



R·I·T

NATIONAL TECHNICAL
INSTITUTE FOR THE DEAF

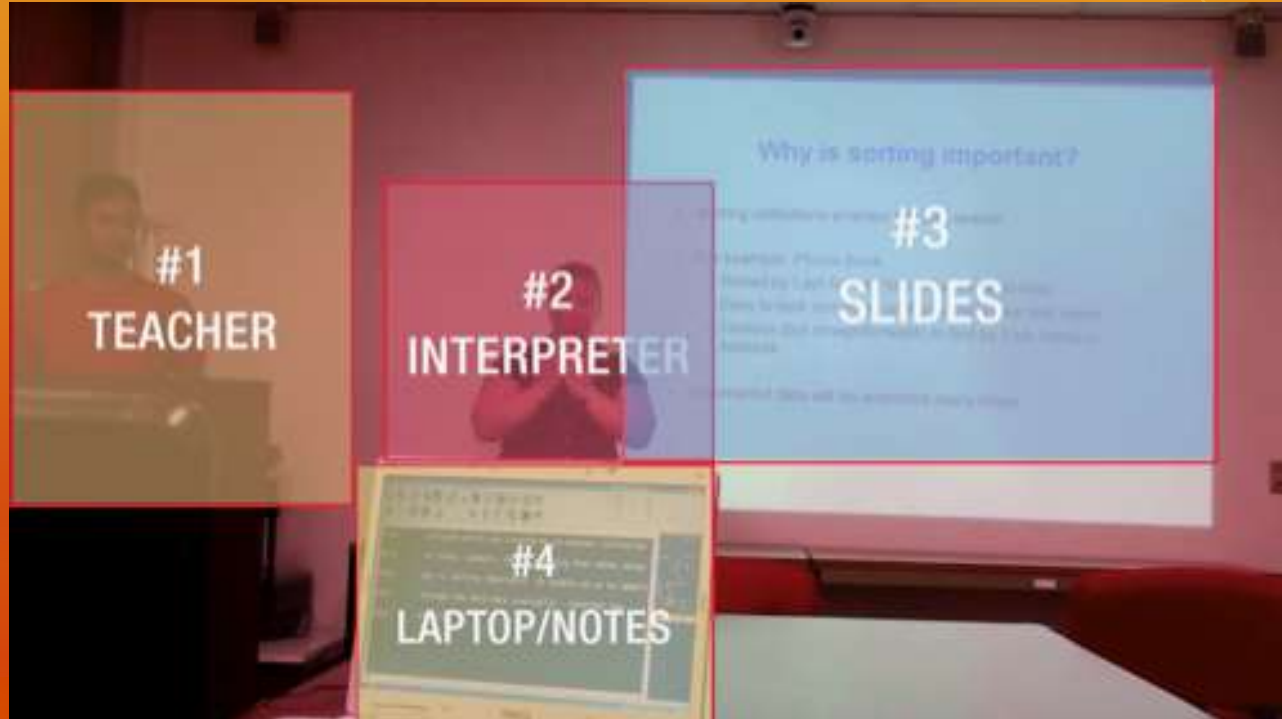
Collaborative Gaze Cues and Replay for Deaf and Hard of Hearing Students

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Main problem: Simultaneous views



