




# Deaf and Hard-of-Hearing Students with Double Exceptionality

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# I have the two worse sociotopes !

Objective action space		Normative action space		
.....Value & esteem	.....Resource availability	Actively supports	Neither supports nor inhibits	Actively rejects
<b>Academic self concept LOW</b>	<b>POOR</b>			
		<b>Deficient</b>		<b>Antagonistic</b>

**(Phillipson, 2011)**



# DOUBLE EXCETIONALITY (2E)

- **Students with 2E**

Outstanding talents or gifts in specific academic areas

**Deafness/  
Hard-of-hearing**

**Oral language  
difficulties**

Disability (2E) that impedes their learning and development

Most frequently under-identified population in our schools

Worrying to imagine that among many of our average performing students are in fact with unidentified giftedness and disabilities masking one another

No prevalence of 2E worldwide! Lack of operational definitions of 2E?

Estimated 6% of **Giftedness** equals with Disabilities

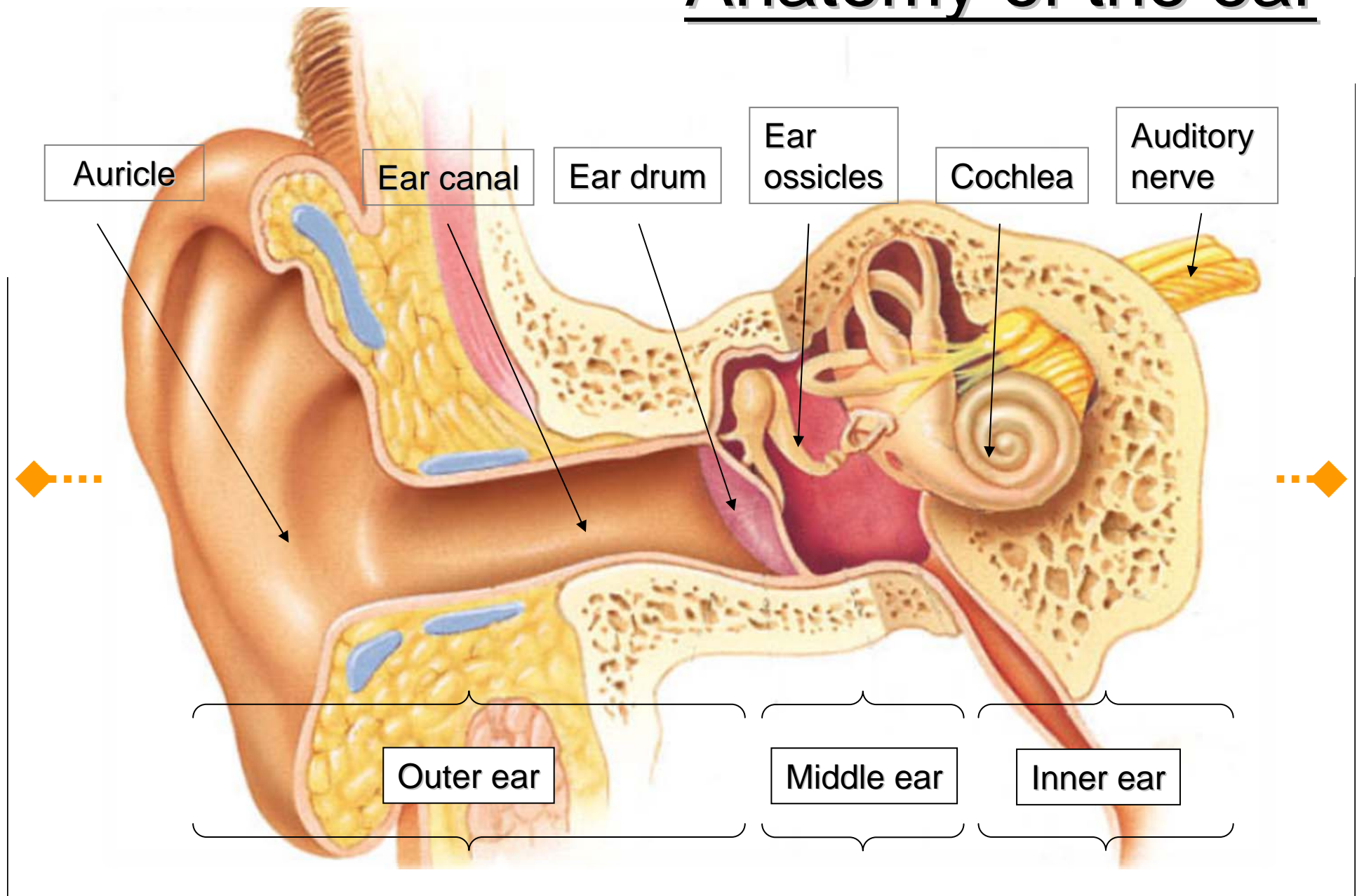
Act may also be academically gifted (U.S. Department of Education, 2006)

