



Alexandria University
Faculty of Fine Arts
Décor Department – Interior Design



The Role of Modern Interior Architecture of Light Construction Units in Solving Social and Environmental Problems

Presented by :

Rana Hisham Mohamed Kamal El-Din El-Sayed.

Demonstrator in décor department – Faculty of Arts and Design –
Pharos University in Alexandria .

Supervisor

Dr.May Abd El-Hamid Abd El-Malek

Lecturer of Interior Architecture
Décor Department
Faculty of Fine Arts
Alexandria University

Prof.Dina Mohamed Mandour

Professor of Interior Architecture
Décor Department
Vice Dean for Community
Development & Environment Affairs
Faculty of Fine Arts
Alexandria University

٢٠١٦

Abstract

The Role of Modern Interior Architecture of Light Construction Units in Solving Social and Environmental Problems

The thesis comprises four chapters with respect to its content. The first chapter "lightweight structures –its historical approach, classifications, and design's criteria-"

This chapter has been oriented towards studying the lightweight structures with regard to its historical background, its classifications and design criteria, through studying diverse structural systems (bearing walls, skeleton walls, space frames).

In addition to studying the historical approach for the lightweight structures, and its development according to the design and manufacturing evolution

Moreover, a detailed study has been conducted for the lightweight structures' types according to a set of standards and principles.

And thus the structures were classified according to the structure's mobile capacities, its relation with the existing buildings whether as an extension or addition or a separated structure.

Also the structures have been classified according to the utilized structural system. And finally the design criteria has been addressed with respect to classifications, in addition to a number of illustrated examples for each type, and its contribution in overcoming environmental and social problems.

The second chapter "The lightweight structures' role in overcoming economic and social problems"

This chapter addresses a set of economic and social problems -directly linked with the interior design standards and principles- that can be overcome through utilizing the lightweight structures (containers), for instance, slum housing, and the architectural and design problems facing these spaces.

And the design problems concerning the governmental schools, and limited interior spaces in classes, in addition to slum markets and its drawbacks within its architectural territory, particularly territories with historical backgrounds

Furthermore, studying the methods and techniques utilized in constructing mobile hospitals and fixed ones, whether permanent or temporary in order to overcome the problems facing the governmental hospitals, and areas suffering from a lack in therapeutic units.

Abstract

The Role of Modern Interior Architecture of Light Construction Units in Solving Social and Environmental Problems

As a result, an analytical study has been conducted for each problem, and studying the methods utilized in their solving through lightweight structures, in addition to some examples illustrating the design framework.

The third chapter "Environmental problems and the methods used to overcome them through utilizing lightweight structures"

In this chapter, a set of environmental problems have been studied, and how we can overcome them through utilizing lightweight structures. For instance, visual and environmental pollution. In addition to the lightweight structures' role in achieving sustainability as a common trend for preserving the surrounding environment

In addition to the methods utilized in preserving the historical identity within cultural territories, using added units that reflect the heritage value through utilizing diverse additive strategies for historical territories

The forth chapter "CAD/CAM computer aided design and computer aided manufacturing techniques and their role in designing lightweight structures"

This chapter addresses flexibility and its influence on spaces, and how we can achieve it corresponding to its function, through flexibility in interior spaces and furniture; for example, the compact, multifunctional, transformative, and folded.

In addition to studying the CAD/CAM (computer aided design and computer aided manufacturing) impact on the design and fabrication of lightweight structures and its role in saving time and effort during Implementation and installation.

Also studying the trends and diverse methods used in digital fabrication, and the design phases for each trend

As the required objective is to develop solutions for a set of environmental and social problems through the utilization of lightweight structures..

In addition to studying the innovation's influence for digital fabrication's technology through introducing a number of lightweight structures with various types. As the digital fabrication techniques and computational design have helped in pushing the boundaries within the design process which have finally led into flexibility in manufacturing with diverse materials, in addition to increasing the proposed solutions.

Abstract

The Role of Modern Interior Architecture of Light Construction Units in Solving Social and Environmental Problems

And finally a set of Humanitarian standards and principles have been concluded, which should be put into consideration when designing temporary or permanent lightweight structures in order to overcome the previously mentioned problems, and conclude the convenient solutions to accommodate the proposed extensible and transformative furniture units through utilizing contemporary material and digital fabrication techniques.