Improving Classroom Acoustics

**CEU TEST QUESTIONS**
Select the best answer for each question. Use the answer sheet to record your responses.

**Article 1. Background Noise Levels and Reverberation Times in Unoccupied Classrooms: Predictions and Measurements**

1. The longer the reverberation time, the greater the negative effect on:
   - A. noise
   - B. signal-to-noise (SNR) ratio
   - C. speech intelligibility
   - D. classroom acoustics

2. As the distance between the signal and listener increases, the:
   - A. intensity of the speech signal decreases and the effective signal to noise ratio is reduced
   - B. intensity of the speech signal decreases
   - C. effective signal-to-noise ratio is reduced
   - D. intensity of the speech signal increases

3. Reduced signal-to-noise ratio results in:
   - A. reduced understanding and learning
   - B. reduced verbalizations
   - C. increased understanding and learning
   - D. increased understanding for children with hearing loss

4. In this study, classrooms with the longest reverberation times were those with the:
   - A. smallest volumes
   - B. smallest signal-to-noise ratios
   - C. largest volumes
   - D. largest signal-to-noise ratios

5. The largest challenge facing schools in the future will be:
   - A. achieving quiet HVAC systems
   - B. installing carpet
   - C. placement of absorbent paneling
   - D. installing carpet and placement of absorbent paneling
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6. Who is most negatively affected by noise levels and reverberation times in the classroom?
   A. teachers
   B. students with normal hearing
   C. students and teachers with hearing, language, or learning deficits
   D. administrators

7. For optimal auditory comprehension, students with normal hearing require a:
   A. +5 dB signal-to-noise ratio
   B. +6 dB signal-to-noise ratio
   C. +10 dB signal-to-noise ratio
   D. +7 dB signal-to-noise ratio

8. Students who are listening and learning in a non-native language require more favorable SNRs than children learning in their first language.
   A. true
   B. false

9. Reverberation time (RT) in unoccupied classrooms have been shown to range from 0.4 – 1.2 seconds. The implication of these findings is:
   A. RT longer than .5 seconds degrade speech recognition in most listeners
   B. RT has an insignificant effect on speech recognition
   C. Research indicates that RT does not affect the speech signal until they become longer than 1.9 seconds.
   D. RT is only a concern in classrooms with students who have hearing loss

Article 3. ASHA Guidelines for Addressing Acoustics in Educational Settings

10. Based on room size, ANSI 2002 recommends that background noise level not exceed:
    A. 55 dBA
    B. 20 dBHL
    C. 55 dBHL
    D. 35 dBA
11. Based on room size, ANSI (2002) recommends that reverberation time should not exceed:
   A. 0.6 – 0.7 seconds  
   B. 0.7 – 0.8 seconds  
   C. 0.3 – 0.5 seconds  
   D. 0.6 – 0.8 seconds

12. Based on room size, ANSI (2002) recommends a signal-to-noise ratio of:
   A. +10 dB  
   B. +15 dB  
   C. +17 dB  
   D. +20 dB

13. The role of the audiologist in improving classroom acoustics does not include:
   A. classroom acoustic survey  
   B. educating  
   C. selection of acoustic modification materials  
   D. comparison to established standards

14. In order to provide a link between acoustic conditions and actual performance of students in a classroom, appropriate behavioral performance measurements include:
   A. audiometric behavioral test results  
   B. inventory reports (e.g., SIFTER)  
   C. speech recognition results (e.g., WIPI)  
   D. inventory reports and speech recognition results

15. The best way to minimize sound from standalone units is to build a closet around them:
   A. true  
   B. false
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16. Guidelines and requirements for classroom construction and facility requirements are a:
   - A. federal issue
   - B. local district issue
   - C. state issue
   - D. state and federal issue

17. The Americans with Disabilities Act (ADA) does not necessarily require facilities (where services are provided) to accommodate the special needs of students.
   - A. true
   - B. false

18. Children with mild hearing loss are more at risk for psychological problems and poor academic success than their normal hearing peers.
   - A. true
   - B. false

19. Windows and highly reflective surfaces and can be acoustically treated by adding:
   - A. draperies
   - B. a specialized tint
   - C. polish
   - D. wax

20. Banners and plants suspended from the ceiling can contribute to reduction of noise and reverberation in a classroom.
   - A. true
   - B. false
21. Research has shown that sound field amplification systems in the classroom provide:

A. improvements in academic achievement, speech recognition and listening skills of students
B. significant improvements in students’ IQs
C. off-task behaviors and distractions to students with attention deficit disorder
D. a stigma for students with mild hearing loss and/or auditory processing disorders