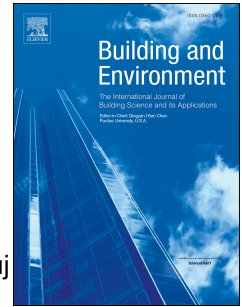


# Accepted Manuscript

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## Status of thermal comfort in naturally ventilated classrooms during the summer season in the composite climate of India

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### Abstract:

Considering the importance of comfort requirements in classrooms and the fast-growing number of institutes for higher education in India, classroom thermal comfort needs serious attention. This study assesses occupants' thermal comfort conditions in classrooms under naturally ventilation mode during the summer season in a composite climate of India. Thirty classrooms in three university buildings with a total of 900 students participated in field study: 729 males, 171 females. The transverse type survey was carried out in the month of April, May and June 2015. Thermal environment variables were recorded according to Class-II protocol of ASHRAE Standard 55. Students thermal sensations, preferences, and acceptability for prevailing indoor conditions were analyzed statistically. Mean indoor air temperature, relative humidity and air velocity observed during field study are 30.4 °C, 39.4 %, and 0.59m/s respectively. About 80 % subject's responses were found in comfort band ( $\pm 1$  thermal sensations) during a field study in naturally ventilated classrooms. The mean comfort temperature, as predicted by Griffiths' method was 29.8°C (CI 95% and Std. Dev 2.84). Adaptive models thus obtained using comfort temperature in present study show good agreement with the predictions from similar adaptive models. Principal adaptive opportunities available to students were clothing level change, opening windows and regulating ceiling fans.

**Keywords:** Classrooms, Thermal comfort, Thermal preference, Naturally ventilated, Thermal sensation

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