

Challenges and solutions to supporting access in the Educational setting

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Deaf Education Through Listening
and Talking
DELTA



deaf education through
listening and talking

Who and what is DELTA ?

DELTA, Deaf Education through Listening and Talking, is a voluntary association of young deaf adults, families and Teachers of deaf children. DELTA is a national charity which supports and develops the **Natural Aural Approach** in the education of deaf children.



What is the Natural Aural Approach?

The Natural Aural approach is about :-

- Early and timely identification of hearing loss and any changes in hearing
- appropriate hearing aiding and on-going monitoring and verification
- empowering parents to recognise their natural skills to support the development of language through listening and talking.



In the Educational setting it is about understanding your child's needs and how they can access alongside their peers.

It is a '**can do**' approach.

Understanding the challenges and maximising supportive learning strategies and making best use of the technology is key.



Find out more about DELTA ?

Visit our website: www.deafeducation.org.uk

Come to our Summer Schools or events



DELTA and the Natural Aural approach underpins my role as a support Teacher of the Deaf and has done for over 30 years.

Today I want to help you to understand your child's hearing impairment and therefore the challenges that are presented in the educational setting.

. . . and how these can be overcome



There are four categories of hearing loss

Mild 21dB HL – 40dB HL

Moderate 41 dB HL – 70 dB HL

Severe 71dB HL – 95dB HL

Profound 95dB HL -

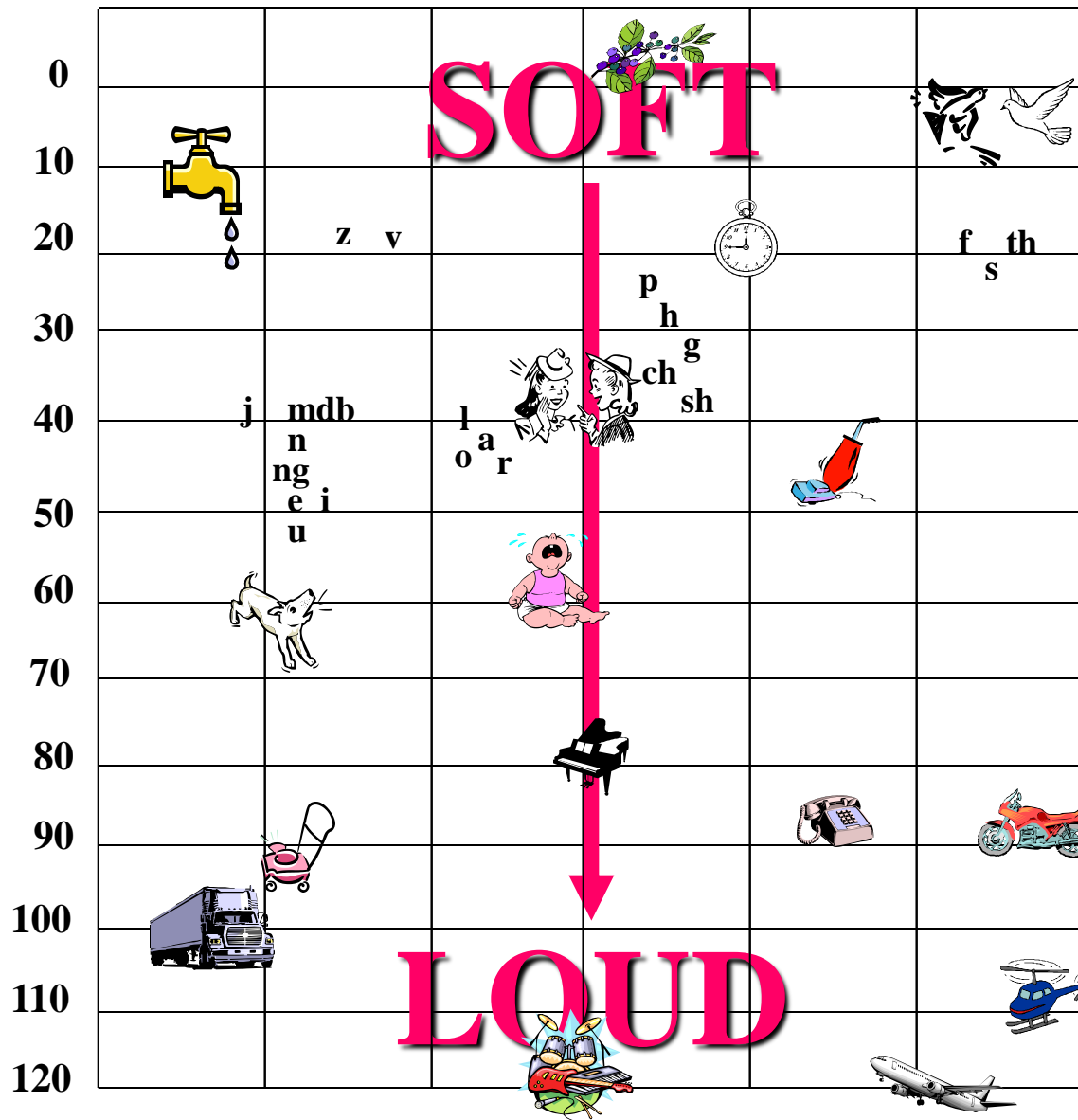


Understanding the Audiogram

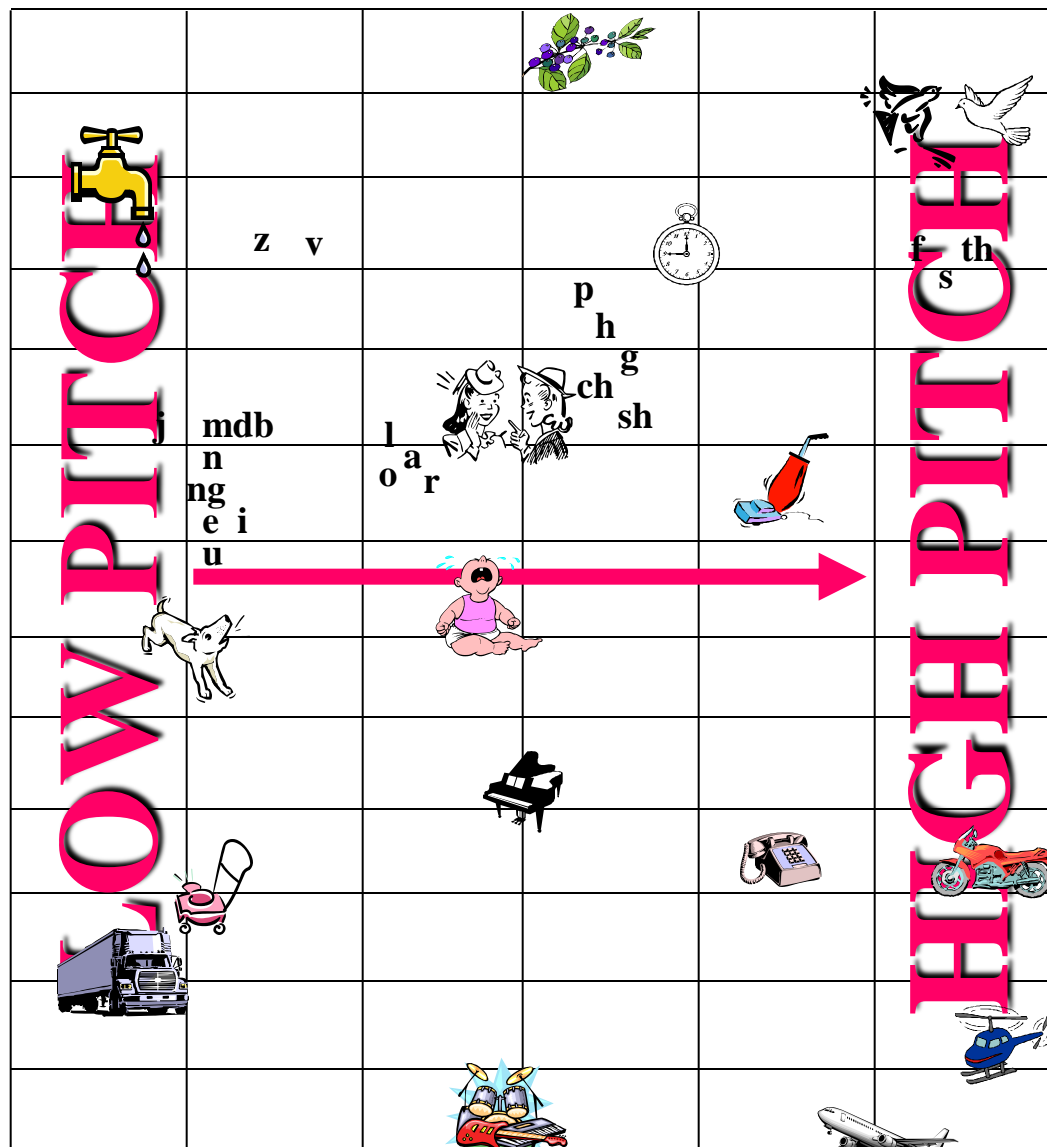
- Hearing loss is often shown on an audiogram
- An audiogram is the graph that is obtained when a person's hearing is tested using pure tone audiometry



HEARING LEVEL (dB HL)