# Normal hearing and hearing loss



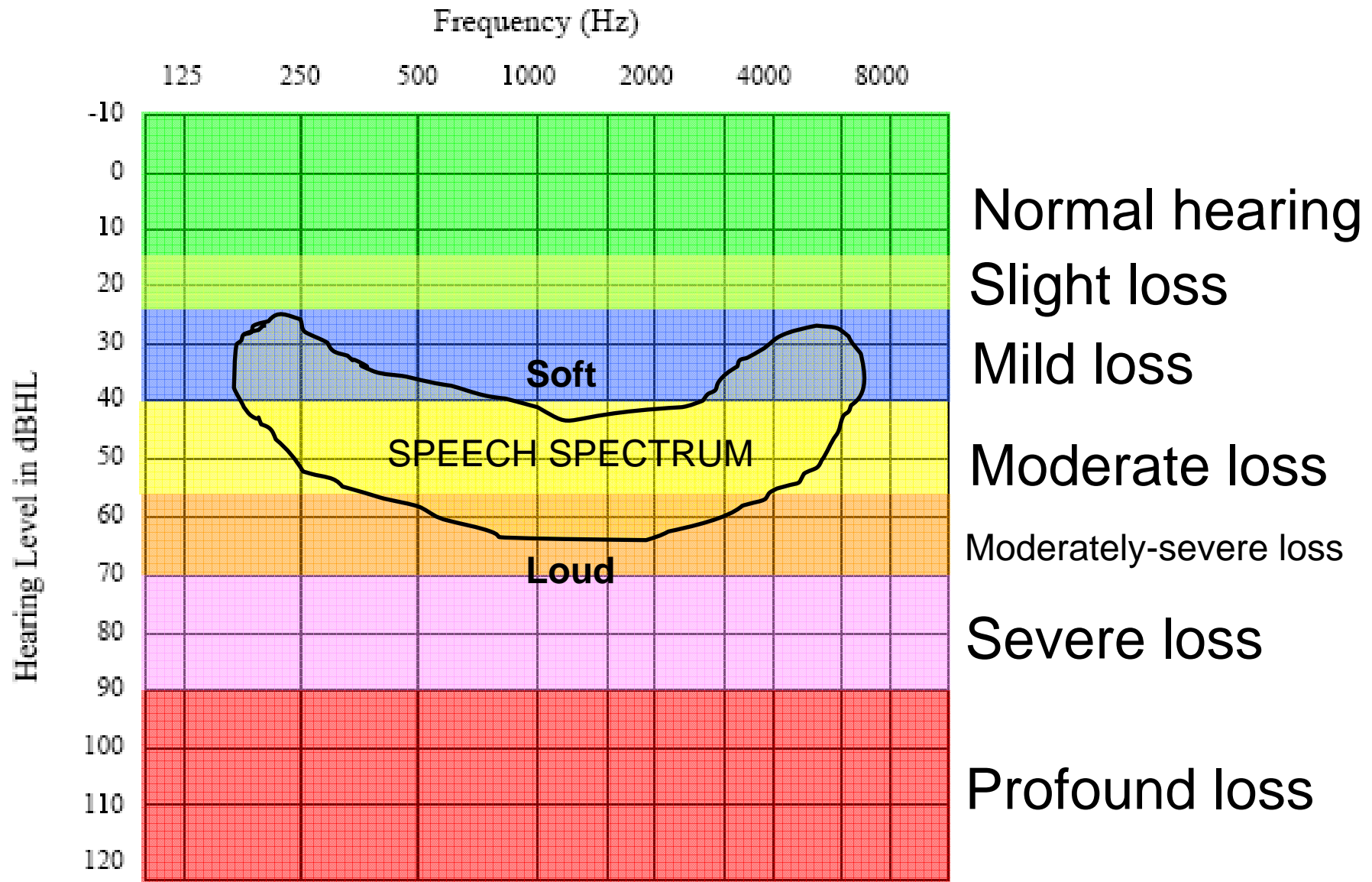


# Anatomy of the ear



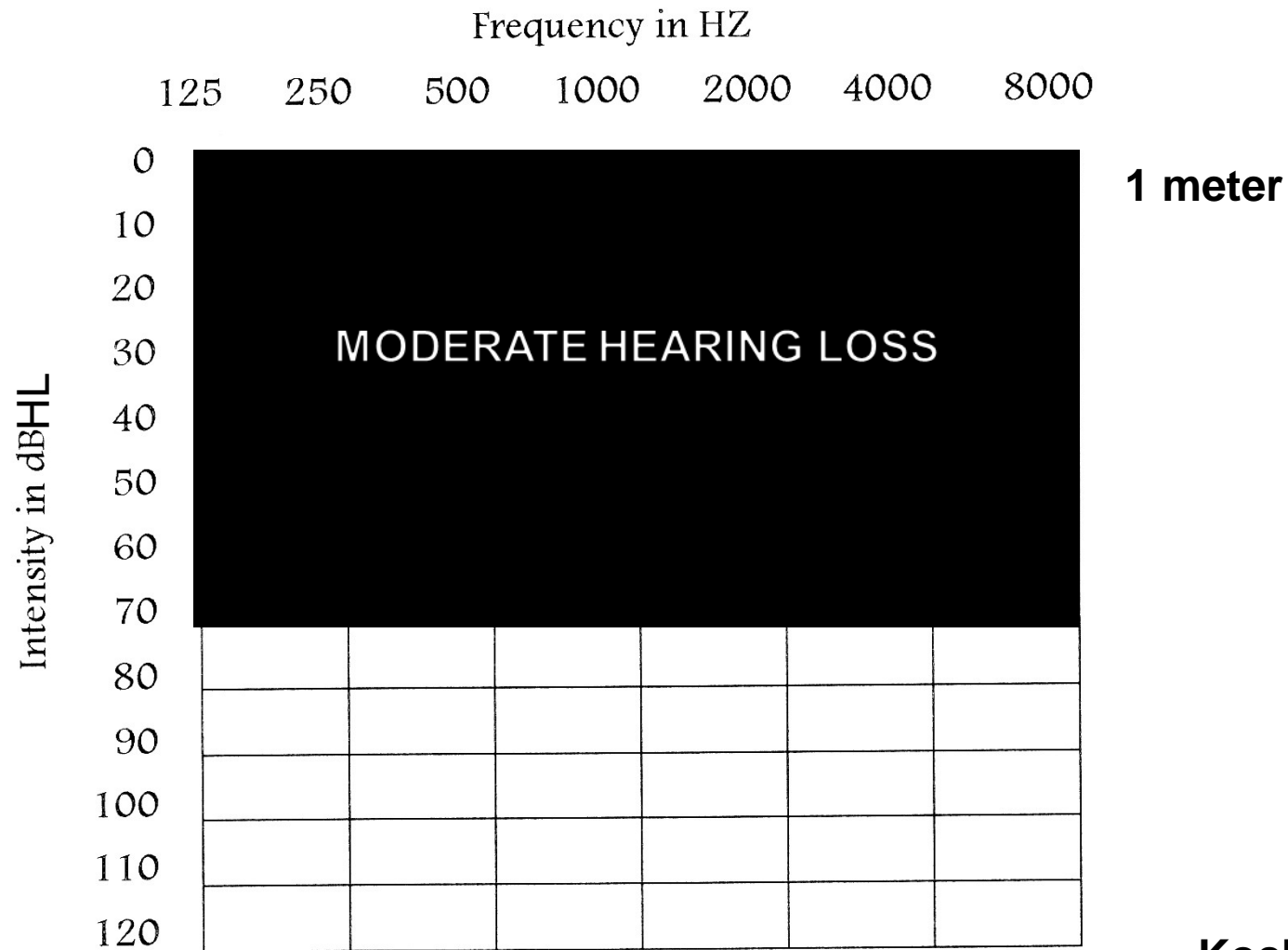


# AUDIOGRAM quantifies the degree of hearing loss





# Loss of speech spectrum with hearing loss

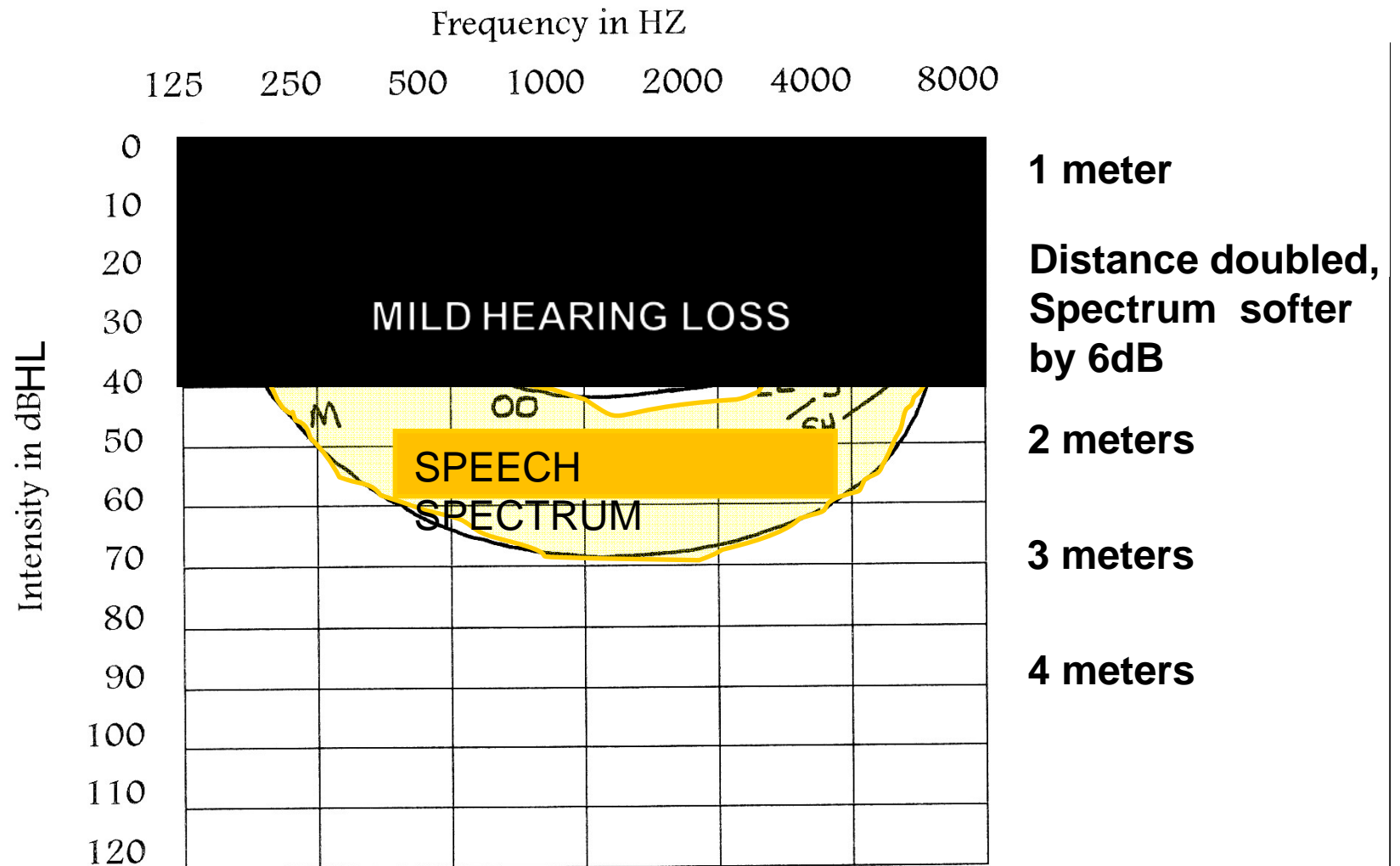


The frequencies of the Ling 6 Sound Test

**Koch (1999)**



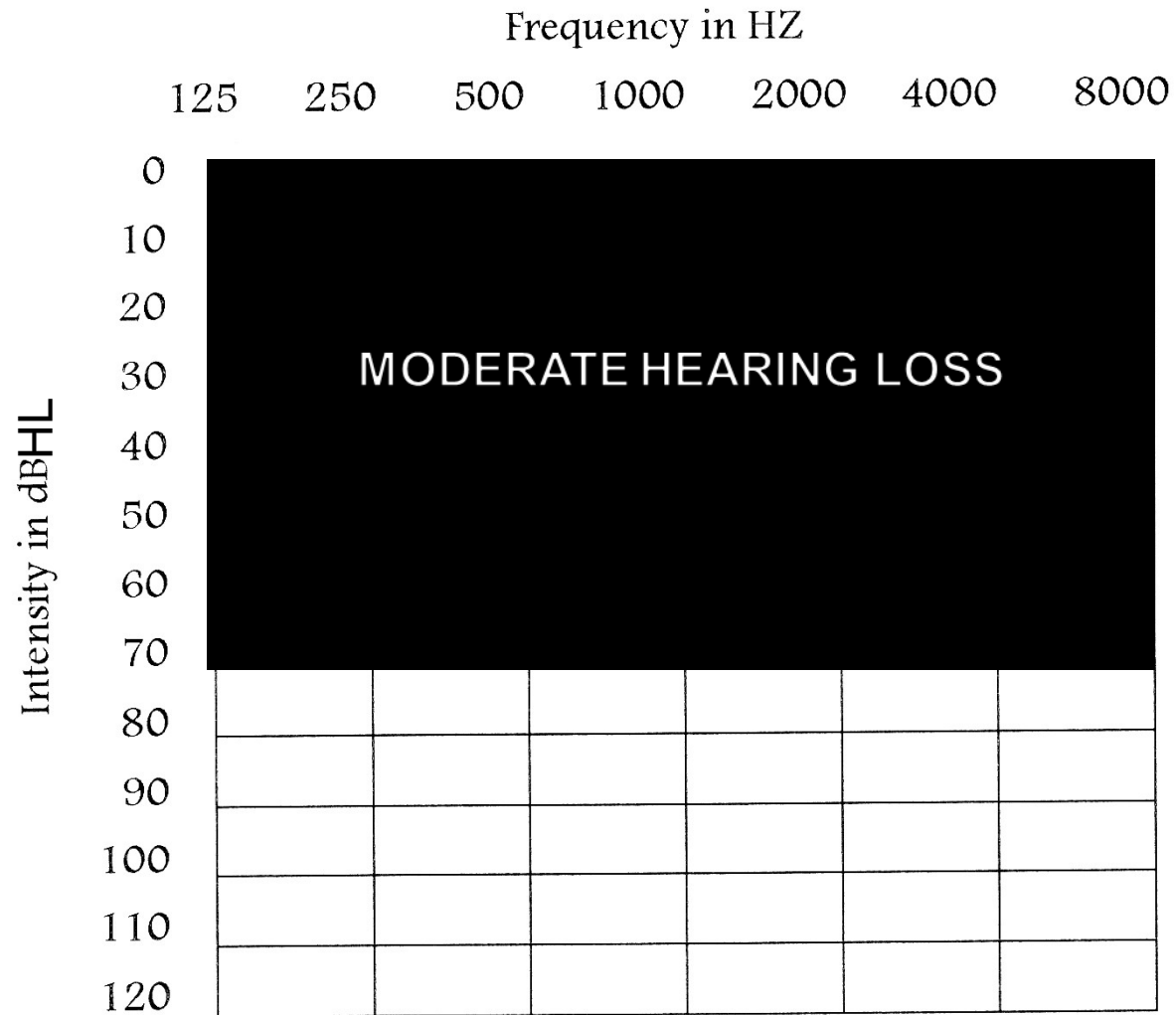
