

# Masked education: Which face coverings are best for student comprehension?

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With the ubiquity of masks due to the coronavirus pandemic, understanding speech has become difficult. Pasquale Bottalico has been studying the effects of masks on communication and he will discuss his findings at the 179th ASA Meeting. Credit: Bottalico

With the ubiquity of masks due to the coronavirus pandemic, understanding speech has become difficult. This especially applies to speech in classroom settings, where the presence of a mask and the

acoustics of the room have an impact on students' comprehension.

Pasquale Bottalico, at the University of Illinois at Urbana-Champaign, has been studying the effects of masks on communication. He will discuss his findings on the best way to overcome hurdles in classroom auditory perception caused by facial coverings at the 179th Meeting of the Acoustical Society of America, which will be held virtually Dec. 7-10. The talk, "Speech intelligibility in auralized classrooms when the talker is wearing a [face mask](#)," will be presented on Wednesday, Dec. 9, as part of a session on classroom acoustics.

"Fabrics are often used for sound absorption due to their porous structure. A porous material absorbs sound energy as it dampens the oscillation of the air particles through friction," Bottalico said. "As a consequence, face masks act as a low-pass filter that attenuates speech intensity, mainly at mid-to-[high frequencies](#) that are fundamental for speech comprehension."

According to Bottalico, the [frequency range](#) most important for speech intelligibility falls within the range face masks affect the most.

In a comparison of three types of masks—a three-layer fabric mask, a [surgical mask](#), and an N95 mask—in two different [classroom settings](#), he found the fabric masks to be the most unfavorable option for listener comprehension and strongly suggests instructors use surgical or N95 masks.

"Because of the problems that COVID-19 is forcing us to face, the significance of this study consists in giving recommendation on the best type of masks to wear while teaching to minimize their [negative effect](#) on speech intelligibility," said Bottalico. "The use of surgical and N95 masks can minimize negative effects on speech intelligibility and the students' listening effort while protecting instructors and students alike."

**More information:** [acousticalsociety.org/technical-program/](https://acousticalsociety.org/technical-program/)

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