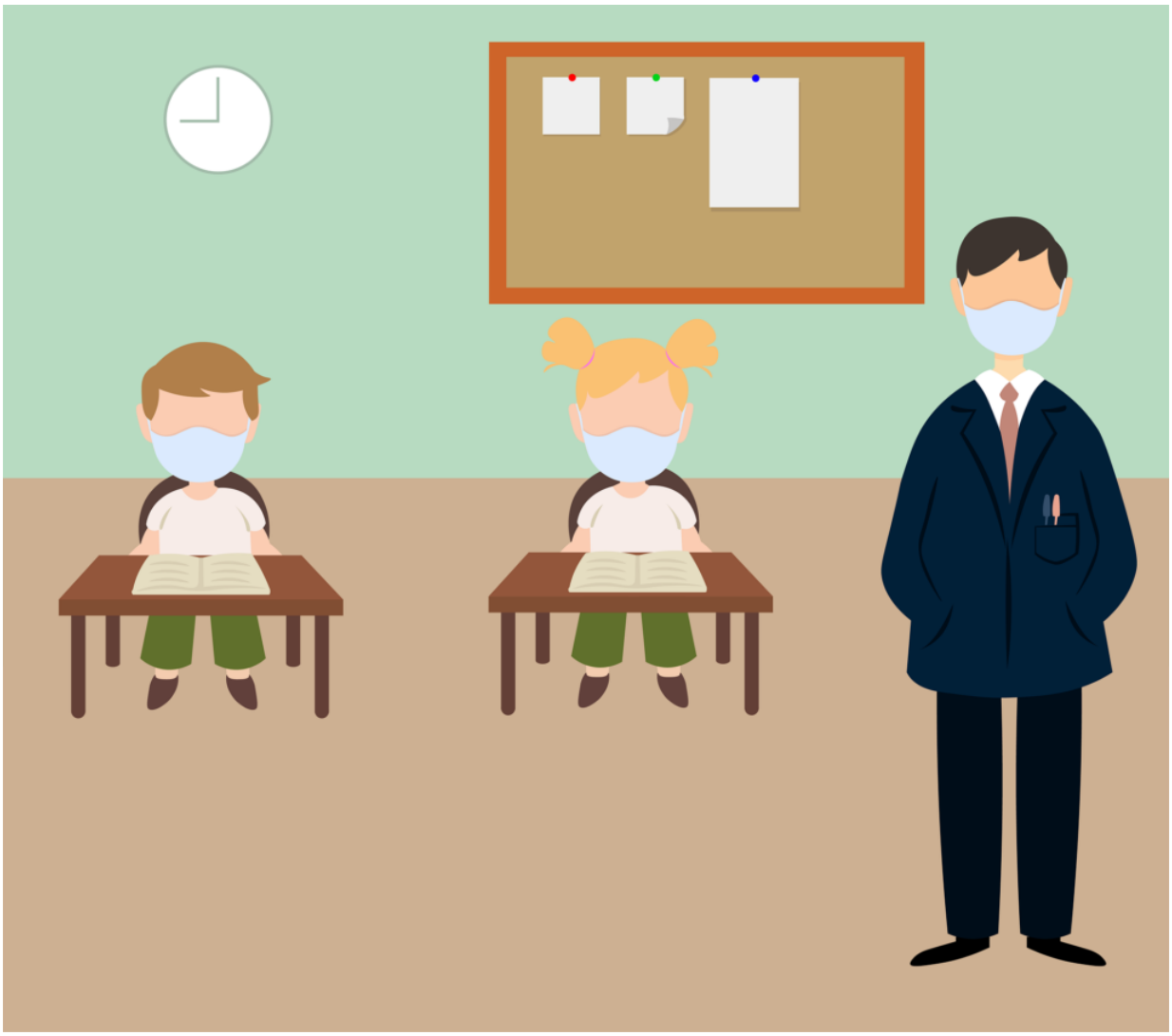
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Non-auditory Effects of Noise in the Classroom: Students

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Editor's Note: This article is a continuation from the previous column in issue #4 of CanadianAudiologist.ca, but this time around, concentrating on the non-auditory effects of noise in the classroom for students, rather than for teachers.



In the June issue, I talked about non-auditory effects of noise on teachers, specifically on teacher

vocal health and absenteeism. There is no question that students are also impacted by high external and internal noise levels. The topic was first raised in the 1950s and 60s, and research has continued to demonstrate the same adverse effects of noise on academic performance; in fact, there is so much research on the adverse effects of noise on students that I gave up trying to cite it all. Arline Bronzaft's fascinating work in the 1970s and 1980s comparing the academic performance of students on two different sides of the same school (one side with high environmental noise levels and one without) could not have been clearer (Bronzaft & McCarthy, 1975); in fact, a follow-up study in which noise reduction strategies were applied outside (to the rail track) and inside, equalized the reading scores on the two sides of the school (Bronzaft, 1981). There is comprehensive research literature on the effects of noise on speech perception for a variety of student groups which has not changed over the years (e.g., younger children, English Language Learners, students with mild or unilateral hearing loss, students with auditory processing disorders and other learning challenges) (Crandell & Smaldino, 1996; Klatte et al., 2013; Neuman et al., 2010; Nober, 1973; Ziegler et al., 2009). Students themselves understand that noise is a problem. Connolly et al. (2015) surveyed 11-16-year-old students on their perceptions of their classrooms' acoustical conditions, and the results aligned perfectly with the research on speech perception in noise. Students with mild hearing loss, English Language learners, and learning challenges reported being significantly more affected by poor classroom acoustics than their peers, indicating that students can reliably evaluate and report on difficulty listening in poor acoustical conditions. Internal and external noise has been shown to have an impact on a wide variety of student issues - stress levels (Evans et al., 2001), reports of annoyance (van Kempen et al., 2010); incidence of student behaviour problems (Lim et al., 2018) and possibly mental health, although the research in this area is mixed (Crombie et al., 2011; Haines et al., 2001; Park et al., 2017; Stansfeld et al., 2009).

The research on sound field or Classroom Audio Distribution Systems (CADS) clearly shows that speech understanding and academic performance are improved with their use. Audiologists, speech-language pathologists, teachers, and students understand that classroom noise is a problem. Professional associations (Speech-Language and Audiology Canada, the American Academy of Audiology, the Elementary Teachers Federation of Ontario, the Acoustical Society of America, ASHA) have published position statements advocating for better acoustical design and implementation of sound field systems universally in classrooms and professional and consumer group organizations such as the Classroom Acoustics Coalition, Quiet Communities Inc., the School Noise Action Group are also advocating for change. So why is noise still a problem? I can clearly recall sitting in a staff room at a completely open concept school, listening to teachers discuss their plans to request transfers to different schools specifically because of the noise levels in the school and their envy of those who had managed to escape teaching there. This is the same school where I repeatedly asked the Plant Department to conduct some sound level measurements, hoping they might help partner in advocating for change. Someone finally did and told me they didn't see a problem. It turned out that the individual had done the measurements on a professional development day when there were no students in the school and no classes going on because, in their words, "it's easier to do the measurements when no kids are running around." We know the problem and the strategies to address it; we don't particularly need more research on this. However, how do we convince administrators, Ministries of Education, and governments that this is a big enough problem to spend money on to fix? Email me if you know the answer.

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