# Loss of speech spectrum with distance



The frequencies of the Ling 6 Sound Test



# Loss of speech spectrum with hearing loss

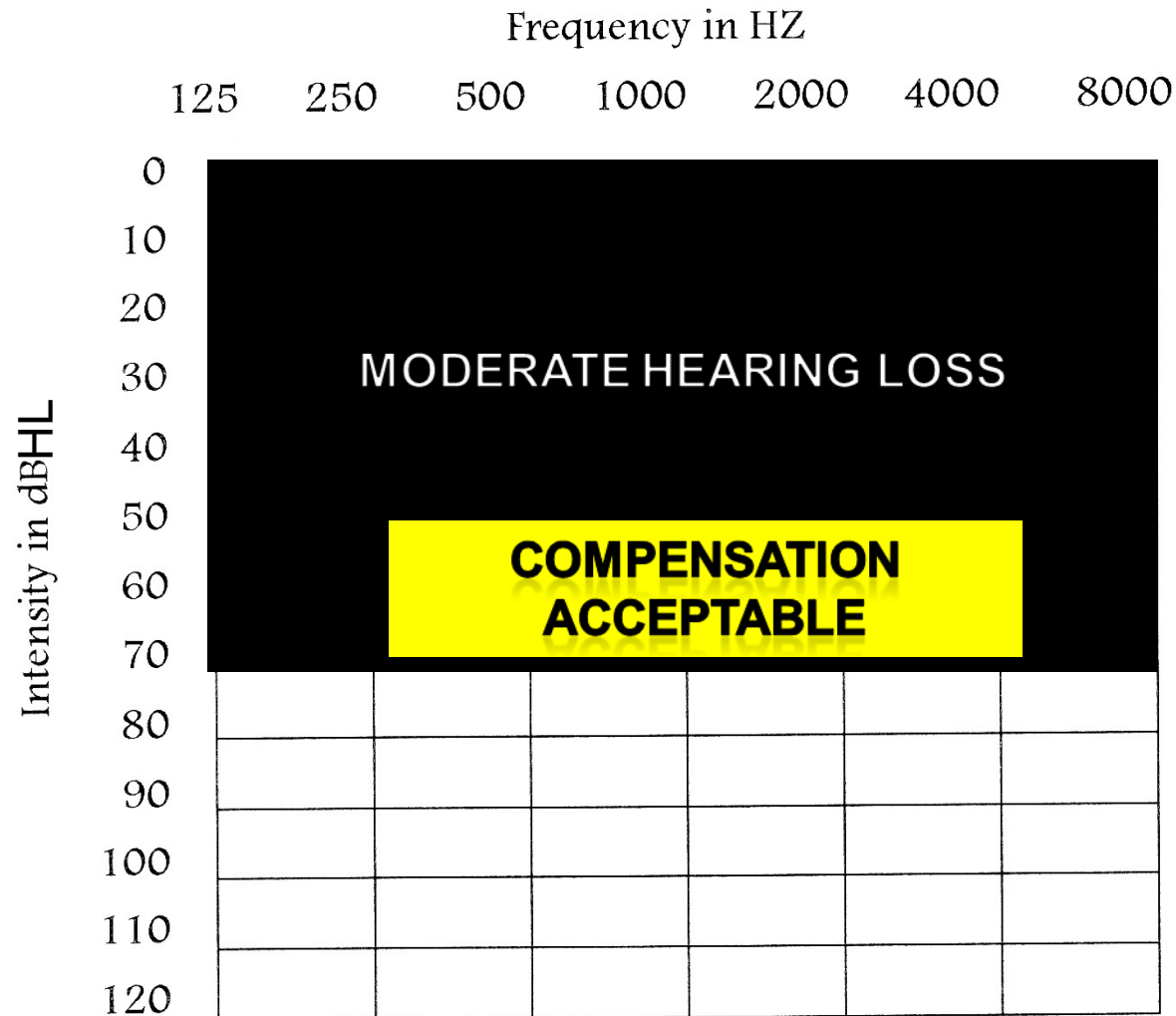


The frequencies of the Ling 6 Sound Test

**Koch (1999)**



# Hearing prosthesis – making the speech spectrum audible



**Hearing  
prosthesis:**

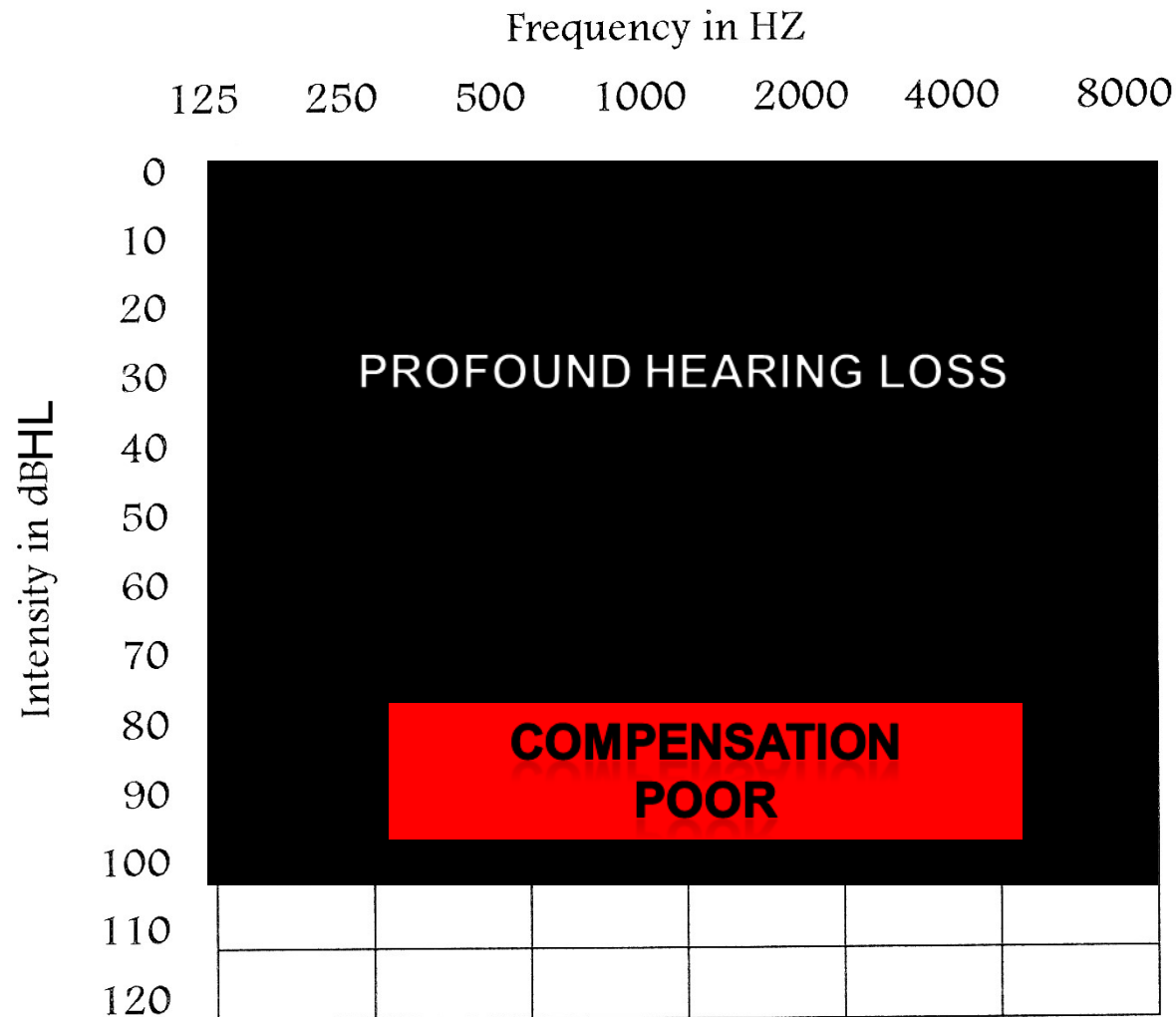