125 250 500 1000 2000 4000 8000

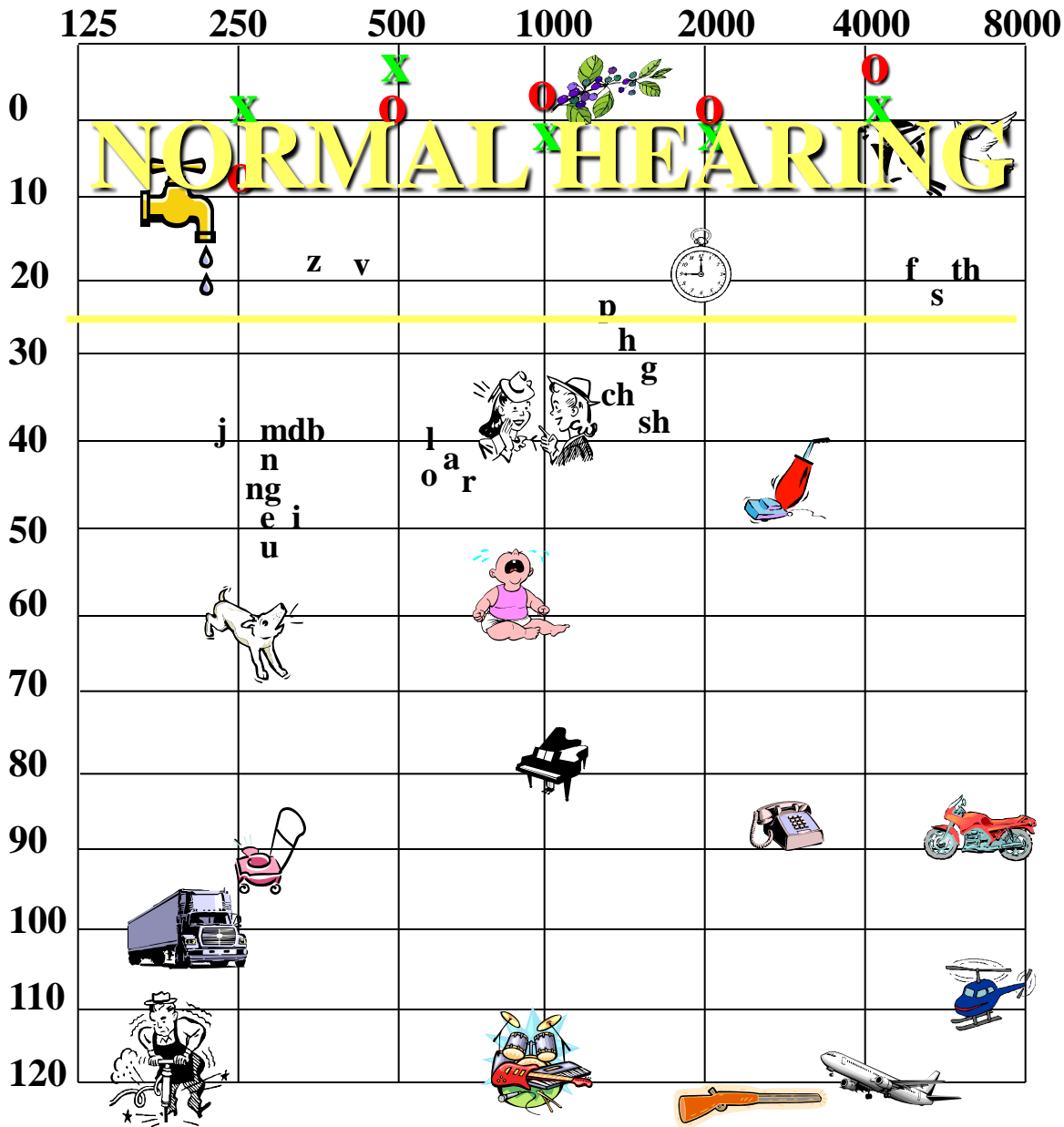


FREQUENCY IN CYCLES PER SECOND (HZ)



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HEARING LEVEL (dB HL)



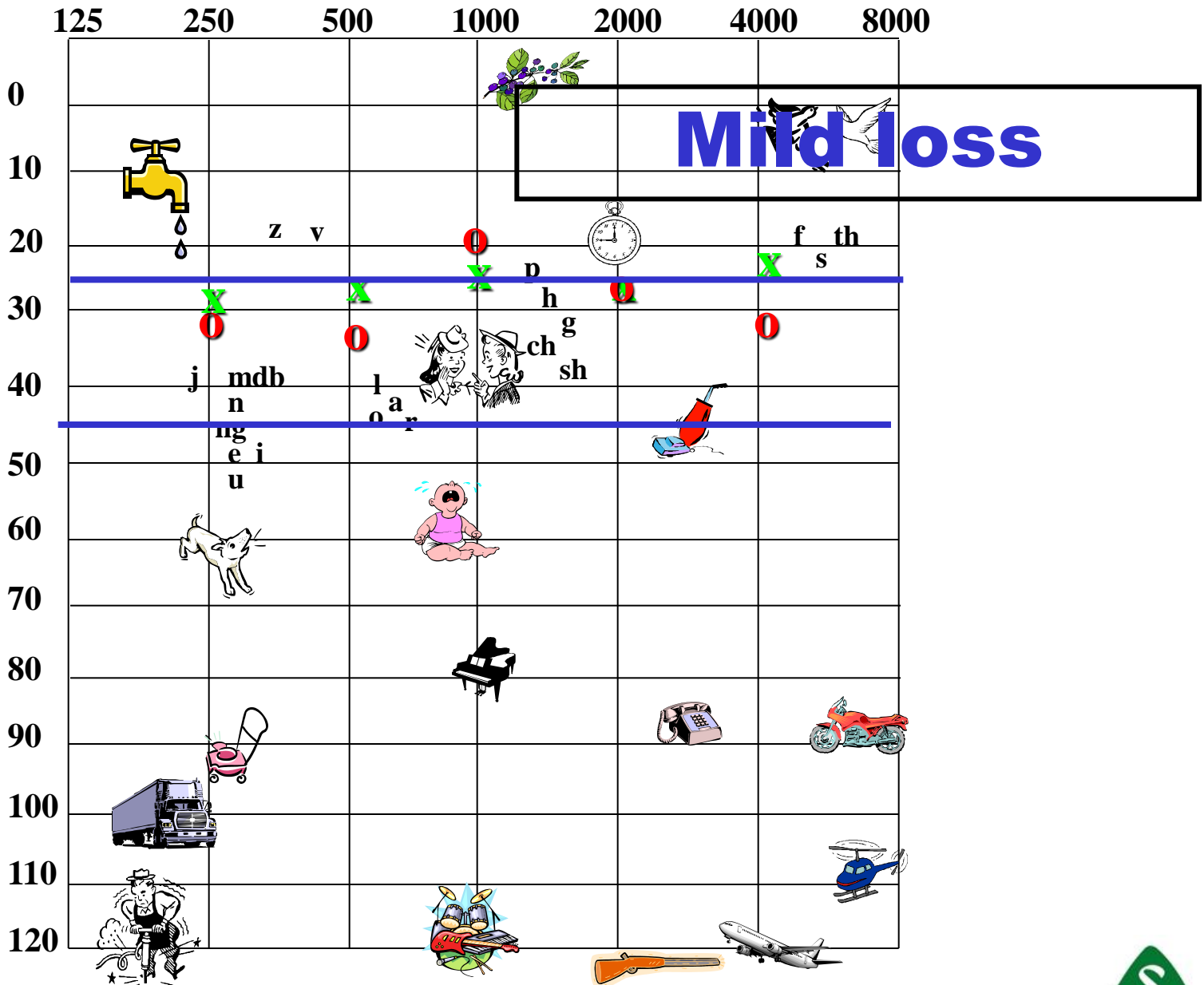
AUDIOGRAM OF FAMILIAR SOUNDS

FREQUENCY IN CYCLES PER SECOND (HZ)



deaf education through listening and talking

HEARING LEVEL (dB HL)