Challenge: Simultaneous Visuals



Goal: Maximize Accessibility to Information in the Classroom

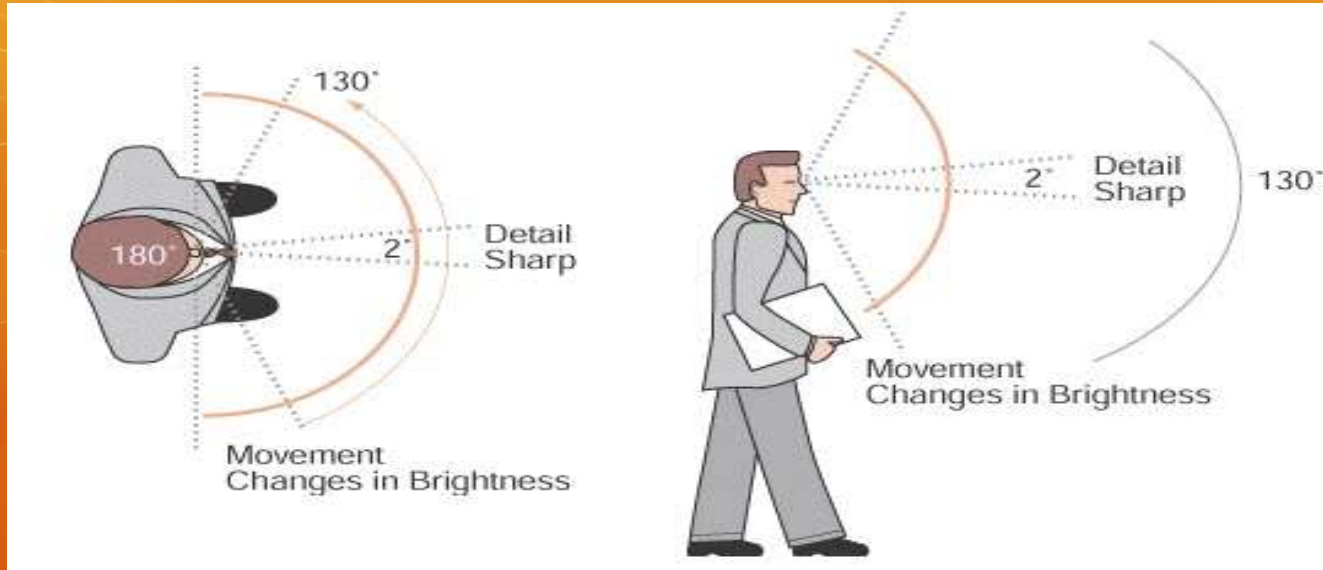
For DHH students using visual accommodations