**hearing aids,  
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**Koch (1999)**

The frequencies of the Ling 6 Sound Test



# Hearing prosthesis – making the speech spectrum audible



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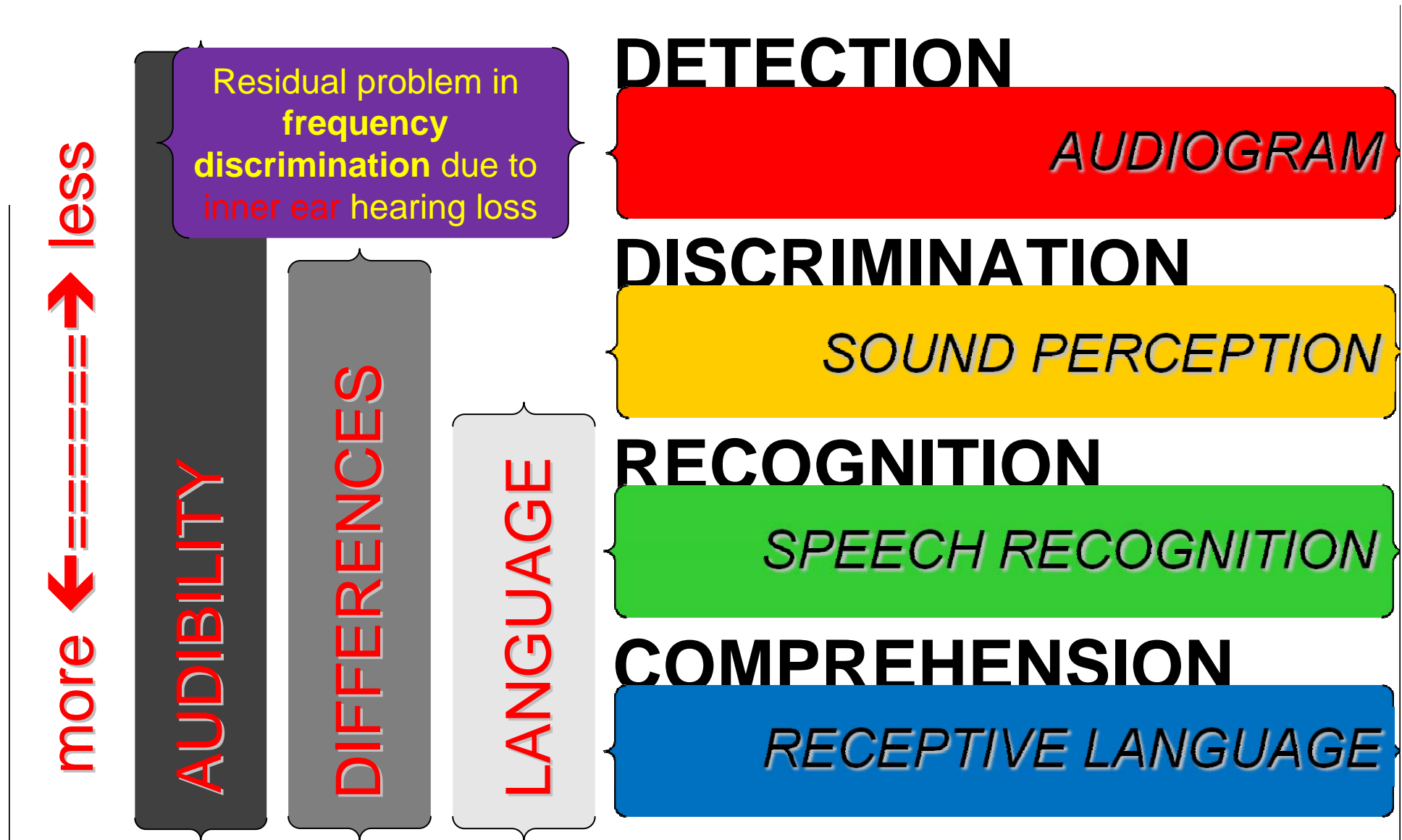
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**Koch (1999)**