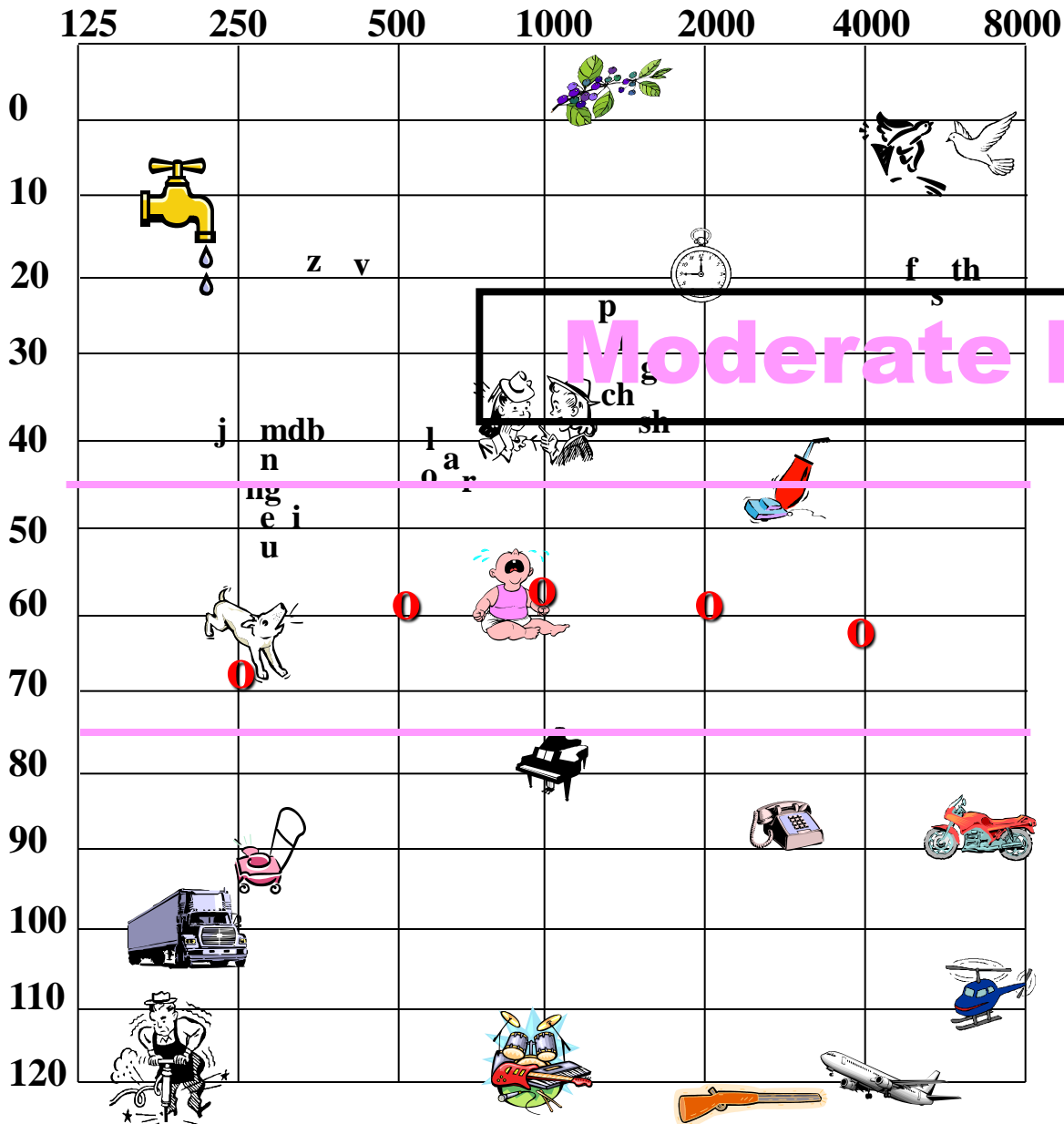


AUDIOGRAM OF FAMILIAR SOUNDS

FREQUENCY IN CYCLES PER SECOND (HZ)



HEARING LEVEL (dB HL)



