on adopting green approaches in interior design to ensure a healthy and sustainable future for all. All materials and resources in a system contribute to a cyclical process of reuse and sustainability. In nature, the "waste" from one system becomes nourishment for another. Similarly, designs can be created with the intent to be dismantled and safely reintegrated into the environment as biological nutrients or repurposed as high-quality materials for new products, functioning as uncontaminated technical nutrients (McDonough 2002). Although the practice of C2C design has primarily been within business and industry, attention is now turning to education and the preparation of future designers to

practice ecological design. Design professionals making interior spaces that are less than healthy, physically or psychologically, are irresponsible at least and unethical or unlawful at worst. Knowingly specifying materials or finishes that off-gas toxic fumes has the potential to create a litigious situation. Instead, interior designers can become known as the design professionals who create ecologically sound, healthy interior environments (Cradle-to-Cradle Task Force, 2005, pp. 2–3). Understanding the situation of students' attitudes towards environmental issues will support the use of sustainable methods and products and facilitate the design of appropriate education (Ruff & Olson, 2009). As mentioned in Alansari, Wagner, and Amor (2015), the provision of sustainability knowledge in interior design allows better design practicality that could create a balance between human use of resources and nature's ability to replenish. By assessing interior design students' attitudes toward environmental sustainability, educators can develop targeted strategies that foster a deeper understanding of ecological principles, such as resource regeneration and circularity, while encouraging the adoption of sustainable methods and materials. However, to design effective educational approaches, it is essential to first understand students' current level of awareness and engagement with sustainability concepts.

2. Literature Review

2.1. Defining sustainable design

Sustainable development and sustainable design are interconnected, demanding a comprehensive and regenerative strategy that prioritizes ecological harmony, resource efficiency, and long-term adaptability.

The Brundtland Commission (1987) defines sustainable development as meeting present needs without compromising future generations' ability to meet theirs. This foundational idea is reflected in Kang and Guerin (2009), who describe sustainable design as an approach that integrates systems and materials to minimize negative environmental impacts while maximizing benefits across environmental, economic, and social systems throughout a project's life cycle.

Similarly, Van Der Ryn and Cowan (1996) emphasize that sustainable design minimizes environmental impact by using methods, products, and processes that respect natural life cycles, ensuring a collaborative interaction between people and the earth while conserving natural resources for both present and future generations. This aligns with Morelli's (2011) definition of environmental sustainability as a balance, resilience, and interconnectedness that enables society to meet its needs without exceeding ecosystems' regenerative capacities or reducing biodiversity.

2.2. Roles for interior designers

Moxon (2012) emphasizes the responsibility of designers in addressing environmental issues through their professional activities, urging emerging interior designers to reconsider their design approaches to effect positive environmental change. Similarly, Kang and Guerin (2009) stress that designers need to understand the specific characteristics of sustainability and sustainable design to apply them effectively.

McDonough (2003) highlights the significant role designers play in shaping the human environment, underscoring their influence in creating a more just, healthful, and sustainable world. However, Stieg (2008) notes that a lack of pro-sustainability attitudes among designers often stems from a lack of awareness regarding the potential negative impacts of their design decisions.

Elliott (2004) reinforces this idea by stating that designers must first develop an appreciation for nature before they can actively engage in conservation and protection efforts. Bonda (2007) expands on this responsibility, arguing that interior designers and architects bear a greater obligation than the average person due to the long-term effects of their design choices. In alignment with this perspective, Ashour (2020) asserts that the "designer responsible for the project" should anticipate not only the environmental impact of their designs but also their broader social and ecological consequences.

2.3. Sustainable design in education

Magdalena Celadyn (2020) highlights the need for revisions in the conventional interior architectural design curriculum to equip students with systematic knowledge, abilities, and skills necessary to create environmentally high-performing interior spaces. Similarly, Gould (2002) argues that schools of architecture, interior design, and engineering should update their mission statements, employ environmental professionals, integrate LEED standards, and engage in activism at various levels.

However, some believe that curriculum changes alone are insufficient. Bainbridge (2000) emphasizes that universities and professional organizations must also cultivate a culture of sustainability within the education system, particularly for those involved in land and building development. The United Nations (2004) supports this notion by affirming that education plays a critical role in promoting sustainable development and enhancing individuals' ability to address environmental challenges.

In parallel, Grazyna Pilatowicz (2015) notes that integrating sustainability into interior design reflects broader advancements in the field, shifting beyond operational and aesthetic concerns to prioritize occupant health, safety, and well-being. Likewise, Summers, Kruger, Childs, and Mant (2000) reinforce the idea that education for sustainability should instill the attitudes, values, and behaviors necessary for individuals to protect both local and global environments.

3. Methodology

In order to find out the level of students' awareness of sustainability in interior design education in Samarkand State Architecture and Construction University named after Mirza Ulugbek (Samarkand, Uzbekistan), a questionnaire survey was administered to 83 students in the Faculty of Architecture pursuing undergraduate courses in and interior design. The purpose of this research was to find out the students' knowledge, academic experience, and working experience regarding sustainable design. The findings are informative in relation to the existing knowledge gaps and call for integrating sustainability principles into interior design education.

4. Results and Discussions

This part presents the results based on the research, compiling the data gathered by surveying interior design students in Samarkand State Architecture and Construction University. The results indicate the awareness, comprehension, and practice of the principles of sustainable design by the students during their studies.