The frequencies of the Ling 6 Sound Test



# THE LISTENING HIERARCHY (Ling)





# Deafness & Hard-of-hearing

- **Deafness**

- Students with hearing impairment is so severe which hinders the processing of linguistic information through hearing and in turn harmfully affects educational performance is categorized as deaf (U.S. Department of Education, 2006)

- **Hard-of-hearing**

- Students with any hearing loss, albeit unilateral or bilateral, permanent, transient or fluctuating, that adversely affects educational performance (Tharpe, 2008) but is not included in the definition of deafness, are classified as hard-of-hearing (U.S. Department of Education, 2006)



# Auditory processing disorder

- Subtle hearing impairment albeit with normal hearing sensitivities in both ears
- Significantly more difficulties in understanding spoken messages than peers
- Difficulties exacerbated in the presence of background noise, rapid or degraded speech
- Problems cannot be explained by either peripheral hearing loss, language disorder, attention deficit, or other higher cognitive or related dysfunctions

(American Speech-Language-Hearing Association, 2005; Jerger & Musiek, 2000)



## Types of 2E deaf and hard-of-hearing students (Baum, 1990) (Montgomery, 2004)

- Giftedness masks disability / Discrepant
- Disability masks giftedness / Deficit
- Giftedness & disability both unidentified / Deceptive
  
- Giftedness & disability both identified ??



## Giftedness masks disability / Discrepant

- Giftedness formally identified
- Disability unnoticed
- Mild hearing loss, unilateral hearing loss, auditory processing disorder
- Discrepant verbal and performance IQ, inconsistent performance within scales, some even with exceptional verbal IQ
- Uneven achievements across school subjects
- Perform only in class at an average level
- Perceived as lazy, poorly motivated and inattentive as causes of underachievement
- May find increasing difficulty to use gifted qualities, e.g. memory, reasoning to compensate for the degraded & insufficient auditory input in classroom when they reach high school years where academic demands escalate
- Psychological issues: *“I was called gifted but I can’t do anything well.”*



## **Disability masks giftedness / Deficit**

- Severe hard-of-hearing, or deafness
- Involve in programs, services and instructions focus solely on their hearing problems
- Formal IQ tests with depressed scores due to inability to fulfill language requirements
- Giftedness traits stay noticed
- Instructions not challenging enough to keep them engaged



# Giftedness & disability both unidentified / Deceptive

- Mild hearing loss, unilateral hearing loss, auditory processing disorder
- Very good at compensating their hearing problems with their giftedness, e.g. using exceptional memory and visual perceptual skills to combat far-from-satisfactory auditory input
- Consistently achieve the required grade level and are considered to have average ability level
- Even those with hearing impairments noticed, may not be considered for special education service
- Achievement / standardized test scores deflated as cognitive resources utilized to compensate for the hearing impairment
- Not recognized for formal IQ test, will not receive gifted education service
- May no longer cope in high school years to maintain as an average performer
- Maybe perceived as daydreaming, uninterested, or lazy



## The Actiotope Model of Giftedness (Ziegler, 2005)

- Uses a systems approach to analyze an individual & his/her actions
- Does not suggest an individual need to possess some personal attributes such as high levels of intelligence or creativity, rather
- Focuses on analyzing the developmental processes of behaviors that would lead to the achievement of excellence
- Describes the complex interactions among an individual's action repertoire, his/her subjective action space, and the environment, which form the individual's actiotope



## The Actiotope Model of Giftedness (Ziegler, 2005)

- **With enough flexibility, the actiotope continues to adapt and will only fully develop after a long period of time for the individual to obtain excellence**
- **Steps for progressive adaptation of the actiotope to achieve excellence, individual must**
  - Identify whether an action was successful in expending the actiotope
  - Recognize he/she should apply what specific learning strategies to which learning situations which could generate effective learning
  - Generate variations of actions in his/her subjective action space and have the ability to choose among them in their action repertoire
  - Aware their actiotope should always remain adaptive, not only reactive, but also anticipative
  - Possess effective feedback & feed-forward loops in talent domain in order to maintain adaptive, with the help of competent trainers



- *“I grew up and I felt that I didn’t have an identity. I didn’t see myself as a deaf person who could achieve. I saw myself as someone who was sick who couldn’t really achieve in a hearing community.” (Vialle & Paterson, 1996, pp. 7)*



## Culturally marginalized identity

- 94% of deaf children born from hearing parents (Moore, 2001)

I am not as good as them  
to hear, speak & read?

Am I not working hard enough?

Should I sign? Am I normal then?

Who am I?

Low self-esteem severely limit their motivation to develop their action repertoire

- May perceive they cannot perform better and as a result learning helpless and continuing to stay in this marginal stage



# Deaf or Bicultural identity

- **Those who are identified with poor development in audition & spoken language may engage in**
  - sign language education
    - Learn sign language without obstacles and can interact freely with peers
    - Embrace disability as a culture, which is no inferior than the hearing one
  - sign-oral bilingual education
    - Learn both spoken language and sign language, and appreciate the benefits of both languages, & develop strategies with hearing and deaf peers



## From **culturally marginalized** to **culturally deaf / bicultural identity**

- Even parents and teachers may think that the student should focus on remediating the oral language disability and literacy problems, rather than to discover and develop possible actions, e.g. exposing to arts, enrolling in art & design classes, participating in school or open competitions, etc.
- These actions would have helped the student to access & develop his/her subjective action space
- Without the support of environment to execute appropriate actions, they student may think that they also should work on their disability in order to catch up with their normal hearing peers
- He/she may not realize they possess determinants that can lead to the achievement of excellence, resulted in under-estimation & under-achievement
- The individual & the environment dismiss the development & execution of actions
- The action repertoire of designing would fail to develop and without the necessary action goals for becoming a designer will not be formed