Moderate Loss

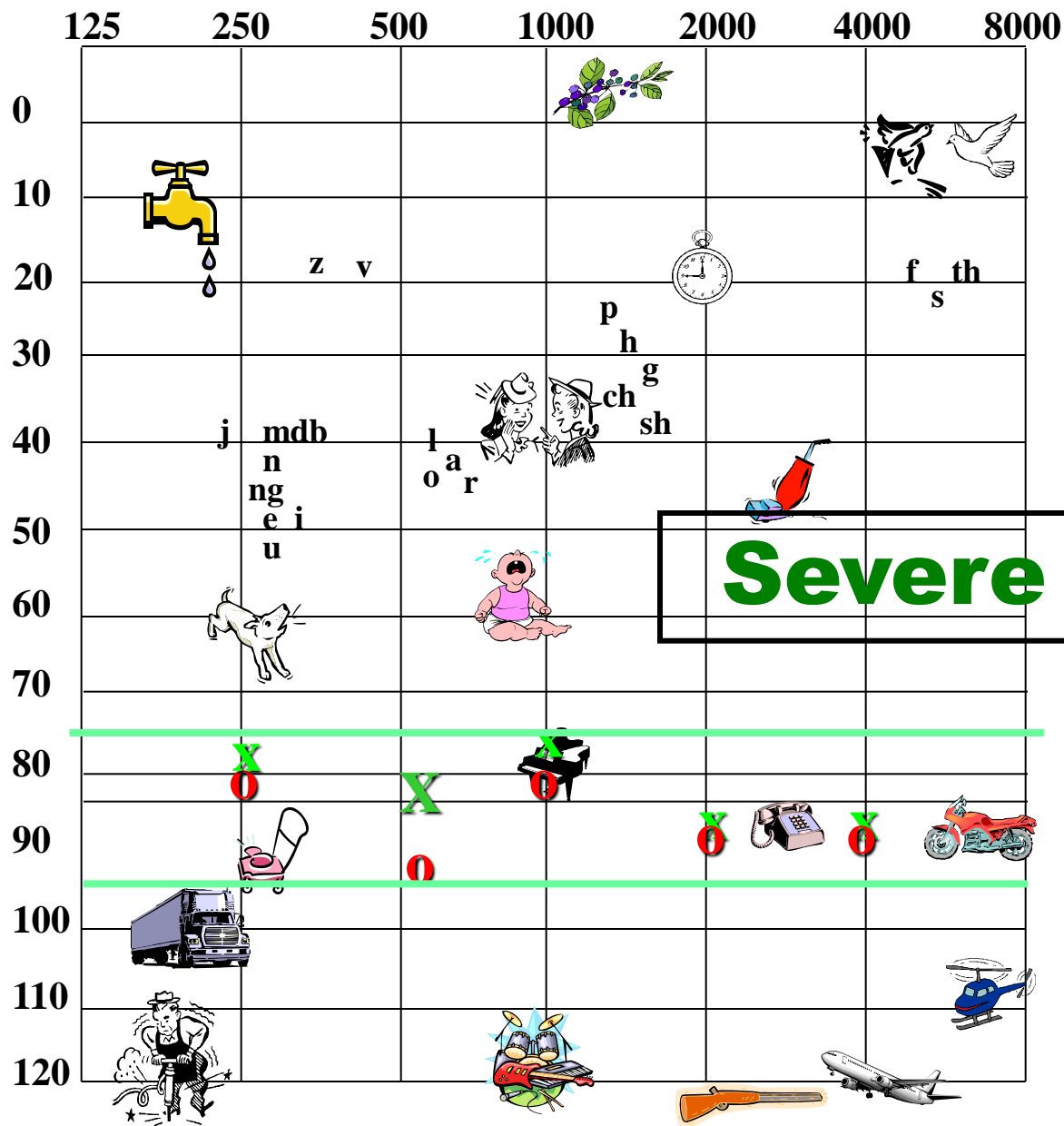
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Severe Loss