1. Maximize visual access

1. Minimize attention split and mental effort

Challenge #1

Visual Dispersion

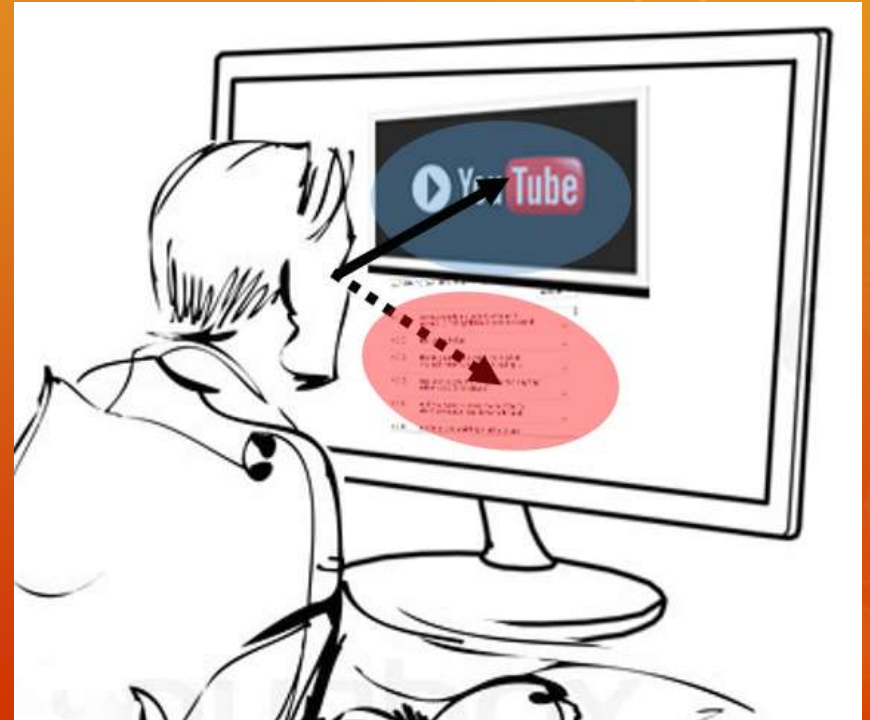


Human vision detail has a narrow field of view

Solution #1

Visual consolidation approach

If images are close together, can see everything with eye movements only

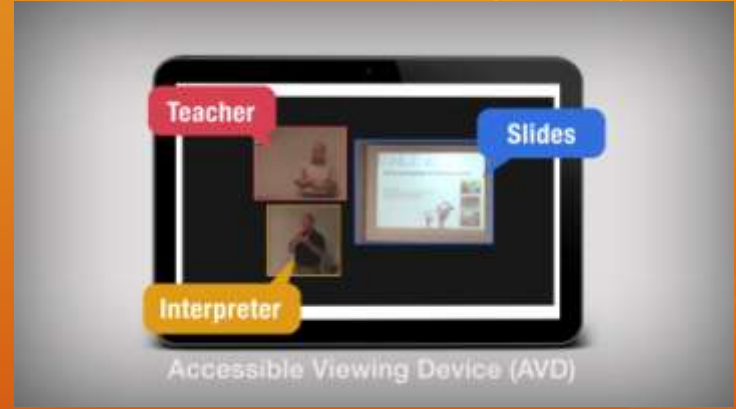


Solution #1

AVD View Consolidation Technology



FOV: 90 degrees



FOV: 20 degrees

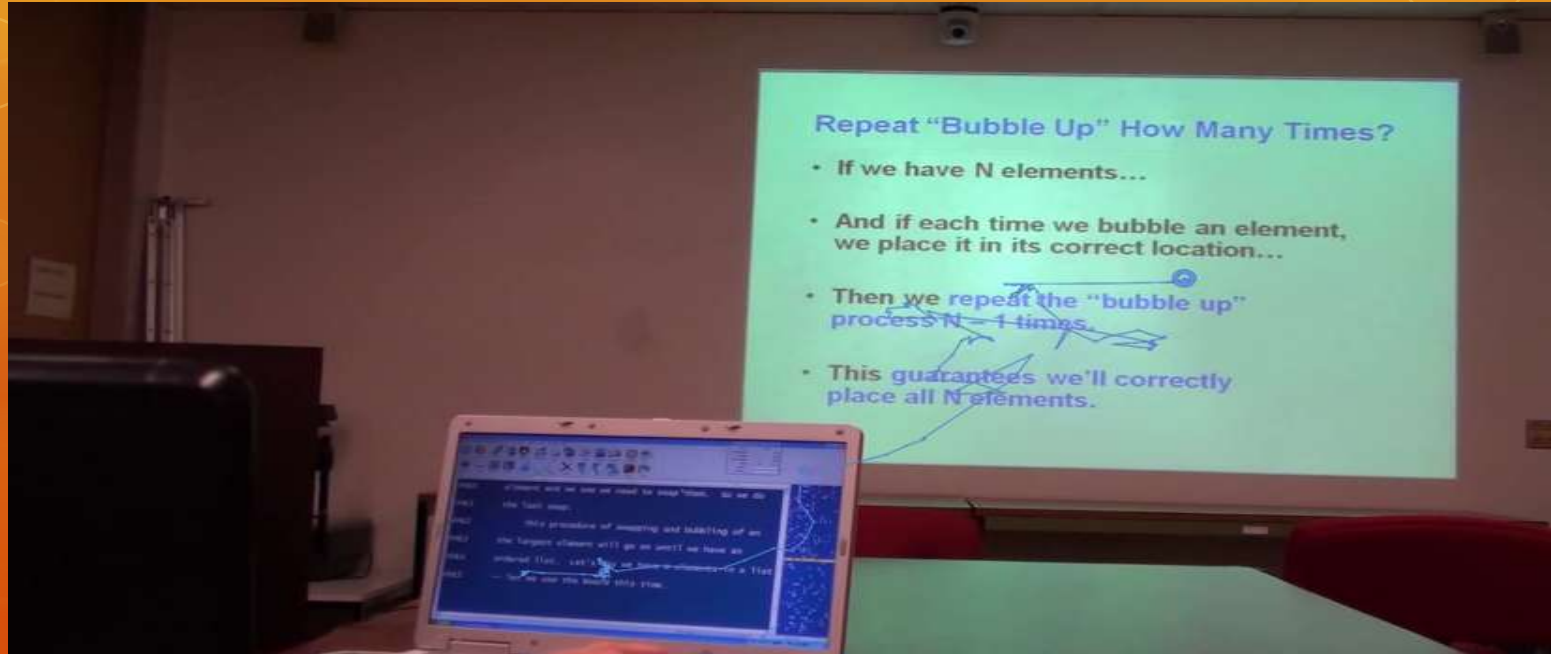
<http://www.rit.edu/avd/>

Video: <http://avd.rit.edu/Videos/ImagineRIT2013v2.mp4>



Challenge #2

When to look



Read and Scan. Repeat.

Solution #2

Replay missed information

NTID Accessible Viewing Device

Time delay: -15 Seconds

Example 1: Consider the sequence of terms 3,
6, 9, 12, ...

a) What is the third term?
b) Write a formula for the general term.
c) Predict the 17th term.

any term at all.
For example, if I wanted to find the 20th term, I
could start counting negative 2, negative 4, negative
6, negative 8 and go on and on and on until I got to
