

## Hearing Impairment: New Eligibility, New Technology

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OREGON  
DEPARTMENT OF  
EDUCATION



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## **New Eligibility for Hearing Impairment**

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## **Early Hearing and Detection Intervention Advisory Committee (EHDI)**

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OAR 581-015-2150 revision request submitted to ODE to:

- Revise hearing loss criteria for Early Intervention
- Update terminology for ECSE/School Age

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## **EHDI Advisory Committee:**

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- Parents
- Students
- Audiologists
- Speech therapists
- Health care providers
- Educators

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## **Early Intervention Benefit**

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- Infants diagnosed with minimal hearing loss will be able to access Early Intervention Services.
- Early Intervention services for children with minimal hearing loss will likely prevent delays in language and communication development.

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## EI and the ECSE/School Age Criteria

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### EI Eligibility

- The threshold and decibel levels are more encompassing, meaning more children will qualify for Special Education services.

### ECSE/School Age Eligibility

- The threshold and decibel levels are more restrictive, meaning fewer students will qualify for Special Education services.

## EI and the ECSE/School Age Criteria

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### EI Eligibility

- Uses hearing thresholds, which is the softest sound an individual can hear.

### ECSE/School Age Eligibility

- Uses pure tone averages, which is the average of hearing threshold levels at set frequencies.

## El and the ECSE/School Age Criteria

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### El Eligibility

- 25dBHL level at 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, 6000 Hz, and 8000 Hz or greater, at two or more consecutive frequencies

### ECSE/School Age Eligibility

- At least 35 dBHL for the frequencies of 3000Hz, 4000 Hz, and 6000Hz in the better ear
- OR**
- 25 dBHL for the frequencies of 500Hz, 1000Hz and 2000Hz in the better ear

## Technology to Support Students with Hearing Loss

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## Hearing Aids



- Amplifies sound based on the amount of hearing loss in different frequency regions
- The goal is to increase audibility of speech
- Issues:
  - Difficulty hearing in noise
  - Some sounds may still be inaudible
  - Technology provides access, but does not guarantee listening or comprehension

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## Hearing Aids



[Hearing Aid Simulation Video](#)

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# Bone Anchored Hearing Aid BAHA

- Bone-anchored hearing device
- Can be worn on a headband or a titanium post surgically implanted into the bone behind the ear (children > 5 years)
- Transmits sound via bone-conduction to the normal-hearing cochlea



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## Cochlear Implants



- A surgically implanted device that codes acoustic information by stimulating the auditory nerve with electrical pulses

<https://www.youtube.com/watch?v=zeg4qTnYOpw>

- Simulation

<https://www.youtube.com/watch?v=SpKKYBkJ9Hw>

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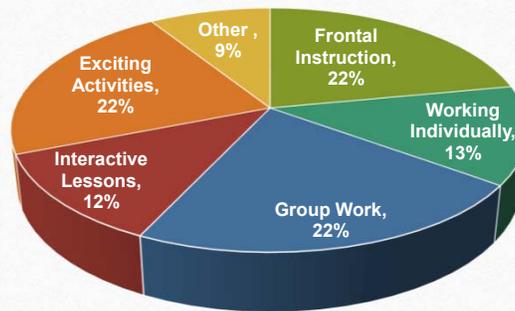


Because of technology and brain neuroplasticity, today's infants represent a new and different generation of children who are deaf

--Dr. Carol Flexer

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## The Importance of FM and Soundfield Systems



Today's Dynamic Classroom

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## Benefits for Students

- Improved signal-to-noise ratio
- Easier deciphering of language in early learning years
- Expanded seating options for students with attention issues
- Better understanding of teacher for non-native speakers

Duarte da Cruz, et al, 2016; Flexer et al, 2002; MARRS 1989, 1992; Massie et al, 2004; Massie and Dillon, 2006; Massie et al 2006; Flexer 1989; Chelius, 2004 are just a few of the studies demonstrating above results

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## Benefits for Students con't

- Increased student attention, interaction and participation
- Positive student reports
- Improved sentence recognition ability
- Improvements in academic performance, speech recognition, learning and increased self esteem

Duarte da Cruz, et al, 2016; Flexer et al, 2002; MARRS 1989, 1992; Massie et al, 2004; Massie and Dillon, 2006; Massie et al 2006; Flexer 1989; Chelius, 2004 are just a few of the studies demonstrating above results

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## Benefits for Teachers

- Improved signal-to-noise ratio
- Improved in-class mobility
- Aids class instruction and management

Duarte da Cruz, et al, 2016; Flexer et al, 2002; MARRS 2005; Massie et al, 2004; Massie and Dillon, 2006; Massie et al 2006; Flexer 1989; Chelius, 2004 are just a few of the studies demonstrating above results

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## Benefits for Teachers con't

- Less instructional repetition
- Teacher absences due to vocal strain and voice fatigue decreased from 15% to 2-3 % in one year (MARRS, 2005)
- Fewer discipline problems through improved voice-control of students

Duarte da Cruz, et al, 2016; Flexer et al, 2002; MARRS 2005; Massie et al, 2004; Massie and Dillon, 2006; Massie et al 2006; Flexer 1989; Chelius, 2004 are just a few of the studies demonstrating above results

