

Contrasting Affective Responses: Daylighting vs. Electric Lighting

Johan Svensson*

Department of Electronics Engineering, University of Cape Coast, Cape Coast, Ghana

Introduction

In the realm of architectural and interior design, the choice between daylighting and electric lighting is not merely about illumination but also significantly impacts human emotions and well-being. Daylighting, derived from natural sunlight, and electric lighting, generated through artificial sources, evoke contrasting affective responses in individuals. This article delves into the psychological and physiological impacts of both lighting types, exploring their effects on mood, productivity, health, and overall satisfaction [1]. Lighting is not just about visibility; it profoundly influences our emotions, perceptions, and well-being. In the realm of architectural and interior design, the choice between daylighting and electric lighting holds significant implications for human experiences within built environments. Daylighting, derived from natural sunlight, and electric lighting, generated through artificial sources, evoke contrasting affective responses that shape how we feel, behave, and interact with our surroundings. This article delves into the psychological and physiological impacts of daylighting and electric lighting, exploring how these lighting types influence mood, productivity, health, and overall satisfaction. By understanding the nuanced interplay between natural and artificial light, designers, architects, and individuals can make informed decisions to create spaces that promote well-being and enhance quality of life [2].

Description

Daylighting, often referred to as the "gold standard" of lighting, harnesses the full spectrum of natural sunlight. Its inherent variability throughout the day, from the soft hues of dawn to the warm glow of midday and the gentle twilight, creates a dynamic environment that deeply influences human emotions. Exposure to natural light triggers the release of serotonin, the neurotransmitter associated with mood regulation. Consequently, individuals often experience heightened positivity and reduced feelings of anxiety and depression in naturally lit spaces. Daylighting has been linked to improved cognitive performance, including enhanced concentration, better memory retention, and faster information processing. This cognitive boost is particularly notable in educational and work environments. The presence of daylight fosters a stronger connection with nature, a concept known as biophilia. This connection can evoke feelings of tranquility, creativity, and overall well-being [3].

Sunlight is a primary source of vitamin D synthesis in the human body. Sufficient exposure to daylight helps maintain healthy bones, supports immune function, and contributes to overall physical wellness. Natural light plays a crucial role in regulating the circadian rhythm, the body's internal clock. Proper synchronization of this rhythm promotes better sleep quality, hormone balance,

*Address for Correspondence: Johan Svensson, Department of Electronics Engineering, University of Cape Coast, Cape Coast, Ghana; E-mail: johan@gmail.com

Copyright: © 2024 Svensson J. This is an open-access article distributed under the terms of the creative commons attribution license which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Received: 02 February, 2024, Manuscript No. jees-24-129600; Editor Assigned: 05 February, 2024, PreQC No. P-129600; Reviewed: 16 February, 2024, QC No. Q-129600; Revised: 21 February, 2024, Manuscript No. R-129600; Published: 28 February, 2024, DOI: 10.37421/2332-0796.2024.13.101

and overall metabolic health. Electric lighting, while offering consistency and controllability, lacks the nuanced qualities of natural light. Its impact on affective responses varies based on factors such as color temperature, intensity, and timing of exposure. Different lighting temperatures, such as cool white (daylight-mimicking) and warm white (evening-mimicking), can influence alertness levels. Cooler tones tend to promote alertness and productivity, while warmer tones create a more relaxing ambiance conducive to winding down [4].

The Color Rendering Index (CRI) of electric lighting affects how colors appear and, subsequently, emotional responses. High CRI bulbs render colors more accurately, contributing to a vibrant and emotionally engaging environment. Artificial lighting, especially from screens and LED sources, emits blue light that can disrupt sleep patterns and cause digital eye strain. Proper management of blue light exposure, particularly in the evening, is crucial for maintaining optimal circadian rhythm. Electric lighting technologies have evolved to prioritize energy efficiency, with LED lighting leading the way. This not only reduces environmental impact but also provides cost-effective solutions for sustainable illumination. In office settings, the incorporation of daylighting has shown to boost employee morale, satisfaction, and productivity. Access to natural light has also been linked to reduced absenteeism and improved overall job satisfaction. Electric lighting complements daylighting in workplaces by providing task-specific illumination and maintaining consistent light levels during periods of low natural light. Smart lighting systems that adjust color temperature and intensity throughout the day can mimic natural lighting patterns, supporting employee well-being [5].

In homes, the balance between daylighting and electric lighting is crucial for creating functional and emotionally appealing environments. Design considerations such as window placement, light diffusion, and shading play a significant role in maximizing natural light while optimizing artificial lighting for specific activities and moods. For relaxation areas like bedrooms and living rooms, warmer and dimmable electric lighting can enhance coziness and promote relaxation. In contrast, task-oriented spaces such as kitchens and home offices benefit from brighter, cooler lighting to aid focus and functionality. Daylighting in healthcare settings has been associated with faster recovery times, reduced stress among patients, and improved staff well-being. Incorporating elements like skylights and large windows not only enhances aesthetics but also contributes to a healing environment.

Conclusion

The debate between daylighting and electric lighting transcends mere functionality, delving into the realm of human emotions, health, and productivity. While daylighting offers a holistic and biophilic approach to lighting design, electric lighting provides flexibility, efficiency, and customization options. The ideal lighting strategy often involves a harmonious blend of both daylighting and electric lighting, tailored to specific contexts and user needs. Designers and architects play a pivotal role in creating environments that optimize natural light while leveraging technology for enhanced comfort, functionality, and well-being. By understanding the contrasting affective responses of daylighting and electric lighting, we can embark on a journey towards illuminating spaces that not only look beautiful but also nurture the human spirit.

Acknowledgement

None.

Conflict of Interest

None.

References

1. Alimoglu, Mustafa Kemal and Levent Donmez. "Daylight exposure and the other predictors of burnout among nurses in a University Hospital." *Int J Nursing Stud* 42 (2005): 549-555.
2. Almeida, Alissandra Pessoa, Vitor Sousa and Cristina Matos Silva. "Methodology for estimating energy and water consumption patterns in university buildings: Case study, Federal University of Roraima (UFRR)." *Heliyon* 7 (2021).
3. Smolders, Karin CHJ, Yvonne AW De Kort and P. J. M. Cluitmans. "A higher illuminance induces alertness even during office hours: Findings on subjective

measures, task performance and heart rate measures." *Physiol Behav* 107 (2012): 7-16.

4. Figueiro, M. G., J. A. Brons, Barbara Plitnick and Bryan Donlan, et al. "Measuring circadian light and its impact on adolescents." *Light Res Technol* 43 (2011): 201-215.
5. Melrose, Sherri. "Seasonal affective disorder: An overview of assessment and treatment approaches." *Depression Res Treatment* (2015).

How to cite this article: Svensson, Johan. "Contrasting Affective Responses: Daylighting vs. Electric Lighting." *J Electr Electron Syst* 13 (2024): 101.