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**Comparisons of predicted and measured values of speech, noise,
reverberation and early reflections in optimized classrooms**

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Twelve newly renovated classrooms have been studied to determine the accuracy of prediction software used to guide architects, acousticians and interior designers. Several variations in renovation techniques based on traditional precepts were compared. After the renovations were complete, measurements and recordings were made of speech, noise and reverberation when the rooms were both occupied and non-occupied by students. A systematic map of the results was compiled, which when presented on a seat by seat basis, defined values of merit for the presumed optimizations and were compared to the predicted values. The two principle indices chosen as targets were increases in total speech level and decreases in total noise level (including late reverberation). When referred to these targets, several novel strategies proved to offer higher value/cost ratios while a few traditional strategies proved to be deficient and in some cases detrimental to at least one of the principle indices. Emerging from this study is what appears to be evidence for two points: 1) that some common acoustic criteria are inadequate for classrooms and 2) there are several strategies that might offer significant advantages over some of the traditional guidelines for acoustic treatments for learning spaces.