

# Does classroom indoor environmental quality affect teaching and learning?

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A new study published in *Indoor Air* indicates that indoor environmental quality can affect short-term students' academic performance, with a preference for a relatively cool, bright, and quiet environment and in ambient air with low carbon dioxide concentrations. Credit: Dr. Brink

What impact does a classroom's indoor environment have on teaching, learning, and students' academic achievement in colleges and universities? This is the question researchers set out to answer in their analysis of all relevant published studies.

In the analysis published in *Indoor Air*, the team looked at [indoor air](#), thermal, acoustic, and lighting conditions. The collected evidence from 21 studies showed that the indoor environmental quality can contribute to the quality of learning. Sufficient evidence confirmed that poor indoor air, thermal, acoustic, and [lighting conditions](#) negatively influence the quality of learning due to discomfort and impaired mental and physical health of students. On the other hand, optimal conditions can create an environment in which students feel more alert and pay more attention.

Study results also indicated that indoor environmental quality can affect short-term students' academic performance, with a preference for a relatively cool, bright, and quiet environment and in ambient air with low carbon dioxide concentrations.

The influence of all parameters on the quality of teaching and on students' long-term [academic performance](#) could not be determined, however.

"Several studies showed that there is not a single optimal indoor environmental condition for students in higher education classrooms. Conditions in which students perform at their best are task-dependent. Therefore, classrooms should provide multiple indoor environmental conditions, in order to facilitate educational processes optimally," said lead author Henk W. Brink, Ph.D., MSc, of the Hanze University of Applied Sciences, in the Netherlands.

**More information:** H.W. Brink et al, Classrooms' indoor

environmental conditions affecting the academic achievement of students and teachers in higher education: a systematic literature review, *Indoor Air* (2020). [DOI: 10.1111/ina.12745](https://doi.org/10.1111/ina.12745)

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