# Danny

- Educated in deaf school with oral-aural educational environment. Sign language not the formal medium of instruction
- Some teachers do not use, do not know sign at all
- Learn English starting in primary 2
- Difficult to follow classroom teaching although with hearing prosthesis. Need a lot of guessing and clarification of misunderstanding
- Curriculum not challenging enough, because of the barrier of language
- Further studied design at the Institute of Vocational Education
- Virtually no support for sign language interpretation, note-taking, loop system, or frequency modulation (FM) system
- *“Hard to understand the advanced concepts as I had no idea what the lecturer was talking about who was so far away from me?”*
- *“It was so frustrating that I couldn’t follow class at all, and I just left and find a place for a nap or visit the library!”*



**Danny's work as a deaf teacher at the  
Jockey Club Sign Bilingualism and  
Co-enrolment in Deaf Education  
Program**





# Jockey Club Sign Bilingualism and Co-enrolment in Deaf Education Program

- One of the first investigational sign-oral bilingual inclusive educational setting (Lau et al., 2010)
- Sign-oral teaching pedagogy adopted for every student in class, both D/HH and hearing
- Oral teacher can do basic signs, another teacher simultaneously sign
- Oral and sign languages equally emphasized
- Hearing students interact very early with deaf peers from primary 1 onward
- Hearing peers very willing to take up roles as interpreters in classes without sign teachers, e.g. in physical education
- “Secret” sign between deaf and hearing.
- Maximize learning potential, minimize limitations of hearing and oral language disabilities via simultaneous signing, hearing aids, cochlear implants, FM systems, etc
- Diversity and differences embraced everywhere: principal, teachers, peers, guardians of hearing peers, & school support personnel.
- D/HH students not limited than their peers to explore actions to construct their subjective action space for determining their future goals for study, work and life



# Whole class learning signs in a math class



**Break for group work, they do talk!**



# Oral and sign presentation 1



# Oral and sign presentation 2



## Danny's interview

- *“I never thought I could be a teacher. I know that I could help these deaf kids to learn. I feel great!”*
- *“I am much more sensitive to the needs of my deaf students because I've been there.”*
- *“Hearing students would sign to me to discuss questions they have in class and other personal matters. Initially I was worried that I couldn't help, but now I know that they do want to learn from me, and they did learn from me.”*
- *“I have applied a work visa to Canada and I want to learn about more about myself and what I can do.”*
- *“After the experience as a teacher, I think there is nothing much to be afraid of. I want to try more things.”*
- *“I want to be a professional designer. I wish to further study at the (National Institute of the Deaf) Rochester Institute of Technology.”*



## Danny's interview

Comments from his supervisor (Chris Yiu)

- *“Danny has changed a lot in these three years as a teacher for the deaf”.*
- *“Especially after he came back from a Deaf conference in US he became much more vocal & non-hesitant in expressing himself in front of people.”*
- *“He knows he can do more, which is the reason why he wants to go to Canada to challenge himself.”*

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# Success

Meet a few of the student

## Students




**Christopher Jappah**  
Growing up deaf among his hearing family and friends in Liberia, Jappah chose RIT/NTID because he wanted to meet other deaf people. [more](#)



**Sean Forbes**  
Forbes, a 2008 RIT/NTID grad, never let being deaf get in the way of his love for music. [more](#)



**Annmarie Rose**  
Being a woman in a scientific field has never bothered Annmarie, a faculty member in NTID's Laboratory Science Technology program. [more](#)



**Yesenia Ballasteros**  
This Advertising Photography major always knew that she wanted to pursue a major in photography. [more](#)



**Kevin Symons**  
Uncertainty in the economy doesn't have to mean disaster. Just ask 2002 Computer Aided Drafting Technology graduate Kevin Symons. [more](#)



**Gerry Walter**  
After more than 30 years leading NTID's institutional research efforts, Dr. Walter retired in 2006. Six months later, he was back and spearheading a new online initiative. [more](#)



**Hannah Worek**  
This Rochester, N.Y., native is the 13th member of her family to enroll at RIT. [more](#)



**Sara Gould**  
Says Sara, "Thanks to my co-ops at RIT, I've worked in design, manufacturing and testing." [more](#)



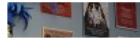
**John Panara**  
Born hearing to deaf parents, Prof. Panara's goal has always been to teach deaf and hard-of-hearing students. He says of the students at RIT/NTID, "They keep me young." [more](#)



**MaNeesha McIlwain**



**Jason Webb**



**Luane Davis Haggerty**

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# Department of Access Service, National Technical Institute for the Deaf, Rochester Institute of Technology

- RIT provides one of the most accessible education communities in the world for deaf and hard-of-hearing students. Here are just a few examples of the services that support your success.
- RIT Bachelor's and Master's Degree Programs
- Instruction with Access and Support Services: If you qualify to take courses in RIT's [College of Arts and Sciences](#), [College of Business](#), [College of Engineering and Technology](#), [College of Health Sciences and Technology](#), [College of Learning Arts and Sciences](#), [College of Liberal Arts](#) or [College of Science](#), RIT will provide the educational access services you need. You can request sign language interpreting services, FM systems, notetaking, or real-time captioning services by contacting the [Department of Access Services](#). Alternative services also will be provided as required. You also may request educational support services such as tutoring, personal and career counseling, and academic advising.
- Interpreting
- RIT has the largest staff of professional sign language interpreters of any college program in the world. Last year, RIT provided nearly 117,000 hours of interpreting services. In addition to classroom interpreters, you also may request interpreting services for non-academic activities such as athletic events, religious services, student government meetings, guest presentations and other student life activities.
- Notetaking
- Trained student notetakers record information during class or laboratory lectures, discussions and multimedia presentations. Class notes then are placed on the Web, so you can easily access them. Last year, RIT provided more than 63,000 hours of notetaking services for students.
- Real-time Captioning Services
- This service uses C-Print® captionists to provide a thorough English text display of classroom lectures and discussion. Students read this text during class and receive access to review or print it as permanent documents.
- Tutoring/Advising
- [Faculty tutors/advisers](#) help answer your questions and clarify concepts and information taught in classes. They also provide academic advising, discussing programs and career goals with you and helping you plan your schedule, select classes and prepare for cooperative (co-op) work experiences.

Sign language interpreting service

FM systems

Note-taking service

Real-time captioning service

Interpreting service for non-academic activities

Faculty tutoring/ advising



## From **culturally marginalized** to **culturally deaf / bicultural identity**

- During the process of coaching deaf juniors, Deaf teachers interviewed by Vialle & Paterson (1996) had an excellent opportunity to self-reflect on
  - the determinants they possess,
  - their action repertoire,
  - potentials of existing and new actions that can be placed in the subjective action space which would lead to the pursuit of suitable goals
  - how to strategically influence the environment for them to execute effective actions for goal attainment
- With a full acceptance of their identity, and the self reflections as above, individuals develops more actions, expands action repertoire, with better courage to develop & pursue excellence in a talent domain



*“I identify myself as a Deaf person and I live within the Deaf Community with identity comes pride as well and in being deaf I feel that I’m not different to any other person.”*

(Vialle & Paterson, 1996, pp. 8)



## Challenges to identify giftedness in Deaf & Hard-of-hearing students

- Billy, 6-yr-old, bilateral severe hearing loss, enrolled in an oral educational setting, signing discouraged
- hearing aids offer sufficiently audibility of sounds
- Teacher found incapable of learning lip-reading, spelling, reading, and spoken vocabulary, BUT communicate through gestures and mime from self-learning
- Standardized language scales very depressed
- Performed at top 2% at Raven's Progressive Matrices
- Responded rapidly once sign language was introduced



