Development of a device to support people affected by Dyslexia

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IT-IDX1Y Interaction Design

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Introduction

- 20% people have reading/writing problems
- **Dyslexia**

Solution

- Reading device
- **Word pronunciation**
- Hearing aid

Approach

- Double Diamond
- **Interaction Design** principles

Step 1: Requirements analysis

- Persona
- Questionnaire

Questionnaire

Methodology	Results
• Closed-ended questions (open are possible) • Collect answers from a lot of people • Background information • Specific questions	• People mainly read in the afternoon and evening • They read at desk • Hearing aid is interesting • A few have dyslexia

Persona

Methodology	Results
• Typical user of the product • Not a specific person, but still real! • Background • Behavior	• Child • Dyslexic • Difficulty • Frustrated • Sense of inferiority

Step 2: Designing alternatives

- Conceptual design
- Concrete design

Designing alternatives

Methodology	Results

• Conceptual design
• Concrete design
	• 2 different designs
	  ◦ Headband
	  ◦ Smart pen
	• Need
	  ◦ Camera
	  ◦ Speakers

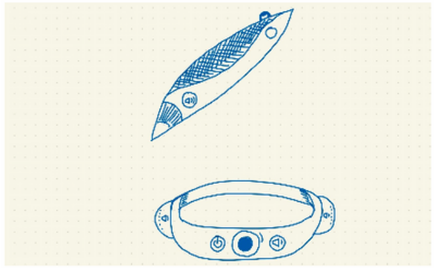
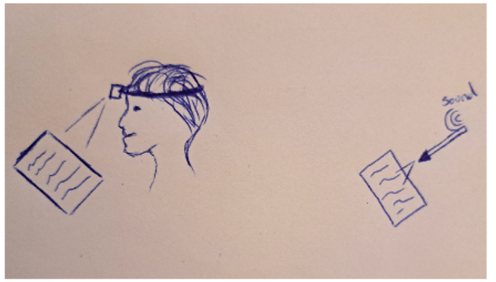
Step 3: Low-fidelity Prototyping

- 2 cycles
- Sketches
- Physical realization
- Wizard of Oz

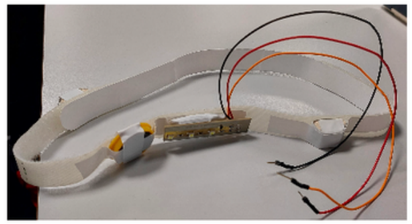
2 cycles

Methodology	Results
• Building more prototypes • Improve the initial idea	1. Prototypes are realized 2. Feedback is gathered through testing 3. Prototypes are modified

Sketches

Methodology	Results
• Simple drawings for concepts • Show the idea	 Fig. 7: First sketch of the prototypes.  Fig. 8: Second sketch of the prototypes.

Physical realization

Methodology	Results
• Paper • Velcro • Cardboard • Weight	 Fig. 5: First version of the headband prototype.  Fig. 6: Second version of the headband prototype.

Wizard of Oz

Methodology	Results
• Show functionality • Simulate software's response	• User reads a text • Team member acts as hearing aid

Step 4: Evaluation

- Methodological triangulation
- Observations
- Interviews
- Improving the prototype

Methodological triangulation

Methodology	Results
• More data gathering techniques combined	• Semi-structured interviews • Direct observations

Observations

Methodology	Results
• Direct • Usability testing • Think aloud • 2 categories of people with different texts	 Fig. 9: Picture of the testing process.  Fig. 10: Picture of the testing process.

Interviews

Methodology	Results

• Semi-structured
• Questions:
  ◦ Warm-up
  ◦ Yes/no
  ◦ Open
  ◦ Cooling-off
  ◦ Acknowledgements
• Recorded
	• Headband heavy
	• Audio solution suitable
	• Possibly a visual aid

1. How old are you?
2. What is your nationality?
3. Do you have diagnosed dyslexia? Any other problems in reading?
4. Which of the prototypes did you prefer? Why?
5. Were the prototypes comfortable? What about the size, weight, and location?
6. Did the audio solution help you? Were you disturbed by the sound?
7. How many times do you think you want to listen to the pronunciation?
8. Would you like to have a visual help as well? Why?
9. Do you have any other ideas on how to solve the problem?
10. What other features would you add?
11. Would you wear the device in public? Why?
12. Would you use the device in bed? Why?

Improving the prototype

Methodology	Results
• Understanding feedback • Redesign • Adding features	• Hearing the pronunciation more than once • Smaller camera • Speaker more rounded

Project future

- Data collected from the right people
- Emotional design – product aesthetics
- Focus on cognitive frameworks
- Production

Thank you!

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