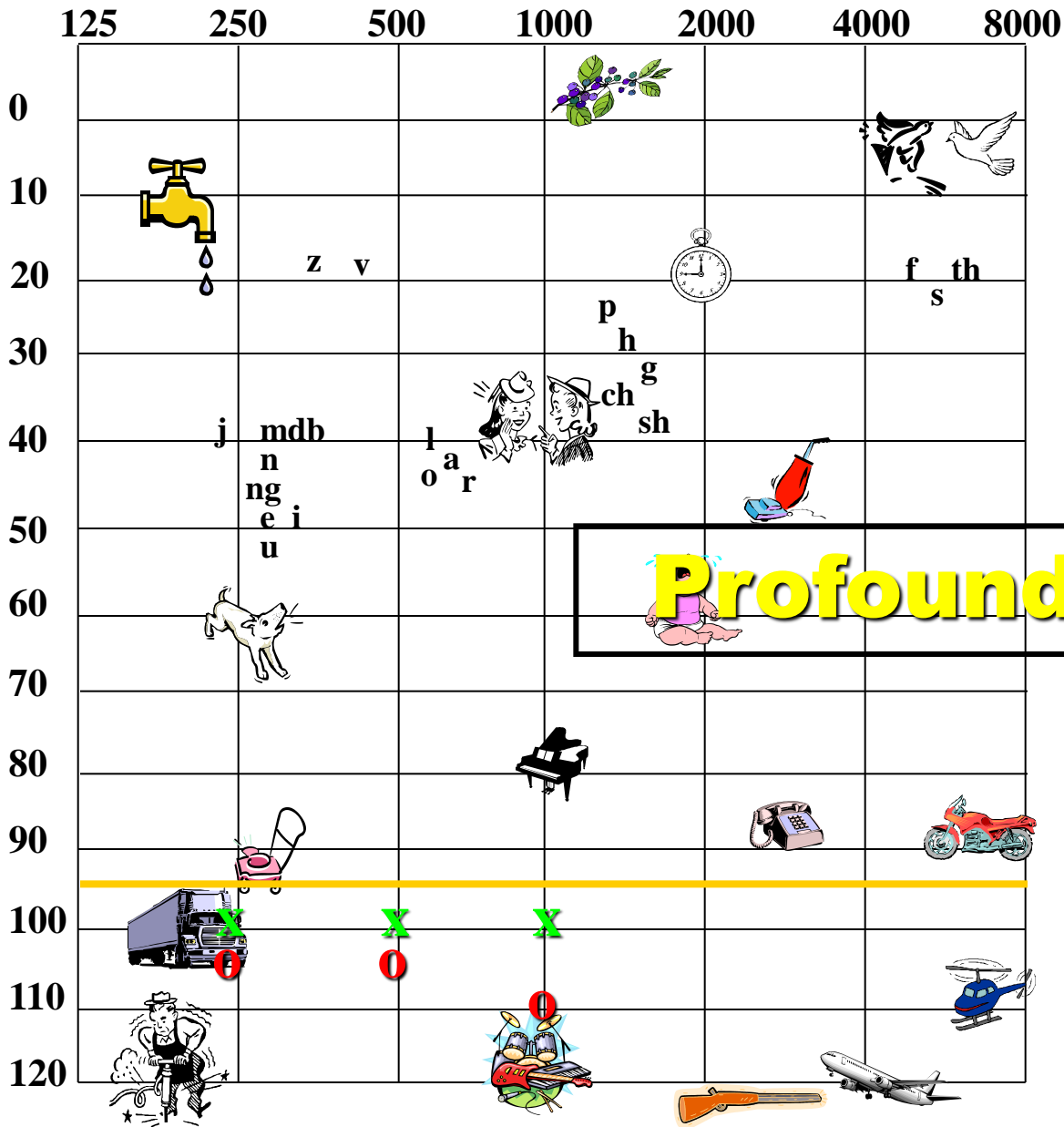
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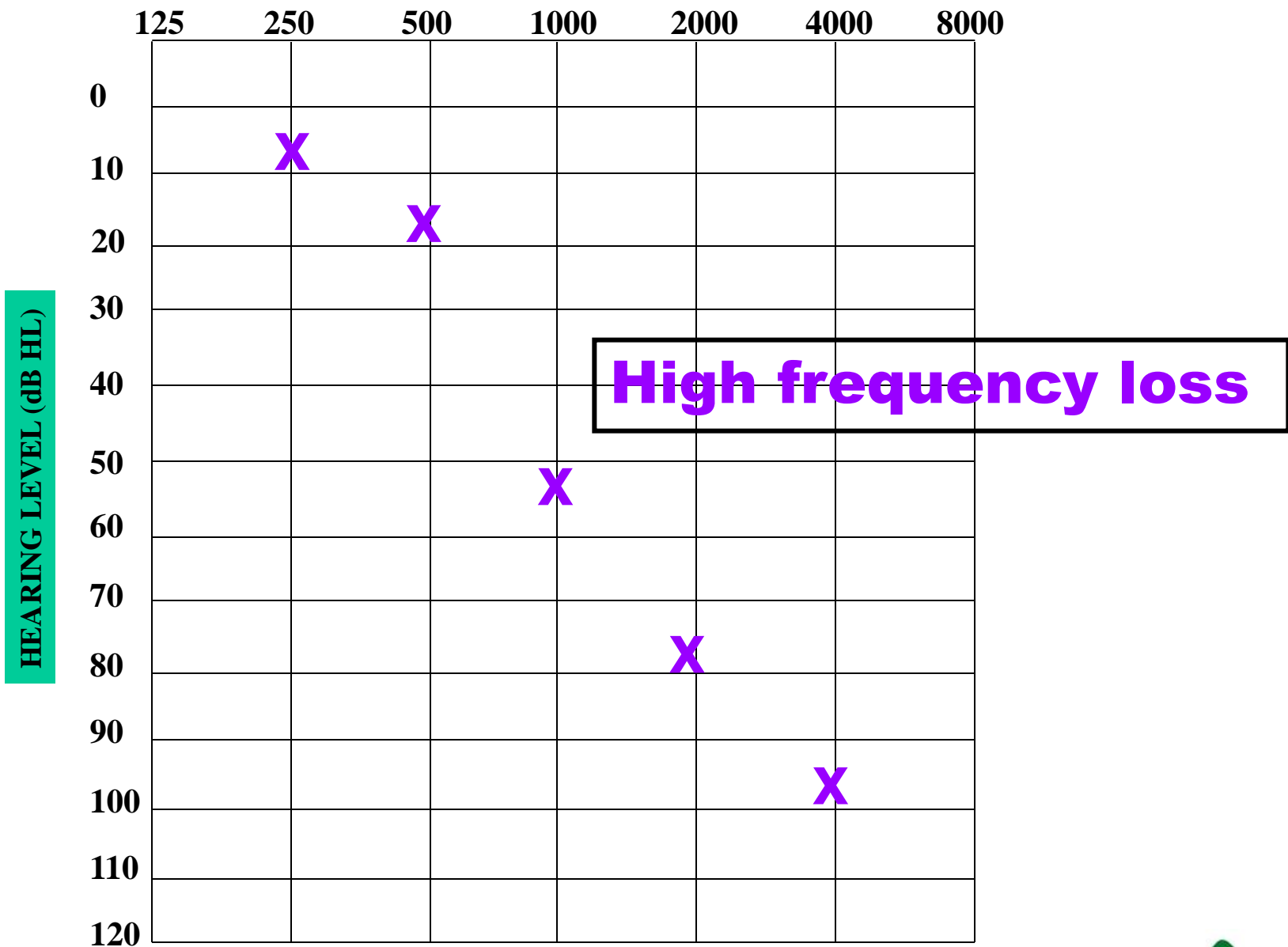


