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# Controlling natural lighting and methods of attracting it within residential spaces

**Mona Sayed Othman Badr Othman**
Lecturer of Interior Design and Furniture Department at Ahram Canadian University
mona83art@gmail.com

## *Abstract:*

Our bodies are governed by circadian rhythms that play an important role in many physiological processes, and which depend on signals from the natural environment, especially during exposure to sunlight. Natural light is vital in regulating these Rhythms that control various body processes to maintain good psychological and physical balance. But modern lifestyles can disrupt these important signals, with consequent consequences for sleep and a person's physical and mental health. Hence the role of the interior designer in promoting health and well-being through good design of natural lighting within residential spaces. While artificial lighting is undoubtedly important and often necessary, there are potential negative impacts it can have, especially with regard to sleep patterns, mental health, potential health risks from constant exposure to artificial lighting, and increased environmental concerns such as increased energy consumption. And environmental pollution, made the designer strive to achieve a balance between natural and artificial lighting, by determining and knowing the location of the sun and predicting the facades of the space at the beginning of the architectural design, while exploiting various technological methods and means to attract natural lighting within the space, and regular distribution of natural lighting, which would increase the amount Natural lighting within the space and eliminating artificial lighting for most parts of the day, in order to achieve sustainable practices and reduce energy consumption. Artificial lighting has become an integral part of our modern society, providing illumination when natural light is unavailable or insufficient. However, it is important to acknowledge the negative aspects associated with them, as they tend to produce light in a smaller range of wavelengths compared to sunlight, which contains light across the visible and invisible spectrum. They also have significant environmental and economic consequences that cannot be ignored, such as energy consumption. And carbon emissions, as artificial lighting represents about 15% of global electricity consumption, and the energy requirements needed to maintain industrial lights contribute to creating a large carbon footprint, and these environmental impacts extend beyond just carbon emissions, as they pose risks to human health and the ecosystem. Moreover, the economic impact of artificial lighting should not be overlooked, as it translates into high energy consumption Directly increases electricity bills. Therefore, in this research, the designer was keen to try to make the most of natural lighting through various technological treatments and means in order to increase the bringing of natural light into residential spaces efficiently, and thus reduce lighting requirements Industrial and energy saving, promoting well-being and contributing to creating a positive mood.

**Significance:** Providing natural lighting at the appropriate level within residential spaces would- : -Regulating the rhythms that control various body processes to maintain good psychological and physical balance, promote well-being and contribute to creating a positive mood -.Reducing he damage caused by total reliance on artificial lighting. -Reducing artificial lighting requirements leads to energy savings and sustainability.

**Objective:** Applying various treatments and technological means to attract the required natural lighting within residential spaces to achieve sustainable practices and reduce energy consumption.

**research Methodology**

The research follows the descriptive analytical method by examining the problem, defining its features, formulating hypotheses and deducing their implications.

**Results:** The designer analyzed, studied and applied each source of natural lighting to one of the residential spaces using the computer programs Sun Path Diagram- DIALux Evo in order to ensure that the research goal was achieved. The process of controlling natural lighting in space required the designer to take many procedures and rely on many design and performance evaluation methods, including traditional design techniques, computer simulations, testing architectural models in environments, measuring and improving performance. - The designer represented the results he reached by controlling the internal and external interior design elements in one of the residential spaces using the DIALux Evo program, and comparing those results before and after applying the research results, in order to ensure that the application of various treatments and technological means attracted natural lighting. What is required within residential spaces would increase the rates of natural lighting within those spaces, thus achieving sustainable practices and reducing energy consumption. The results of the light intensity of each space appeared before and after applying the research results, to confirm the research hypothesis.

## *Keywords:*

 

Attracting natural lighting, sustainable practices, reducing energy consumption

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