

The Role of Interior Design in Promoting Sustainability and Combating Climate Change through Smart Applications

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Abstract:

The world is facing increasing environmental challenges due to climate change and urban expansion, necessitating the adoption of sustainable solutions in various fields, including interior design. This research explores interior design's role in promoting sustainability and combating climate change through innovative technology applications. It examines how Artificial Intelligence (AI) and the Internet of Things (IoT) can enhance energy efficiency and resource management within interior spaces, reducing carbon emissions and improving indoor environmental quality.

The study highlights key principles of sustainable interior design, such as using eco-friendly materials, optimizing natural lighting and ventilation, and integrating smart energy management systems. It also discusses the numerous benefits of smart interior design applications, including improved indoor air quality, reduced energy waste, and enhanced thermal comfort for occupants. Despite these advantages, implementing smart applications in interior design faces several challenges, such as high costs, a lack of awareness about the importance of smart technology in sustainability, and the need for supporting infrastructure. To address these challenges, the research proposes several recommendations, including strengthening sustainability regulations, providing financial incentives for adopting smart solutions, and increasing awareness and training for designers and engineers.

The research concludes that integrating smart applications into interior design is an effective solution for achieving sustainability. It helps reduce environmental impact, improves quality of life, and strengthens the role of interior design in addressing climate change and building a sustainable future.

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References:

- 1- Intergovernmental Panel on Climate Change (IPCC). (2022). Climate Change 2022: Mitigation of Climate Change. Cambridge University Press.
- 2- United Nations Environment Programme (UNEP). (2021). 2021 Global Status Report for Buildings and Construction.
- 3- Kwok, A. G., & Grondzik, W. T. (2018). The Green Studio Handbook: Environmental Strategies for Schematic Design. 3rd ed. Routledge.
- 4- Asdrubali, F., D'Alessandro, F., & Schiavoni, S. (2015). A review of unconventional sustainable building insulation materials. Sustainable Materials and Technologies,
- 5- Cabeza, L. F., Rincón, L., Vilariño, V., Pérez, G., & Castell, A. (2014). Life cycle assessment (LCA) and life cycle energy analysis (LCEA) of buildings and the building sector: A review. Renewable and Sustainable Energy Reviews, 29, 394–416.
- 6- Tam, V. W., Tam, C. M., Zeng, S. X., & Chan, K. K. (2006). Environmental performance measurement indicators in construction. Building and Environment, 41(2), 164-173.
- 7- <https://sustainablebuildingledell.blogspot.com/>
- 8- www.architecturecourses.org
- 9- <https://www.academia.edu>
- 10- United Nations. (1987). Report of the World Commission on Environment and Development: Our Common Future. Oxford University Press.

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- 11- Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone Publishing.
 - 12- Abdullah, A., Ahmad, S. S., & Ismail, F. (2020). Sustainable interior design: A review of current practices. *Journal of Design and Built Environment*, 20(1), 15-25.
 - 13- Sidewalk Labs LLC (February 2, 2018). "Public Engagement Plan" (PDF). Archived from the original (PDF) on July 25, 2018. Retrieved November 28, 2018.
 - 14- "Opinion | The fight against Google's smart city". *Washington Post*. Archived from the original on November 13, 2018. Retrieved November 28, 2018.
 - 15- <https://theconversation.com/sidewalk-labs-smart-city-plans-for-toronto-are-dead-whats-next-138175>
 - 16- <http://meghasmart.com/>

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