

Hearing Impairments in the Classroom

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Studio: Assistive technologies and accessibility

Needfinding methodology (*who*)

- Three interview participants:
 - **J**: early 20s, male, college student: *fitted with hearing aids at 17 days*
 - **A**: 53 years old, male, Stanford Professor: *mother with a hearing impairment*
 - **D**: 55-60 years old, female, employed by Bing Concert Hall: *hearing loss starting in mid 40s*



A



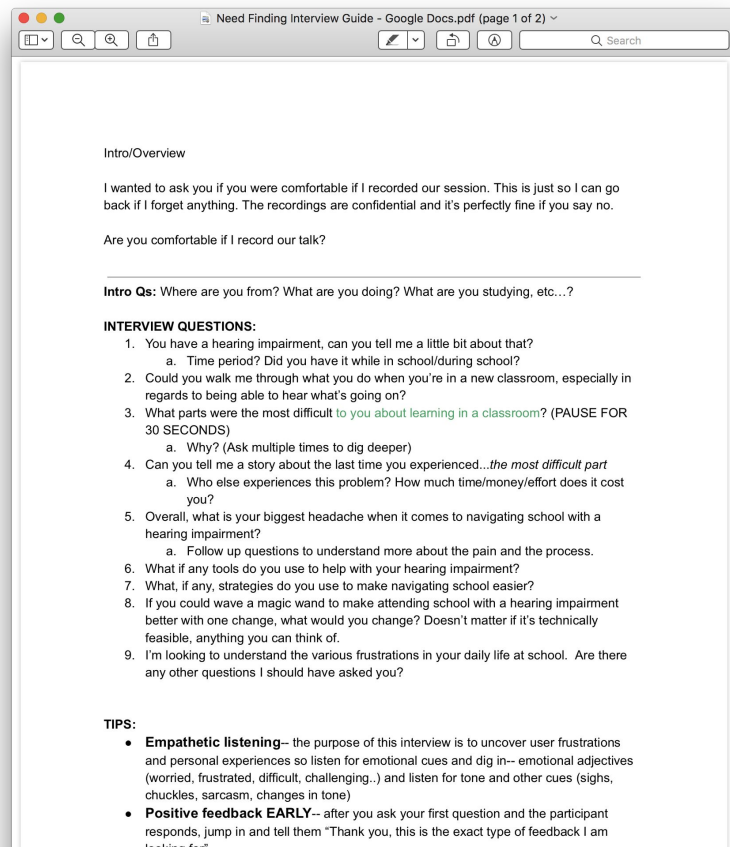
J



D

Needfinding methodology (*what we asked*)

- Participants were *not* compensated
- Developed interview guide, asked questions like:
 - Could you walk me through what you do when you're in a new classroom, especially in regards to being able to hear what's going on?
 - What if any tools do you use to help with your hearing impairment?
 - If you could wave a magic wand to make attending school with a hearing impairment better with one change, what would you change?



Needfinding methodology (*where we talked*)

- Remote
 - J - Zoom interview
- At Job
 - D - In-Person Interview
- On Campus
 - A - In office



zoom



Stanford East House



Bing Concert Hall

What did we learn?

1. Accessibility is an edge-case problem, not a systemic one (at least at school)
 2. Everyone has hearing aids – but has unique issues with them
3. Unique needs with every user

Interview results (*quotes*)

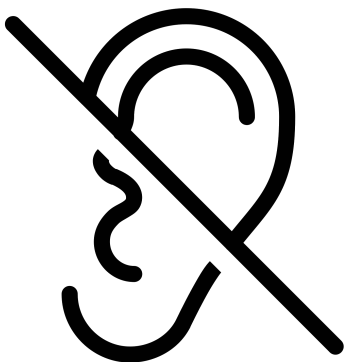
“hearing infrastructure is the weakest part of the health system”

“relies on eyes if glasses are with her”

“accents are tough on campus”

“can’t hear notifications when in another room.”

“hold onto old hearing aids”



“every hearing loss is a little different”

“wasn’t a good fit”

“didn’t affect her quality of life”

"hearing infrastructure is weakest part of health system" **SAY** "I might not be representative"

"mostly about seat position ... "Get a seat" where right side of my body faces the front"

"Spanish class ... we switched seats every day" "First aids at 17 days"

"My hearing aid broke"

"doing something I'm not supposed to do... switching hearing aid from ear to ear"

"had to wait a week ... drive an hour"

"Every hearing loss is a little different" "FDA mandates in-person training"

"hundreds of products... audiologists only trained on a set"