the 20th term, but that would be boring. It's much
easier to take the formula and figure

- 5 sec Live + 5 sec

- 5 sec Live + 5 sec

<http://avd.rit.edu/videos/DeafExperienceET11s.m4v>

Challenge #3

Rate of Speech versus Captions

- 👁️ Speech - 150-300 wpm (2.5 to 5 words per second)
- 👁️ Captions - Each pop-up line has 3-6 words
 - 👁️ Each line is shown for 0.5-2 seconds
 - 👁️ If word is unfamiliar, need more time

Solution #3

Increase time to read or process

- Increase number of lines
- Show captions as a transcript
- Highlight and/or pause captions



Study

- 12 DHH participants
 - 5 female, 7 male
 - Ages 18-27
- Watched video with and without visual cues
- Watched video with and without live replay

Study Results

- Likert Survey

- "Did you like the visual cues?" [1-5]

- "Did you like the live replay?" [1-5]

- Significant preference for visual cues and live replay

Accessible Views: Future Enhancements



Overlays

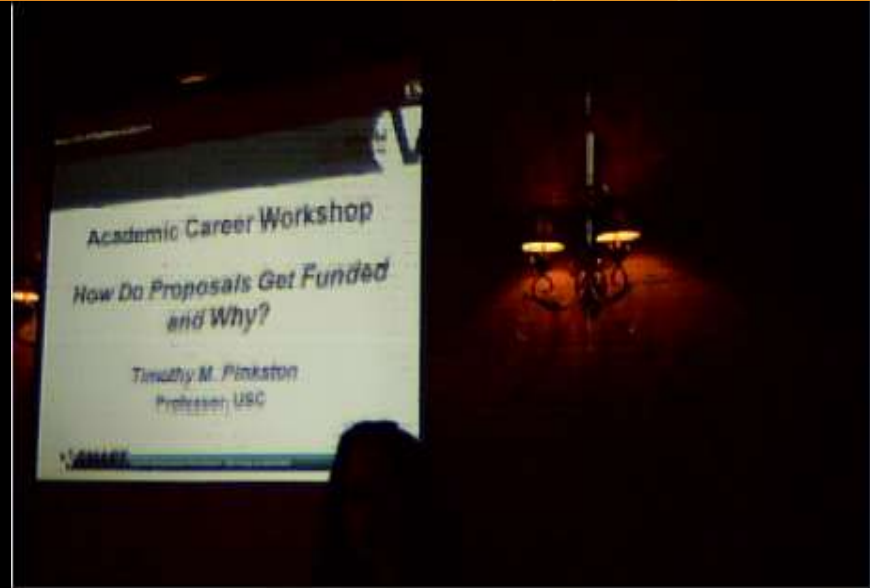


Image Optimization

Want to get involved? Email us!

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