

عنوان مقاله:

The Effect of Architectural Design Parameters on IEQ in Accomplishing School Smartification

محل انتشار:

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خلاصه مقاله:

Purpose: The study aims to study the effect of architectural design parameters on IEQ in accomplishing school smartification. **Method:** The research was conducted in school buildings located in Tabriz, Iran. The indicators chosen to represent IEQ are the adaptive PMV model used for thermal comfort, imageless daylight glare probability used for visual comfort, and CO₂ concentration used for IAQ assessment. The simulation technique was used to collect data for a generative parametric school model. The method of data analysis includes a multivariate linear regression algorithm, t-test statistic, and one-way analysis of variance. The studied variables are dimensions of classrooms with the fixed area, Percentage of window area on a wall, window height, Shading, and protrusions in plan design. The stepwise method for multivariate linear regression in SPSS was used to assess the vital IEQ indicator in terms of thermal and visual comfort and CO₂ concentration. **Findings:** The study found that among studied indicators, the south facade window ratio significantly correlates with IEQ. The other CRI parameters are the north window ratio and north window height. the findings revealed that to increase the IEQ in schools, facade design is more critical than the plan. The higher the window surface on the south, north, west, and east faces, the greater the thermal comfort and glare probability is. **Conclusion:** However, increasing the height of the windows can reduce glare and also increase thermal comfort. Thermal comfort improves as the length of the southern classrooms rises. On the bright side, it has no noticeable glare effect.

کلمات کلیدی:

IEQ, Thermal Comfort, visual comfort, IAQ, Optimization

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