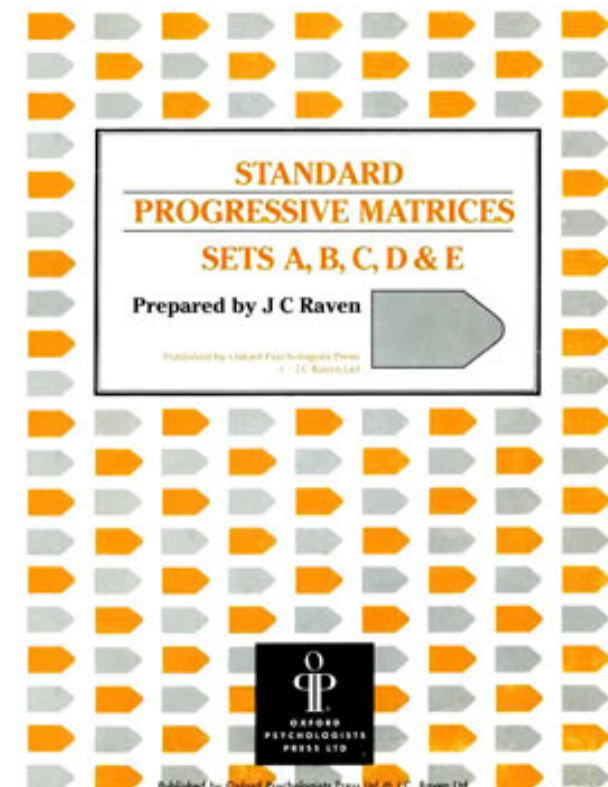
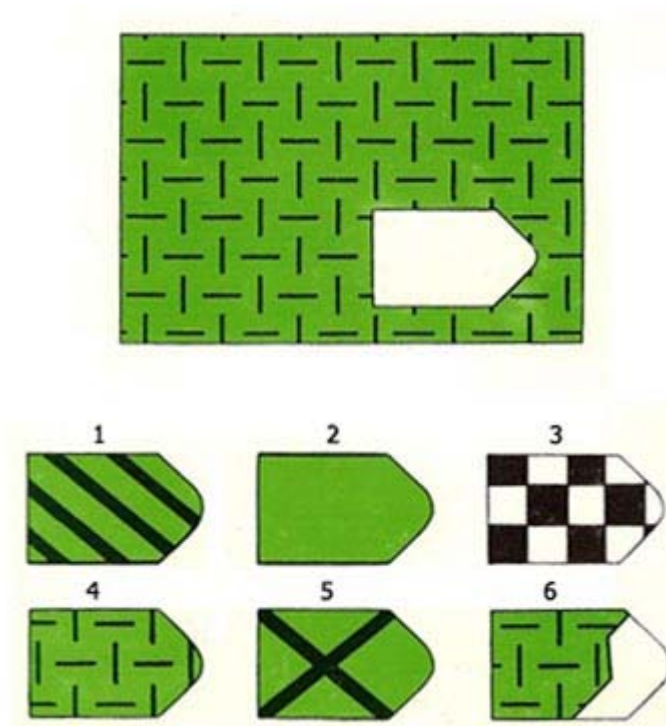
# Identifying giftedness in Deaf & hard-of-hearing students

- Reveal individual subtest performance and discrepancies
  - Hard for D/HH to meet the rigid identification procedure for giftedness (Brody & Mills)
  - Use of a single composite score (combining verbal and non-verbal measures) from IQ tests, overlooking high performance abilities
  - Miss out students with “spiky score syndrome” with scores scatter the extreme ends of the scale
- Reduce qualifying IQ cutoff to account for depressed scores
- Use purely non-verbal based instruments, e.g. The Raven’s Progressive Matrices tests (Raven et al., 1998)



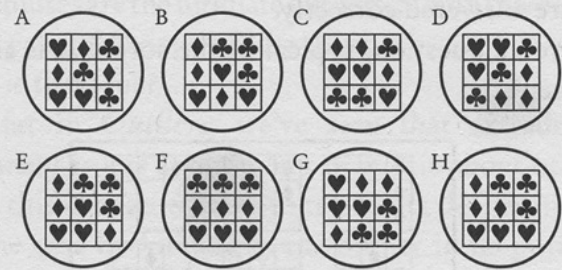
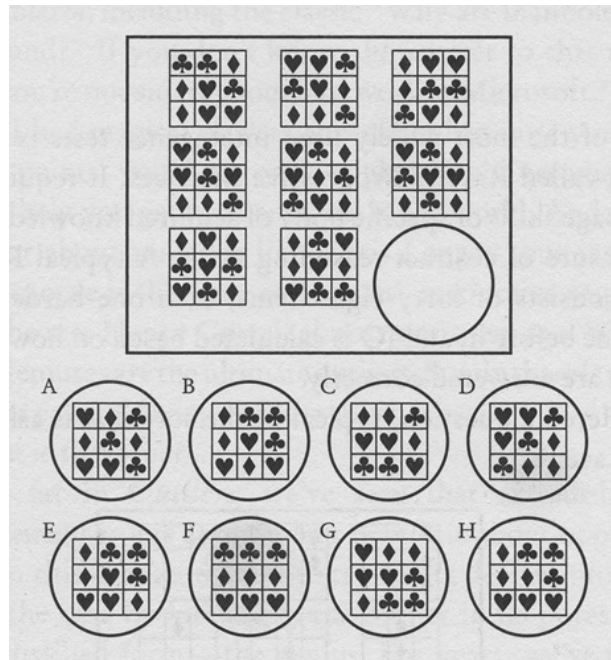
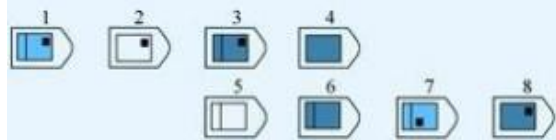
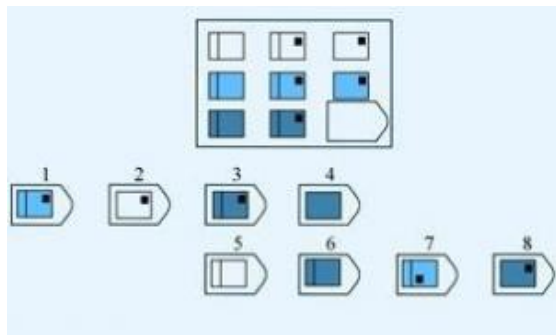
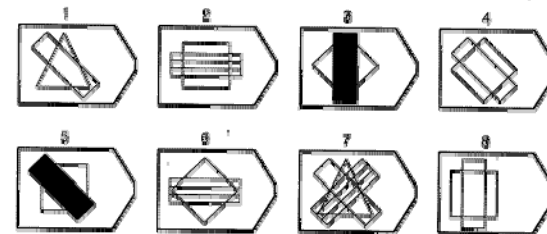
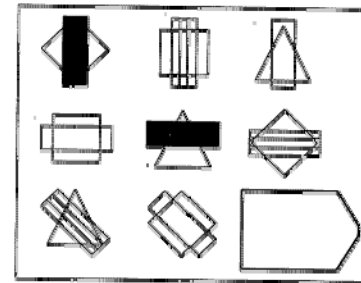
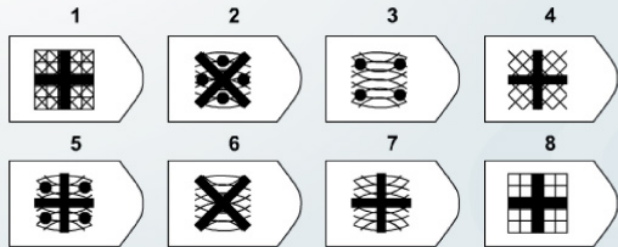
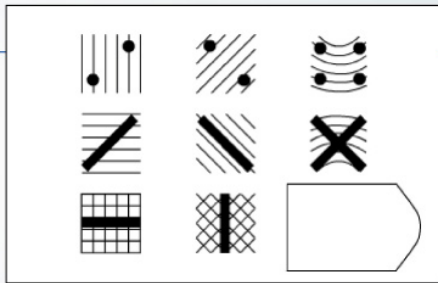
# Raven's progressive Matrices (Raven et al., 1998)