Awareness of Sustainable Design Principles

To measure students' familiarity with sustainable design principles, respondents were required to score their familiarity on a 5-point scale (1 = "I know nothing" and 5 = "I am highly knowledgeable"). 83 responses were collected. The results show that the majority of students have only a moderate level of awareness: 30.1% scored their familiarity as 3 out of 5, and 28.9% gave a score of 4, indicating some knowledge of the problem. Together, these two categories account for 59% of all responses. However, 14.5% stated they did not know anything at all (score 1), and 15.7% gave level 2 awareness, which is evidence of absence of basic knowledge in nearly one third of respondents. Only 10.8% of the respondents placed their knowledge at the highest rating (5 out of 5), indicating that highly educated students are still a minority.

These findings reflect the need for enhanced integration of sustainability topics into design education curricula, as there remains a high percentage of students who lack a good foundation in sustainable design principles.

Inclusion of Sustainable Design in the Curriculum

Participants were also asked if their design courses include study in sustainable design. Out of 82 students, 58.5% said "Yes," confirming the availability of sustainability-related content within their course studies. A striking 41.5%, however, responded with "No," indicating that nearly half

of the students surveyed are not being exposed to sustainable design as part of formal course studies. This discrepancy indicates the need for broader adoption of sustainability considerations in all design-related studies to ensure uniform awareness and competency development.

Importance of Sustainable Design in Interior Design Profession

When asked whether or not they feel the study of sustainable design is important in their area of employment, a sweeping 95.2% responded "Yes" while only 4.8% responded "No".

This high level of agreement reflects the overall perception of design students about the relevance of sustainability to their future professional work. The findings show that sustainability is not perceived as a marginal topic but as an important professional competence. These findings support the hypothesis of integrating material on sustainability into mainstream design courses.

Familiarity with Key Sustainability Concepts

To the question measuring familiarity with sustainable design principles—namely, material reuse, energy-efficient technology, and local production—58.5% of the respondents reported familiarity with these principles, while 41.5% said they were not familiar. This gap between perceived significance as being high and relatively lower conceptual consciousness suggests an educational deficit crisis. While students very much value sustainability, most may not have been sufficiently taught about its basic principles and practice. This finding substantiates the necessity of focus pedagogic strategies and overhauled curricula to eliminate the knowledge gap and facilitate sustainable design literacy cultivation.

Application of Sustainable Design in Course Projects

The survey further investigated whether students had applied sustainable design principles in their course projects. Responses indicated that 67.5% of students have used such principles in their projects at academic or personal levels, and merely 32.5% of them indicated they have not. This finding reveals an extremely good level of real application of sustainable design from students' perspectives. Ironically, the remaining third of students who haven't used such principles yet may feel compelled to quote gaps within curriculum subjects, absence of material, or perhaps no emphasis on sustainability within project briefs. These results indicate the need to further incorporate hands-on sustainable design practice into educational programs to meet this implementation gap.

Priorities in Sustainable Design

Students were asked to identify the most critical aspects of sustainable design. Majority with 61.4% citing the use of environmental materials as the most important factor, indicating strong environmental concern and necessity to use non-toxic, renewable, or recyclable material. 21.7% listed energy efficiency as most important, indicating concern to reduce energy use and operation carbon emissions at design. 16.9% of the students placed waste reduction as first priority, expressing lifecycle thinking and good material handling as essential. These are signs that curriculum planning in the future needs to emphasize material science, lifecycle thinking, and energy-conscience design practices.

To improve sustainability education within the interior design curriculum, students provided several recommendations. 57.8% of the students suggested introducing mandatory courses in sustainable design. This indicates a deficiency in formal education and a demand for systematic, theoretical basis in sustainability. Another 16.9% called for internships and field trips to companies involved in sustainable activities, an indication of the need for experiential and applied learning. Small groups of students proposed the inclusion of practical exercises and design assignments (13.3%) and more focus on regional environmental issues (12.0%). These results indicate the need for a balanced approach to learning using both theory learning and exposure to sustainability in design in practice.

Resources for Enhancing Sustainability Knowledge

Students also identified key resources that could enhance their understanding of sustainable design principles. Most of the respondents selected literature (61.4%), which reflects a strong desire to have access to written practical and theoretical materials in the field. Courses were selected by 33.7% of the respondents, which indicates that structured and systematic teaching is also highly valued. On the other hand, workshops (master-classes) were chosen by a mere 4.8% of respondents, reflecting a comparatively weaker preference for short duration or practice-oriented formats. The findings reflect the necessity to incorporate both scholarly literature and formal coursework in learning methods to assist the evolution of sustainability in design education.

Conclusion

This study examined the integration of sustainable design principles into interior design education based on students' perception, awareness, and implementation of sustainability principles. Results indicate that while students understand the importance of sustainable design, there exists a broad disconnect between theoretical knowledge and practical implementation. Some of the most important priorities suggested by the students are ecologically friendly materials, energy conservation, water usage, and reduced waste. Current curricula do not, however, adequately focus on sustainability, so there must be improvements made in the ways of special classes, experiential learning experience, and collaborations with industry partners. To bridge these gaps, colleges and universities may include formal education with a sustainable orientation, enable access to true case studies, and encourage participation in sustainability-directed projects and contests. In addition, greater liaison between academia and industry can even give students significant information on utilizing sustainable design into practical applications.

Subsequent research must examine the long-term impact of sustainability education on professional practice and determine strategies for further enhancing student engagement in environmentally sustainable design. Through the strengthening of sustainability education, institutions can better equip future interior designers to address global environmental challenges and contribute to the creation of sustainable built environments.

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