INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
PhD-17 SHORT ABSTRACT OF THESIS

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Thesis Title	:	Supporting Design for Indoor Environment Quality (IEQ) & Occupant Comfort in Warm-humid Climate: Development of an IEQ Assessment Model for naturally ventilated school classrooms
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SHORT ABSTRACT

The Indoor Environment Quality (IEQ) of schools is of utmost priority, as young minds of the future citizens are molded in their classrooms. Overall, the importance of IEQ has increased in recent times since people are spending more and more time indoors in urban areas, and children in their formative years spend up to 6-8 hours a day in classrooms. A rigorous design research methodology was followed, and a systematic literature review highlighted the lack of IEQ parameters' comfort model and weighting scheme for NV school classrooms in a warm-humid climate. Empirical studies were conducted in Guwahati, a metropolitan city in North-East India. Both quantitative and qualitative data were collected on-site through instrument measurements and questionnaire surveys, respectively, for the major four IEQ parameters. A total of 45 spot measurements and 1087 questionnaire responses were correlated to derive the respective IEQ parameters contextually-appropriate models and weighting scheme. Upon comparison with Building codes and literature, significant differences were observed in the recommended and existing limits. Overall, it was ascertained that thermal discomfort was the predominant cause for poor IEQ in NV school classrooms in a warm-humid climate. Therefore, further building simulation studies were conducted to test the effectiveness of commonly used passive cooling strategies (PCs) in this context, to examine whether thermal comfort could indeed be achieved throughout the year or not. It was found that conventional PCs alone cannot achieve thermal comfort throughout the year, but with the appropriate combination of advanced PCs, it can be achieved.