Evaluation of estimation models for acoustic reverberation time in educational and office environments

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Abstract

Noise pollution is considered as one of the most annoying factors in educational and office environments. In these environments where learning processes and intellectual activities are ongoing, an effective acoustic design is necessary. The aim of this paper is to assess the reverberation time as one of the important indicators in describing the acoustic characteristics of rooms. In this study, the reverberation time was measured in accordance with ISO 3382-2: 2008. This indicator was calculated based on experimental models for number of classrooms and offices. The calculated values were compared to that of measured corresponding ones. The mean values of reverberation times measured in classroom and office rooms were 0.99 and 0.58 seconds, respectively. In 36% of the classrooms, the amount of reverberation time was higher than the recommended amount. But, the amount of reverberation time measured in all office rooms was less than the recommended amount. The mean of all the reverberation times calculated by the models were greater than the amounts of measured reverberation time. The results also showed that the theoretical models for predicting reverberation time were not valid for the understudy places with the mean absorption coefficients of less than 0.1.

Keywords: Reverberation time, Noise pollution, Classroom, Office room.

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