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## Examples of Access Issues

- New curriculum utilizing computer based instruction/interaction/assessment
- Students are expected to view/listen to audio clips, videos, and other streaming media
- Headphone usage

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## Soundfield Systems

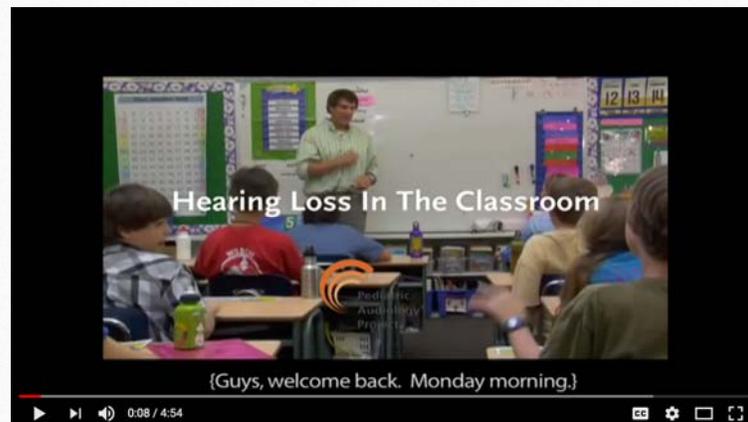


- Provided improved signal-to-noise ratios which young listeners require, boosting speech understanding over distance and in noisy environments
- Less repetition
- Greater vocal comfort for teachers

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## FM Simulation

### FM Simulation Video



## Personal FM Systems

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- Sends signals directly from the teacher's microphone and transmitter directly to the student's receiver
- Reduces the speaker to listener distance
- Improve classroom acoustic environments

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## Personal FM Systems con't

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- Deaf/Hard of Hearing students are able to sort through noise to focus on key signal of speaker
- Should be used any time a student is supposed to listen and attend to one speaker
- Not recommended to use during independent play and center time

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## Visual Transcription Systems

- CART Captioning is a verbatim or word-for-word transcription of what is said.
- Spoken speech is written as text and relayed to the reader for viewing by without any alterations.
- Best option in medical, legal or highly technical settings. Content is usually dense, fast paced and exact.

## Visual Transcription Systems con't

- Produces a verbatim transcript
- Must be able to demonstrate the ability to read and comprehend densely written content quickly and read spoken English which is not grammatically correct when written word for word
- On-site or remote

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## Visual Transcription Systems

### TypeWell

- Trained TypeWell transcriber synthesizes the discussion and captures it using advanced abbreviation software.
- The recipient simultaneously sees the transcript using a standard Web browser on a mobile device, such as a laptop, tablet, smartphone, or e-reader.
- TypeWell transcription can be printed or saved as a study tool or meeting documentation.
- Best with non-technical events such as conferences, meetings or classes and often a good choice for schools

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## Visual Transcription Systems con't

- Easy to read transcript
- Individuals should have at least a 5th grade reading level and comprehension
- Transcribers transcribe spoken speech into grammatically correct English. Reader has quick access to what is said, without false starts, word whiskers or other verbal clutter present in verbatim transcripts.
- On-site or remote

VIDEO <https://www.youtube.com/watch?v=xhyRDw7SzZ4>

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## Which do you prefer?

### CART Captioning

The next phase of it was the war on poverty. This period was between 1964 and 1974. The war on poverty expanded the public assistance programs and literally had as its goal the elimination of poverty, the elimination of poverty in the United States. And this was really the first time ever in history that they are now really talking about poverty as the total issue, focusing on poverty itself, and not just destitution and poor people.

### TypeWell Transcription

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## Speech-to-Text System

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### Interact-AS

- Provides what the teacher says in text form on a laptop computer or media device on the student's desk
- 90-95% accuracy
- Communication translated is what is delivered through the teacher's microphone. The teacher has to accommodate the student's need to access communication from class peers more than a few feet away from the teacher's microphone

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## Video Relay Services

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- Video Relay Service is a form of Telecommunications Relay Service that enables persons with hearing disabilities who use American Sign Language to communicate with voice telephone users through video equipment, rather than through typed text.
- Video equipment links the VRS user with a TRS operator – called a communications assistant, or CA – so that the VRS user and the CA can see and communicate with each other in signed conversation

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## CaptionCall

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- CaptionCall phone features a large, easy-to-read screen that displays written captions of what callers say
- The CaptionCall phone is amplified
- Similar to captioned television, CaptionCall uses advanced technology and a communications assistant to quickly provide written captions of what callers say on a large, easy-to-read screen. It works like a regular telephone – simply dial and answer calls as usual – speak and listen using a phone handset like always.

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## Captioned Media

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- The Described and Captioned Media Program is funded by the U.S. Department of Education and administered by the National Association of the Deaf
- DCMP provides services designed to support and improve the academic achievement of students who are blind, visually impaired, deaf, hard of hearing, or deaf-blind
- Over 4,000 titles
- Provides a collection of free-loan described and captioned educational media
- Acts as a gateway to Internet resources related to accessibility.
- Adapts and develops new media and technologies that assist students in obtaining and using available information.

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# Questions?

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