- **Multiple choice general intelligence test of two components of abstract reasoning (Spearman)**
  - Educative ability (ability to think clearly & make sense of complexity)
  - Reproductive ability (ability to store and reproduce information)

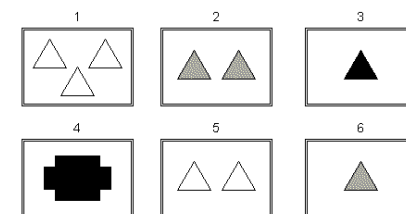
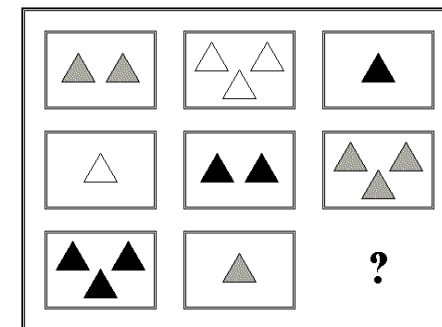




APM: Practice Item 3



Which answer fits in the missing space to complete the pattern?



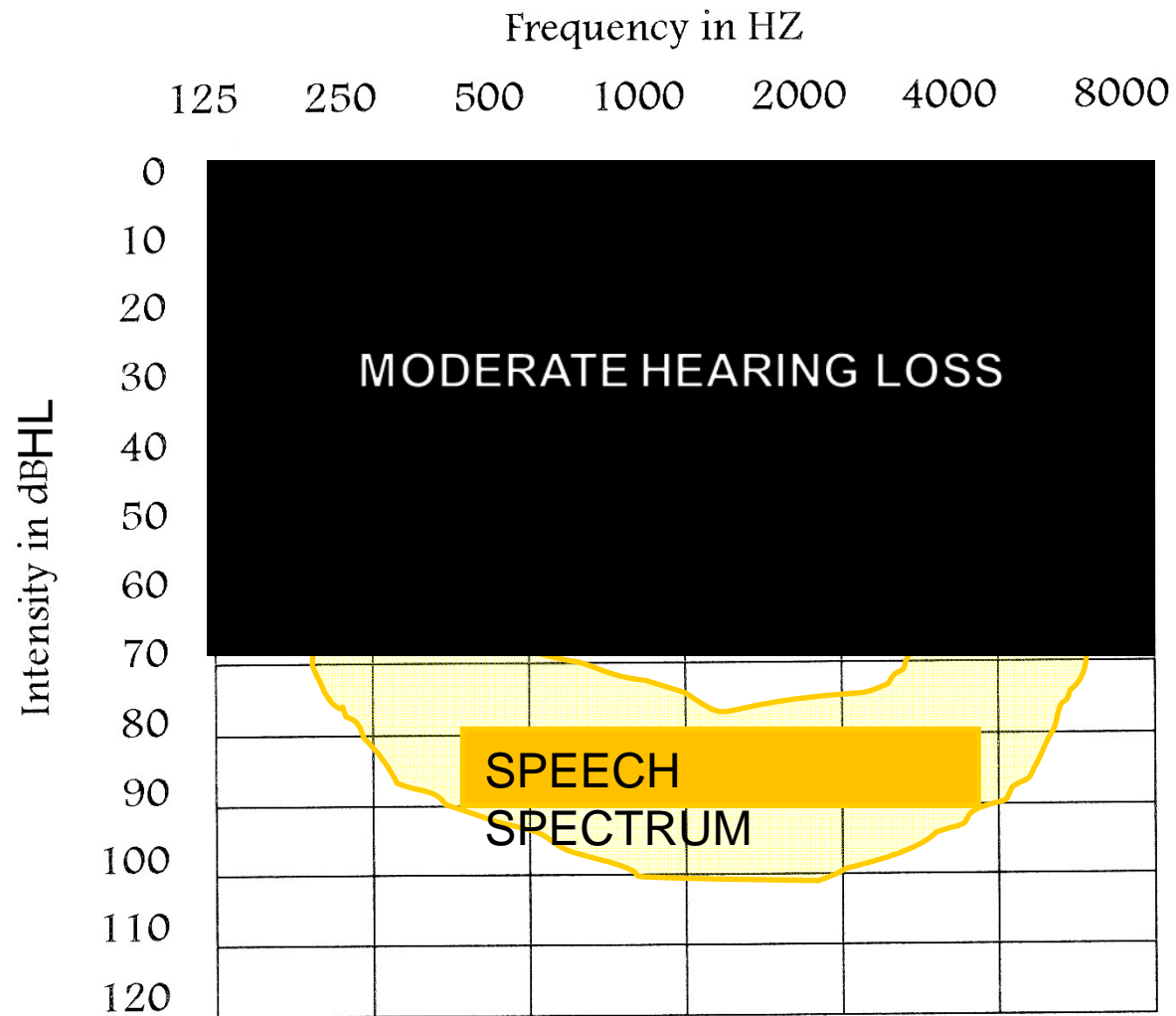


## Identifying giftedness in Deaf & hard-of-hearing students

- Evaluate if mother tongue, of the hearing community, as the de facto language to administer IQ tests is appropriate or not
- Consider fairness in language, communication mode, and culture
- Assess potential to learn signing in addition to oral language, by teachers competent in sign language
- Consider multiple sources of information: reports from teachers, parents, peers, student's interview, portfolio of both academic and non-academic work including fine arts, performing arts, and sports



# Hearing prosthesis - making the speech spectrum **AUDIBLE**



The frequencies of the Ling 6 Sound Test

**Koch (1999)**



# Danny's art and design portfolio

why art & design?





## Is Danny gifted? Will he achieve excellence?

- Has actions. But not enough actions yet.
- Has an action repertoire. But not really the one he would have developed if he were a hearing person
- Environment and himself has not given him enough opportunities to develop actions and to expend his action repertoire
- The experience of being perceived as a valuable person in his subject area is a self as a valuable person. Assessment of his subject area
- He would like to gain more challenging life experiences.
- He identified environments which would help him develop, refine and expand his actiotope.
- *“I like to learn different things about art. I don’t want to waste my art and design gifts!”*
- *“I am deaf. It would be difficult to perform outstandingly in the art world. I would rather enjoy the learning I have everyday!”*
- *“If (I) have strengths, people will know. Just follow the flow!”*

**Achievement of excellence?**

**Better odds now than before!**



# Acknowledgement

- **Dr Shane Phillipson**
- **Jockey Club Sign Bilingualism and Co-enrolment in Deaf Education Program, The Chinese University of Hong Kong**
- **Kowloon Bay St. John the Baptist Catholic School**
- **Chris Yiu, On On**
- **Danny Shum**



*“Whatever you are by nature, keep to it: never desert your line of talent. Be what nature intended you for and you will succeed.”*

- Sydney Smith (1771-1845), English Essayist

*“A true friend knows your weaknesses but shows you your strengths; feels your fears but fortifies your faith; sees your anxieties but frees your spirit; recognizes your disabilities but emphasizes your possibilities.”*

- William Arthur Ward (1921-1994), American Writer



**INSPIRING LEADERS**

**REVOLUTIONARY INVENTORS**

**DISEASE FIGHTERS**

**MOTIVATING WRITERS**

**EMOTIVE ARTISTS**

**INNOVATIVE EDUCATORS**



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