

“Design studio indoor environmet quality standards and it`s impact on energy consumption ”

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Abstract

The quality of the internal environment IEQ is an important topic that many researchers have addressed because of its significant impact on the health of the occupants of a vacuum, as it affects the level of performance, productivity and the health of users psychologically and organically, such as eye, nose and throat irritation, as well as energy consumption in buildings. The quality of the indoor environment is concerned with achieving IAQ indoor air quality, thermal comfort, visual comfort and acoustic comfort, as well as the internal conditions that provide comfort for the users of the space while respecting the parameters of the external environment, ventilation factors, natural lighting, wind, energy, and the use of environmentally friendly materials and materials. Achieving comfort for users of space, and interior design is one of the disciplines most closely related to the impact of the environment and human life. We see the increasing global trend towards the need to reach sustainability in all areas and at all levels, and take advantage of environmental treatments that provide comfort within the spaces and reduce harm to humans and the environment.

The aim of this research is to promote the idea of considiration about the relation between the occupant behavior inside design studio and it`s impact on the energy consumption in the building , in order to identify methods of acheiving more effective IEQ parameters .

Keywords:

Indoor Environment Quality- Human comfort system - Indoor Air Quality –Sick building syndrom -Thermal comfort – Acoustic comfort – Visual comfort - HVAC - Human needs- Energy Consumption - ventilation .

Research problem

- The poor quality of the internal environment inside the halls of design in educational buildings as a result of the increase in the number of students
- Failure to observe the internal environment quality standards and the sustainability of the design halls, especially in light of the climate change phenomenon

Research Importance

The research helps to achieve the quality of the internal environment for the design halls, raise the efficiency of using space and save energy, in light of achieving the principles of sustainable

development while respecting the activities followed inside the design halls and providing the highest level of internal comfort for the users of the space.

Research Aims

Monitoring and analyzing the internal environment quality standards for the design halls according to the determinants of environmental sustainability and by identifying the internal activities and space required for each user and knowing the pattern of using the design halls to provide the greatest amount of interior comfort and achieve the highest energy efficiency.

Research questions

What are the internal environment quality standards for the design halls?

- What is the relationship between the design elements of the halls and the level of interior comfort for the users of the vacuum?
- How can the usage pattern of the design rooms be traced in order to improve the quality of the interior environment and save energy?

Research Methodology

An analytical theoretical approach: by describing and analyzing sustainable design criteria and determinants of internal environmental quality

Realizing the importance of the use of renewable energy and determining the pattern of the users of the vacuum to determine the optimal use of resources.

Results

- Energy efficiency is achieved through the application of an integrated strategy that seeks to rationalize energy consumption and use efficiency in construction and operation processes, by tracking the pattern of consumption as well as employing renewable energy sources.
- Taking into account the needs and style of work of students and users of the space when designing their own space and giving them a space of control to form its elements instead of imposing fixed elements in the space that are difficult to change by changing its needs.
- The importance of taking advantage of the parametric trend and the overall design concept in the field of interior design, taking into account compatibility with the surrounding environment in terms of local materials, as well as taking into account the direction and exterior shape of the building

Recommendations

- It is recommended that designers and researchers take into account the psychological and physiological needs of students in particular and those who use the space in general, that the interior design work is compatible with the lifestyle and behavior of the group inside the space, taking into account their habits and inherited culture, and this effect is not limited to the behavior of the individual, but may extend To the behavior of the group, which affects the inherited values and norms.
- Higher education educational institutions must pay attention to activating the foundations of sustainability and achieving the principles of quality for the internal environment by adopting effective approaches, as neglecting one of these elements may lead to the hindrance and failure of the entire system.

- Activating the performance of energy codes in buildings to improve and monitor energy performance by the National Center for Housing Research and document energy rationalization and to address the need for educational void in ways that can solve some problems and improve performance and function, which leads to raising the efficiency of the educational process.

References:

1. Dixon, Lindsay. “THE FLORIDA STATE UNIVERSITY COLLEGE OF VISUAL ARTS , THEATRE AND DANCE THE INTERIOR DESIGN STUDIO BUILT ENVIRONMENT : EXPLORING INTERSECTIONS OF ENERGY CONSERVATION , STUDENT SATISFACTION , AND OCCUPANCY PATTERNS By LINDSAY DIXON A Thesis Submitted to Th.” the florida state uiniversity, 2012.
2. “THE AMERICAN UNIVERSITY IN CAIRO SCHOOL OF SCIENCES AND ENGINEERING ‘ Life Cycle Cost and Assessment Model for Systems and Sources of Lighting ’ Master of Science in Construction Engineering,” 2013.
3. albaridiu , eabdallah bin eabdalrhmn. altanmiat almustadamatu: muqadimat mutakamilat limafahim alaistidamat watatbiqatiha , mae altarkiz ealaa alealam alearabii. aleubaykan lilnashr , 2015.
4. eadil yis, jiurj basilaa, murad eabd alqadir w 'akhrwn. dalil alттаqat w aleamarat. jihaz takhtit alттаqat , 1998.
5. Pheasant, Stephen. Body Space Anthropometry ,Ergonomics and the Design Work. Vol. 27, 1996. <https://doi.org/10.1038/sc.1989.63>.
6. Wahab, sabah Abdul. Sick Building Syndrom. Vol. 53. springer-verlag berlin heidberg, 2019.
7. Trigwell, Keith, Michael Prosser, Keith Trigwell, and Michael Prosser. Exploring Teaching and Learning in Higher Education. Exploring University Teaching and Learning, 2020. https://doi.org/10.1007/978-3-030-50830-2_1.
8. Al garabawy, islam“The Role of Artificial Lighting in Portraying Functional and Aesthetic Values of Interior Spaces (A Case Study: Commercial Centers in Gaza City)Master`s thesis, Faculty of Engineering, Islamic University in Algeria.” 2019.
9. Belok, Fatima, Mostafa Rabea, Mohamad Hanafdi, an Ibtihal Y El-bastawissi. “Achieving Visual Comfort in University Educational Spaces : A Design Framework for Responsive Kinetic Skin.” Architecture and Planning Journal (APJ) 25, no. 1 (2020).
10. Imam, Mohamed Hassan, Ahmed Mohamed, Abdel Razek, and Anas Mohammad. “Ways to Improve Classroom Internal Environment In View of Sustainable Design Concept” 10, no. 4 (2020).
11. www.eaaa.gov.eg.
12. <https://www.usgbc.org/>
13. <https://fs.lindsly.edu/projects/leed-certifications>