Profound loss

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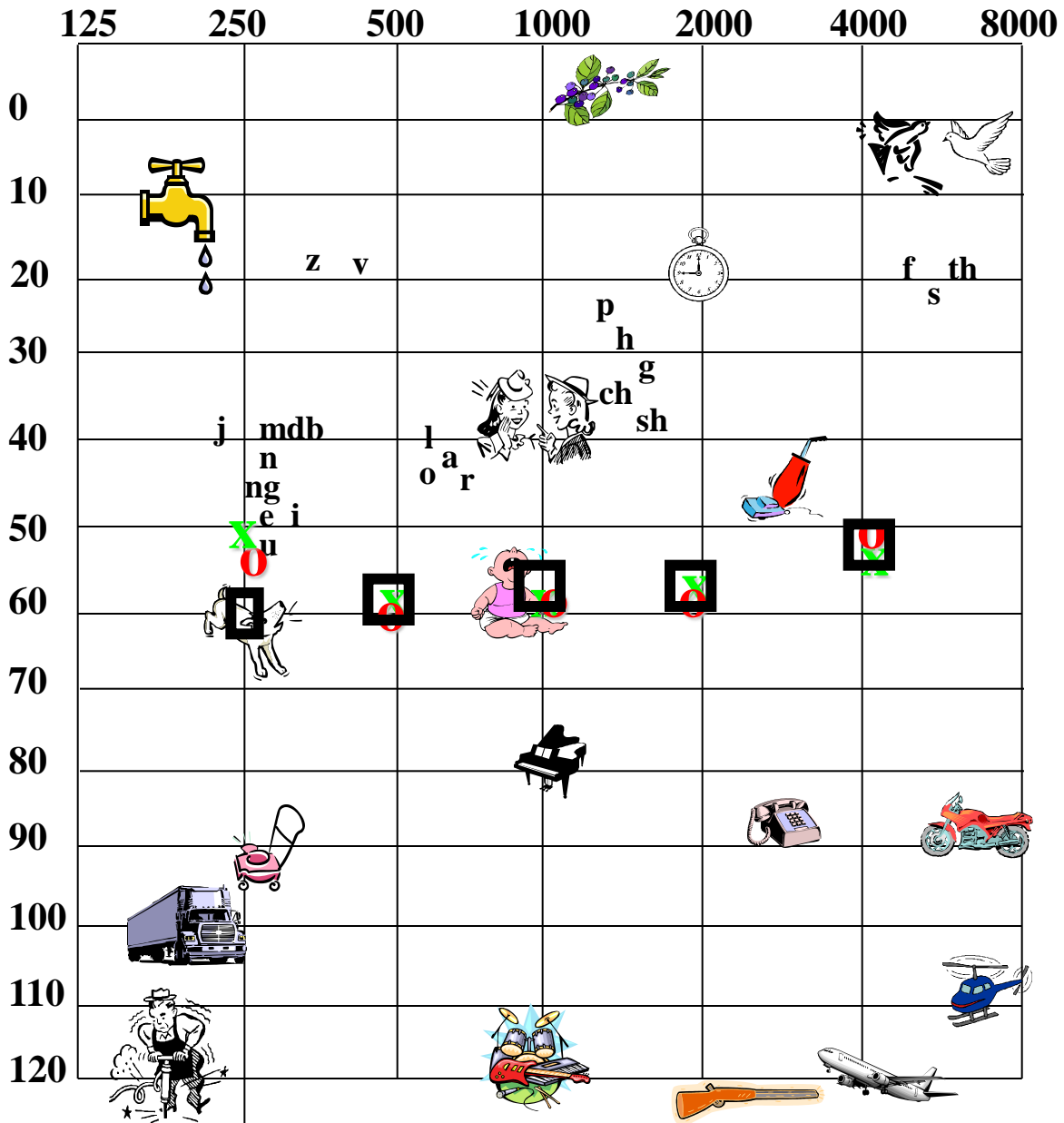


AUDIOGRAM OF FAMILIAR SOUNDS

FREQUENCY IN CYCLES PER SECOND (HZ)



HEARING LEVEL (dB HL)



AUDIOGRAM OF FAMILIAR SOUNDS

FREQUENCY IN CYCLES PER SECOND (HZ)



Vowels only

l -ou-- -i-e a --a-- o- -i-e



Consonants only

- w--ld l-k- - gl-ss -f w-n-



Once upon a time there were three bears who lived in a cottage in a wood. One of them was a little wee bear, one was a middle-sized bear and one was a great big bear. They each had a bowl for their porridge, a little bowl for the little wee bear, a middle-sized bowl for the middle-sized bear and a great, big bowl for the great, big bear.

The incomplete speech pattern that is heard is a bit like reading unclear print



tea, bee

Lip reading can support to listening

But it can be ambiguous

mat, pat

Key difficulties for hearing impaired children

- **Background noise**
- **Distance from the speaker**
- **Reverberation**

The Impact of Background noise

- Affects concentration
- Causes fatigue
- Masks important information for the listener
- Affects behaviour
- How the '**hearing aid**' is programmed. and whether the pupil can control these changes will effect their access in noise

