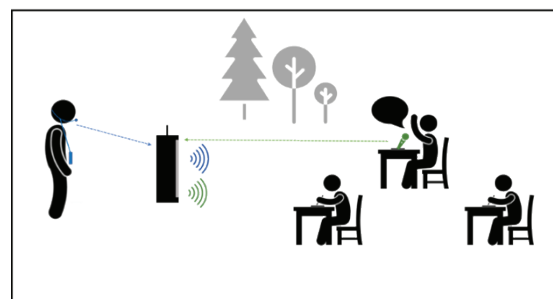
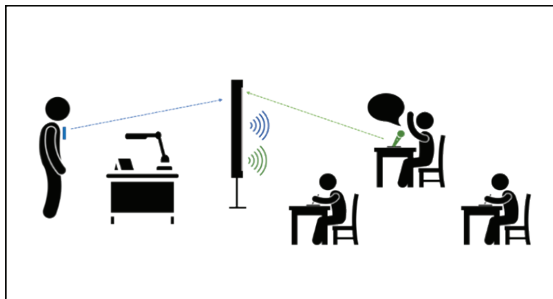


The Covid-19 pandemic has resulted in requirements for physical distancing and the use of face coverings for in-person learning. These requirements reduce communication function for all students. In addition, face coverings have the potential to increase teacher vocal strain as a result of talking louder to compensate for the coverings and distancing. Students with reduced hearing typically use remote microphone technology coupled to their personal hearing devices to improve auditory access to instruction. A similar system (known as a classroom audio distribution system or CADS) that delivers the teacher's voice to a speaker is recommended to support typically hearing students now facing reduced auditory access imposed by distance and face coverings<sup>1</sup>.

- Research has demonstrated that use of face coverings reduces the clarity of the speech signal.<sup>1,2,3,4</sup> Access to clear speech, including soft high frequency consonants (such as “P”, “SH”, “F” and “S”), is critical for children’s early language and literacy development and overall academic achievement.
- Basic speech acoustics show the greater the distance between the speaker and the listener, the message becomes more challenging for individuals to hear and comprehend. When background noise is introduced spoken communication becomes even more challenging for both the listener and the speaker. Younger children, English language learners, and students with hearing, language, or learning concerns are placed at an even greater disadvantage.
- Most of a student’s school day, up to 56%, is spent engaged in listening activities.<sup>5</sup> The purpose of a classroom audio distribution system (CADS) is to evenly distribute spoken communications and curricular content throughout the learning space or classroom. The use of CADS improves the overall signal to noise ratio; thus, providing the learners with enhanced speech recognition and, therefore, a greater opportunity to learn.
- Classrooms with multiple hard surfaces often cause “reverberation” which smears speech sounds together making it difficult to understand. In some situations, the poor acoustics may be exacerbated by CADS<sup>6</sup>. Educational audiologists employed by, or contracted with school systems, have the expertise and equipment to measure reverberation and assure the classroom will benefit from CADS. The CADS manufacturer should be able to assist schools with measurement; or assist the school in connecting with an audiologist to complete measurements.

## How CADS Work:

- 1) The teacher wears a wireless microphone called the transmitter. A separate pass around microphone is shared by the students. Special COVID safety precautions will need to be instituted unless students are using face coverings.
- 2) As illustrated in the figures below, the sound signal is sent from the transmitter directly to loudspeakers within the learning space, evenly distributing sound around the classroom. Battery-operated CADS are particularly effective for outdoor spaces to mitigate background noise and distance.



<sup>1</sup>Note: CADS are not appropriate for most students who are deaf or hard of hearing who require remote microphone personal hearing assistive technology. In these situations, CADS must be selected that are compatible with these students' devices.

## Benefits of CADS: 7, 8, 9, 10

- Reduce vocal strain and fatigue of the teacher
- Reduce auditory fatigue and improve attention of the learner
- Improve auditory access to instruction for ALL learners (need to consider compatibility with specific hearing assistive technology used by students who are deaf or hard of hearing)
- Reduce classroom stress and behavior problems
- Improve classroom participation, interaction, and learning
- Video: Demonstrating Listening Benefit Provided by CADS <https://www.youtube.com/watch?v=Uf310KaAYS0>

**Funding for CADS:** Coronavirus Aid, Relief and Economic Security (CARES) funds may be used for purchasing CADS; see your school audiologist or hearing specialist or contact EAA for recommendations.

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