

Alertness, visual comfort, subjective preference and task performance assessment under three different light's colour temperature among office workers

ABSTRACT

Different CCT provided by different lighting are important in affecting human beings psychologically and physiologically, as well as visual and non-visual processes. This study aim in finding out the effects of warm white (WW) light (CCT=2700K), cool white (CW) light (CCT=4000K) and artificial Daylight (CCT=6200K) on workers alertness, visual comfort level, preferences and task performance. A repeated measure experimental study was conducted among 46 office workers under controlled environment. Alertness levels were measured by Karolinska Sleepiness Scale. Office Lighting Survey was used to evaluate visual comfort and preference. Typing speed and accuracy also were tested. Paired Sample T-Test was used and the results showed that there was significant reduction of subjective alertness level in WW light ($p=0.001$). In term of typing performances, subjects performed significantly better in term of typing speed under CW light and Daylight than WW light. Less typing errors were made under DL, followed by CW light. Meanwhile WW light lead to high typing errors. Besides, CW light is the most preferred whereas subjects feel most comfortable under Daylight. Subjects indicated that they can perform longer works in this coloured-lit environment. The CW light and DL light were more beneficial for office setting for computer-based task.

Keyword: Lighting; Correlated colour temperatures; Visual comfort; Alertness level