Measures for Daylight Quality and Classroom Design: Impacts on Visual Comfort and Performance in Hot Climates

Authors : Ahmed A Freewan

Abstract : The current research explored the quality of daylight and classroom visual environments and their impact on human performance and visual comfort in hot climates like Jordan. The research used multiple methods, including real experiments, simulation, focus groups and questionnaires. Therefore, seven different designs and visual environments have been implemented in south-facing classrooms with high WWR in recently constructed modern schools in Jordan. These visual environments have been created by applying various innovative shading systems in the seven classrooms to enable real interaction with the users of these spaces: students and teachers. The main aims of the research were to introduce distinct measures for daylight quality and to expand the scope of daylight studies in schools by connecting directly with students and teachers through focus groups or questionnaires. The main findings of this research showed the importance of studying uniformity not only across the entire classroom but also in different zones in relation to the windows and the front wall where the whiteboard is located, and the teacher stands. Moreover, it has been found that uniformity analysis in classrooms extends beyond just the horizontal plane, encompassing the relationship with the illuminance level on the front wall as well. Study the fenestration design impact on critical function requirements in addition to studying the dynamic of daylight over time, especially glare, uniformity and veiling reflection.

Keywords : daylight, uniformity, WWR, innovative shading systems

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