

A study of The Thermal Comfort Perception on Campus Outdoor Urban Spaces- Special Reference to Hot Arid Climatic Zones

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Abstract

Outdoor spaces are considered important elements in cities as they provide a space for activities which enhance the livability and vitality of the city (Liang Chen, Edward NG, 2012). Well-designed outdoor spaces encourage more people to use them which will be beneficial from different aspects; environmental, economic, social and physical aspects.

Urban outdoor spaces are considered significant elements in university campuses; which makes thermal comfort in these spaces very important to be achieved. Outdoor microclimate is an important issue affecting the quality of outdoor spaces. Outdoor spaces have very rich microclimatic characteristics that affect users' thermal comfort and thermal comfort perception. Users' needs to reach thermal comfort in outdoor spaces vary according to gender, age and other factors. This paper studies users' approach of the thermal environment in outdoor spaces in university campuses.

The case study has chosen, ten different spots in the British University in Egypt where the measurements and survey were conducted. The purpose was to measure the level of users' perception and preference of the surrounding thermal environment. The devices used for the measurements were Anemometer, Humidity meter, Thermometer, Globe thermometer and CM6B Pyranometer. The measurements were taken over one year, from May 2014 till April 2015. The measurements were taken on intervals as indicated, morning from 9am to 11 pm, midday from 12 pm to 2 pm and afternoon from 3 pm to 4 pm, the measurement time was chosen through the academic year and the occupation hours of the campus. The data from the measurements and surveys were gathered in order to determine the neutral physiologically equivalent temperature (PET) which was determined by analyzing the relationship between thermal sensation votes (TSV) and PET. The findings showed that respondents in BUE campus were sensitive to the variations of the PET. It is due to, every 3.9 C of PET, means that thermal sensations have changed one unit in BUE campus, Cairo, Egypt.

Keywords

Thermal Comfort; University Campus; British University in Egypt; Hot arid Zones.