DO - Physical talker

- Mimed pulling out and re-putting in the hearing aids
- Keeps detailed information on his hearing issues
- many ~~years~~ solutions when hearing aids fail i.e. vaseline for a bad seal
- **Saves old hearing aids in case his fail**
- tilts his good ear towards me
- orients in his chair so his right ear is towards me
- He experiments with new hearing aids to way to use them
- speaks eloquently & familiarly about healthcare & FPA
- Does ~~the~~ research on audiology infrastructure
- ahead of time i.e. study abroad in Spain
- Rescribes the state of audiology in the US

THINK

Improvements to the system is a barrier to getting more options

Irritation w/ the gov

Frustration w/ insurance

He's lucky to be able to afford good hearing aids and replacements **should be more audiological resources**

More hearing aids should be available for at each audiology

Hearing aid training should be easier & more accessible

Hearing aids should be repairable

FEEL

- Frustration
- Anxiety
- Curiosity
- Sympathy
- Pride
- Independence**
- Lucky
- Guilt at his fortune
- Humor
- Limitation
- Self-deprecation
- Confusion
- Anger

J

SAY

"reading people based on what they're focused on."

"works in the music business, so always having to rely on hearing aid"

"documentation is crucial" "how much she preanalysis of a room she does"

"can't hear notifications when in another room."

"better to do something myself, then rely."

"she doesn't wear hearing aids on a daily basis"

"accents are tough on campus"

"relies on eyes if glasses are with her"

"understand exactly what others say would make her delighted"

"how do phones help hearing loss"

Do

"documents a lot of email"

- wears hearing aid or headset

uses glasses
- did not realize how much work she does

- uses eyes to compensate for hearing

- likes doing things herself

- uses electronic communication daily

- works in a loud environment

- interacts with many kinds of people

- thinks technology is helpful

- only speaks English (w/ American accent)

Think

- believes being organized is important

- believes one shouldn't waste time

- believes one should be able to handle their responsibilities

- people will speak with accents will slow down interpretation of speech

- thinks hearing works fine, not an issue

- thinks there can be better audio alerts

- thinks sound can dictate a social environment

- thinks that there ~~is~~ is a need to use hearing aid

- "thinks phones could improve hearing accessibility"

- hearing/understanding clearly brings joy

Feel

independence

calm

comfortable

hurried

limited

annoyed

excluded

unsure

unaware

stressed

determined

self-sufficient

D

SAY

- His mom has been using hearing aids for the past three years
- His mom forgets to use them → sporadic usage
- Most of his mom's comments were about effectiveness (they're too loud or too quiet)
- Mom has memory problems → "wasn't a good fit"
 - Even with hearing aids, "not great hearing going on"
 - Would lose a hearing aid, only use one at a time
 - "Didn't seem to affect her quality of life"
 - Effectiveness was limited because of her memory loss
 - older family use hearing aids
 - "easy to lose"

THINK

hearing aids are poorly designed for people with other cognitive issues
 cure of greater concern than hearing
 Mom's memory issues makes the hearing aids ineffective
 hearing aids are easy to lose
 hearing is not necessary for a productive hearing is not most important cognitive function
 accessible technology should improve life
 it's important to have different cognitive functions work together (heart + memory)
 believes children should look after parents when older

believes ~~close~~ ^{we} should assist ~~that~~ ^{our} close people

A

Do

- has normal hearing
- reminds mom to put in hearing aid
- helps search for mom's hearing aid
- looked away to gather thoughts
- thinks deeply about issue of hearing loss
- speaks concisely
- willing to be patient to help someone with a disability.
- finds the humor in situations
- does not have difficulty communicating with mom.
- ~~mom~~ use hearing consistent

- considers/thinks about the words he says

Feel

thoughtful
 patient
 nostalgic

emotionally distant
 concerned
 wistful

ironic
 controlled
 unsure how else to help

disappointed
 frustrated
 helpless
 somber



Surprises

- *peace-of-mind* with an extra hearing aid
- Working *loud events* with hearing loss
- *navigating a new room* takes lots of work

Contentions



- contention between *adventurousness and cautiousness*
- Issues with *accents not life*
- No hearing *no problem*



We met J, a 21 year old college student who is fiercely independent and wants to travel

We were amazed to realize that he has to wait several days and travel over an hour during a school day in order to be seen by an audiologist who is licensed for his hearing aids

It would be game-changing if J's hearing aid issues didn't disrupt his life.



We met D, a concert hall manager in her mid-fifties

We were amazed to realize that she works in a concert hall and doesn't use her hearing aid on event nights

It would be game-changing if she never missed a notification.



We met A, a graduate school Professor who works with accessibility and student inclusion

We were amazed to realize that hearing was a secondary concern compared to other disabilities.

It would be game-changing if hearing solutions took into account other disabilities