Signal-to-Noise Ratio

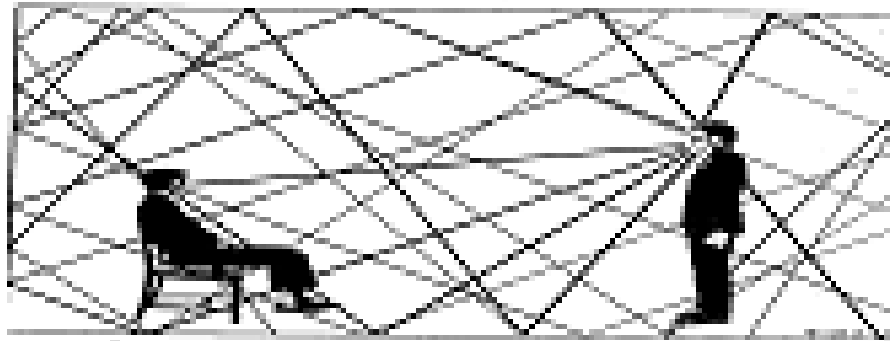
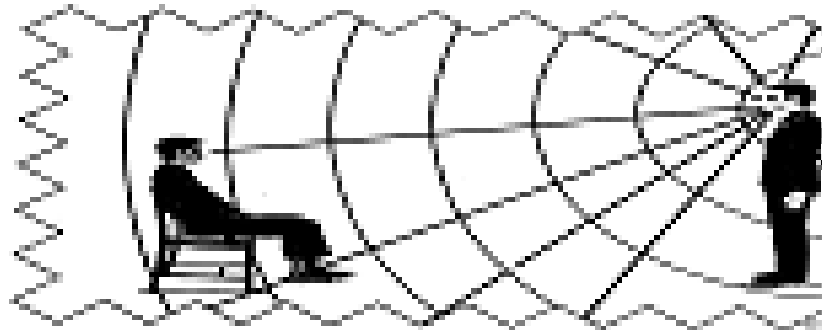
- The signal to noise ratio is a measure of how much louder a signal is in comparison with the background noise
- The smaller the difference between the two levels the more difficult it is for the pupil to hear. The recommended S/N ratio is +15dB
- Typical classroom noise levels range from 55-75dBA

Crucial Distance

As soon as any pupil in the classroom...
in a learning situation moves further
away than six inches from the speakers
mouth, the speech signal begins to
degrade

(Flexer 1994)

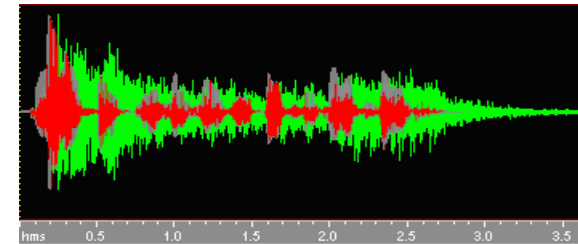
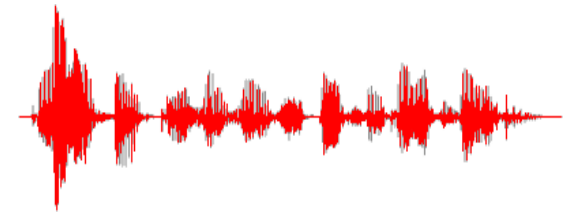
Reverberation



Reverberation

- the amount of time it takes for sound energy to bounce around a room before it is absorbed

- Reverberation time of a room is important because it affects how well we understand speech.
- High frequency consonant sounds of speech are masked or smeared
- RT should not exceed 0.4 secs.
- Most classrooms vary from 0.3 to >1.5secs



Radio systems will help at home and school

Connevens
Genie FM



Phonak
Campus
FM



Phonak
Inspiro
Dynamic
FM



Phonak
Zoomlink
FM



Roger
Radio

TRANSMITTERS

RECEIVERS



Cochlear Nucleus 5 with MLX14 i



Medel Opus 2
with MLXs



Oticon BAHA &
Phonak Roger rec

Roger 17

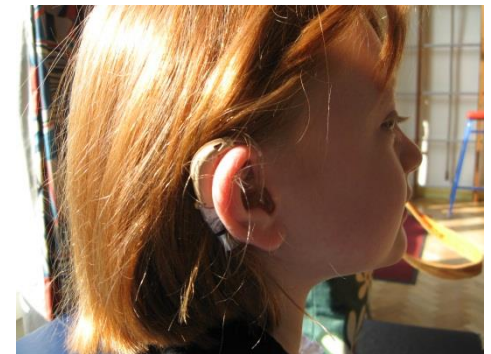


AB Naida with Roger receiver



Phonak MLXs

Phonak MLXi



Hearing aid and MLXi

And then there are Soundfield systems

Great for everyone

- Teacher can use a normal quality voice yet can raise the volume.
- All children can hear no matter where in the room they are
- As all children hear a quality voice of the class teacher and can hear clearly they make less noise
- The transmitter can be plugged directly into the speaker of SFS

SoundField systems



The acoustic Properties of the room are affected by:-

- size of the room
- shape of the space
- materials the room is composed of
- furniture placed in it.
- number of bodies present

- Manage background noise
- Good classroom techniques in lesson delivery and management
- Improve classroom acoustics
- Use a radio transmitter and receiver.
- Consider Soundfield



How can teachers help?

- Speak clearly
- Get the pupil's attention before you start
- Class ethos of attending and listening
- Repeat or reiterate what others' say
- Check seating position
- Direct the lesson making it clear who is talking, to check everyone is following
- Keep to the point!
- Let them see your face and expression



What else?

- Make clear the focus and have clear references
- Use visual references to maintain focus
- Don't constantly move around the class when talking
- Be aware of light source in class
- Manage background noise
- Use the “one person talks at a time” rule
- Children learn from each other –so make sure they can hear and access what each other say.



- Making the classroom accessible for the hearing impaired children, makes it accessible to all children.
- Good classroom practice is good classroom practice for all children

Spot the problems video

FM miss-management

