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A Reading Light That Can Adjust Indoor Light Intensity According to the Activity and Person for Improve Indoor Visual Comfort of Occupants and Tested using Post-occupancy Evaluation Techniques for Sri Lankan Population

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Abstract : Most people nowadays spend their time indoor environment. Because of that, a quality indoor environment needs for them. This study was conducted to identify how to improve indoor visual comfort using a personalized light system. Light intensity, light color, glare, and contrast are the main facts that affect visual comfort. The light intensity which needs to perform a task is changed according to the task. Using necessary light intensity and we can improve the visual comfort of occupants. The hue can affect the emotions of occupants. The preferred light colors and intensity change according to the occupant's age and gender. The research was conducted to identify is there any relationship between personalization and visual comfort. To validate this designed an Internet of Things-based reading light. This light can work according to the standard light levels and personalized light levels. It also can measure the current light intensity of the environment and maintain continuous light levels according to the task. The test was conducted by using 25 undergraduates, and 5school students, and 5 adults. The feedbacks are gathered using Post-occupancy evaluation (POE) techniques. Feedbacks are gathered in three steps, It was done without any light control, with standard light level, and with personalized light level Users had to spend 10 minutes under each condition. After finishing each step, collected their feedbacks. According to the result gathered, 94% of participants rated a personalized light system as comfort for them. The feedbacks show stay under continuous light level help to keep their concentrate. Future research can be conducted on how the color of indoor light can affect for indoor visual comfort of occupants using a personalized light system. Further proposed IoT based can improve to change the light colors according to the user's preference.

Keywords : indoor environment quality, internet of things based light system, post occupancy evaluation, visual comfort
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