

A Post-Occupancy Evaluation of the Impact of Indoor Environmental Quality on Health and Well-Being in Office Buildings

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Abstract : Post-occupancy evaluations (POEs) have been recognized for documenting occupant well-being and responses to indoor environmental quality (IEQ) factors such as thermal, lighting, and acoustic conditions. Sustainable Post-Occupancy evaluation survey (SPOES) developed by an interdisciplinary team at a Midwest University provides an evidence-based quantitative analysis of occupants' satisfaction in office, classroom, and residential spaces to help direct attention to successful areas and areas that need improvement in buildings. SPOES is a self-administered and Internet-based questionnaire completed by building occupants. In this study, employees in three different office buildings rated their satisfaction on a Likert-type scale about 12 IEQ criteria including thermal condition, indoor air quality, acoustic quality, daylighting, electric lighting, privacy, view conditions, furnishings, appearance, cleaning and maintenance, vibration and movement, and technology. Employees rated their level of satisfaction on a Likert-type scale from 1 (very dissatisfied) to 7 (very satisfied). They also rate the influence of their physical environment on their perception of their work performance and the impact of their primary workspaces on their health on a scale from 1 (hinders) to 7 (enhances). Building A is a three-story building that includes private and group offices, classrooms, and conference rooms and amounted to 55,000 square-feet for primary workplace (N=75). Building B, a six-story building, consisted of private offices, shared enclosed office, workstations, and open desk areas for employees and amounted to 14,193 square-feet (N=75). Building C is a three-story 56,000 square-foot building that included classrooms, therapy rooms, an outdoor playground, gym, restrooms, and training rooms for clinicians (N=76). The results indicated that 10 IEQs for Building A except acoustic quality and privacy showed statistically significant correlations on the impact of the primary workspace on health. In Building B, 11 IEQs except technology showed statistically significant correlations on the impact of the primary workspace on health. Building C had statistically significant correlations between all 12 IEQ and the employees' perception of the impact of their primary workspace on their health in two-tailed correlations ($P \leq 0.05$). Out of 33 statistically significant correlations, 25 correlations (76%) showed at least moderate relationship ($r \geq 0.35$). For the three buildings, daylighting, furnishings, and indoor air quality IEQs ranked highest on the impact on health. IEQs about vibration and movement, view condition, and electric lighting ranked second, followed by IEQs about cleaning and maintenance and appearance. These results imply that 12 IEQs developed in SPOES are highly related to employees' perception of how their primary workplaces impact their health. The IEQs in this study offer an opportunity for improving occupants' well-being and the built environment.

Keywords : post-occupancy evaluation, built environment, sustainability, well-being, indoor air quality

Conference Title : ICSBSE 2017 : International Conference on Sustainable Buildings, Sustainability and Environment

Conference Location : New York, United States

Conference Dates : June 04-05, 2017