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Integrating sustainability in interior design studio

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Abstract

Teaching methods on concept of sustainability are frequently searched in the interior architecture education. The purpose of this study is to propose a model for integrating sustainability in interior design studio. In this context, the first part of the research defines relationship between sustainability and interior architecture and determines sustainable interior design principles. In the second part, an interior design studio model is proposed and principles determined in the first part are used in this model as a design check list. The final part of the research analyzes a case study where this model is implemented and discusses the conclusions.

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1. Introduction

Interior architects are responsible for the interiors of the constructed environment which consumes energy and resources and damages the biodiversity and produces wastes. Within the past 25 years the designers come to understand the complexities of their role and environmental consequences of their decisions. These decisions affect the health of current and future generations and the planet on which they live and work (Jones, 2008). In this context, the instructors of interior architecture started to study on how to educate the interior architects of the future that sustainability will not be an option but will be a standard practice. Many interior architecture schools have already included some theoretical sustainable design courses in their curriculum. However, theoretical courses alone are not enough to teach how to apply sustainable design in professional life. In this frame, this

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research aims to propose a model for integrating sustainability in interior design studio which is an initial-experience for real life situations and it is also the core of interior architecture education. In this context, the first part of the research defines relationship between sustainability and interior architecture and determines sustainable interior design principles entitled such as energy, material, water and health. In the second part, an interior design studio model is proposed and the principles determined in the first part and requiring features for sustainable interiors according to these principles are used in this model as a design check list. In the process of developing the model, environmental performance analysis models of BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design) have been examined as preliminary data. Implementation of the new model has been performed in an interior design studio case study and the outcomes are discussed in the final part of the study.

2. Sustainable interior design principles

The sustainable interior design is defined as design and practices that significantly reduce or eliminate the negative impact of interiors on the environment. In other words, it is an approach that recognizes environmental impacts of the entire life cycle of interiors. In this research, 4 sustainable interior design principles are determined and design measures for sustainable interiors evaluated with the help of these principles are summarized below.

2.1. Energy

Energy conservation is the leading principle of sustainable interior design. Two main measures in energy conservation are “design and selection of energy-efficient equipment” and “use of renewable energy sources”. Energy conservation measures for reducing energy used for lighting are increase the natural lighting with sky-gardens, skylights or atriums; design interiors at optimum depth; use light shelves, energy-efficient lighting equipment and lighting control systems (Cole, 1996). Benefit from natural ventilation by using adjustable windows is the most important measure for reducing energy used for ventilation. Likewise, energy spent on cooling and heating can be saved by passive energy conservation measures like prevention of heat losses, using high insulation glass systems and solar shadings on facades and selecting systems with economizer cycles (free cooling, variable air flow systems, waste heat recovery system, etc.). Use of renewable energy sources (sun, wind, geothermal energy, etc.) which can be used partially instead of completely for facilitating all energy needs of buildings is very important in terms of practicing the sustainability concept (Morhayim, 2003).

2.2. Material

Material conservation principle concerns 3 main design measures: “flexible design”, “selecting eco-friendly materials/equipments” and “reducing waste”. The first step for material conservation is furniture and interior equipment design that have flexible, modular, demountable and expandable features. Modular walls, floorings and ceilings systems and using movable dividers and furniture systems are elements that earn interiors a sense of flexibility (Lehman-Smith, 2002). Similarly, important amounts of material can be saved by selecting materials such as long-lasting, durable, requiring low-maintenance, obtained from local resources. Measures which significantly reduce waste amount include manufacturing indoor elements at standard sizes, selecting recyclable material like wood, natural stones, steel, and aluminium or re-utilizing windows, door frames and steel beams from demolition sites plays a big part in reducing the amount of waste (Elias-Özkan, 2003).

2.3. Water

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