**SPEECH AUDIBILITY AUDIOGRAM**

**FOR CLASSROOM LISTENING**

**Student Grade ­ School Date**

250 500 1000 2000 4000 8000 Hz

Loudness in dB HL

0

10

15

20

25

30

35

40

45

50

|  |  |  |  |
| --- | --- | --- | --- |
| **Soft speech**  **(35 dB HL)** | | | **Teacher voice**  **(50 dB HL)** |
| Typical hearing children: Word recognition at 35 dB HL in quiet = 93-98%; in noise at 0 S/N = 86-94%.  Age 3-17 years Word recognition at 50 dB HL in quiet = 92-100%; in noise at +5 S/N = 90-97% ; and 0 S/N = 89-96%. | | | |
| 95% audibility of speech energy perceived with hearing levels between 0 – 10 dB HL  **64% at +10 S/N, 34% at 0 S/N**15 | | | 0-20 dB HL should perceive 98% of speech sounds at a comfortable level **in a quiet classroom and acceptable reverberation levels** (35 dBA or less background noise in an unoccupied classroom & reverberation no greater than 0.9 sec4)  **84% at +10 S/N, 48% at 0 S/N** |
| 75% audibility of speech energy perceived with hearing levels between 10 – 15 dB HL  **44% at +10 S/N, 24% at 0 S/N** | | |
| 60% audibility of speech energy perceived with hearing levels between 15 – 20 dB HL  **29% at +10 S/N, 9% at 0 S/N** | | |
| 40% audibility of speech energy perceived with hearing levels between 20 – 25 dB HL  **9% at +10 S/N, 0% at 0 S/N** | | | 95% audibility of speech energy perceived with hearing levels between 20 – 25 dB HL  **81% at +10 S/N, 55% at 0 S/N**  81% audibility of speech energy perceived with hearing levels between 25-30 dB HL  **67% at +10 S/N, 41% at 0 S/N** |
| 25% audibility of speech energy perceived with hearing levels between 25 – 30 dB HL  **0% in any setting that is not quiet** | | |
| 15% audibility of speech energy perceived with hearing levels between 30 – 35 dB HL  **0% in any setting that is not quiet** | | | 60% audibility of speech energy perceived with hearing levels between 30-35 dB HL  **46% at +10 S/N, 20% at 0 S/N** |
| 10% audibility of speech energy perceived with hearing levels between 35 – 40 dB HL  **0% in any setting that is not quiet** | | | 45% audibility of speech energy perceived with hearing levels between 35 – 40 dB HL  **31% at +10 S/N, 5% at 0 S/N** |
|  |  |  | 30% audibility of speech energy perceived with hearing levels between 40 - 45dB HL  **16% at +10 S/N, 0% at 0 S/N** |

20-30 = 95%

30-35 = 75%

35-40 = 60%

40-45 = 40%

45-50 = 25%

50-55 = 15%

55-60 = 10%

*S/N means the loudness of the speaker’s voice (i.e. teacher) over the background noise. 0 S/N = noise and voice are the same loudness. FM negates the affects of background noise and distance and provides optimal access to verbal instruction in large and small groups.*

**Results of Functional Listening Evaluation: Type of speech materials used:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SPEECH**  **PERCEPTION** | **Close: dB HL**  **Quiet**  or +10 S/N | **Close: dB HL**  **Noise:** +5 S/N +10 S/N | **Distant: dB HL**  **Quiet** or +10 S/N | **Distant: dB HL**  **Noise:**+5 S/N +10 S/N |
| **Auditory + Visual** |  |  |  |  |
| **Auditory Only** |  |  |  |  |

Functional listening can be estimated in a sound suite via a 35 dB HL input to simulate listening a across room distance and 50 dB HL for listening at a closer distance (few feet).

Audibility represents the listening challenge caused by fragmented speech perception. Audibility should not be interpreted as speech perception, which

**Recommended Hearing Technology/Accommodations:**

is how well an individual recognizes the elements of speech that he perceives.

|  |  |  |  |
| --- | --- | --- | --- |
| **AUDIBILITY**  Per the Audiogram above | **Quiet**  No noise | **+10 dB S/N**  Good classroom listening condition | **0 dB S/N**  Very noisy classroom listening condition |
| **Estimated Audibility**  **Soft Speech** |  |  |  |
| **Estimated Audibility**  **Teacher’s Speech** |  |  |  |

Karen L. Anderson, PhD, 2011

www.kandersonaudconsulting.com