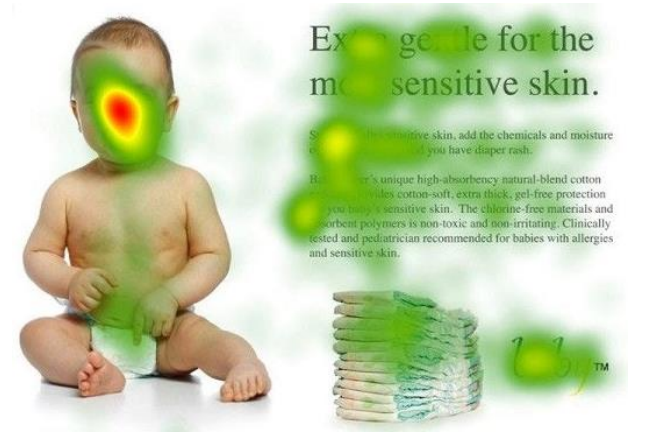# Overview

- Introduction to Eye-tracking

- Study background

- Study participants

- Participants' tasks

- Findings

- Recommendations

- Concluding remarks

Overview of Eye-tracking

- An objective measurement of users' perception of an object or screen

- Measurements carried out by an eye tracker that records the position of the eyes and the movements they make

- Eye trackers direct near-infrared light to the center of the eyes (pupil), causing detectable reflections in the pupils & cornea (outer-most optical element of the eye)

- The reflections are tracked by an infrared camera

- Tracking users' eye movements on a screen allows us to learn about what is good & bad about interface design

UP UX Lab Eye Tracking Technologies

Tobbi Pro Glasses 2

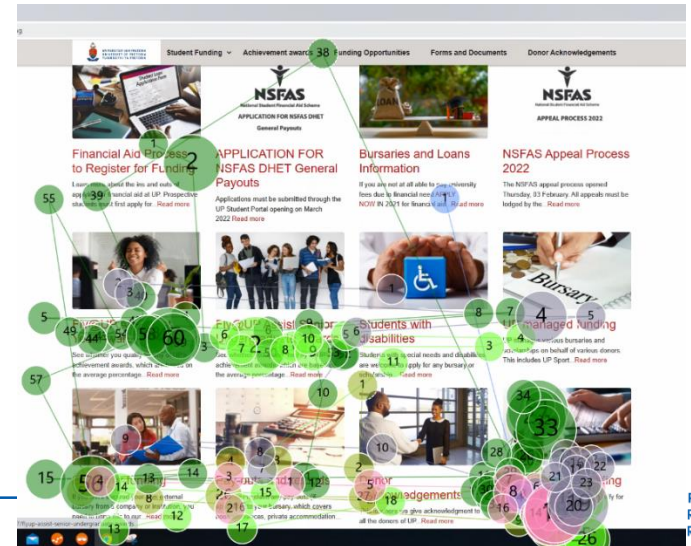Tobbi Pro Screen-based eye tracker

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Eye-tracking data

- **<u>Gaze plots</u>** graphs showing a user's sequence of fixation

- Gaze videos show animated path of users' fixations
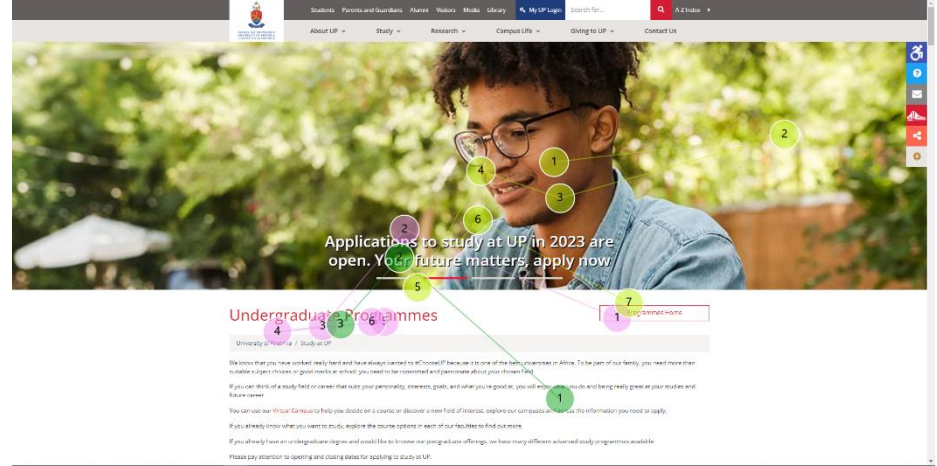
Eye-tracking data

Heat maps indicate which parts of an object users looked at and how intensely they looked
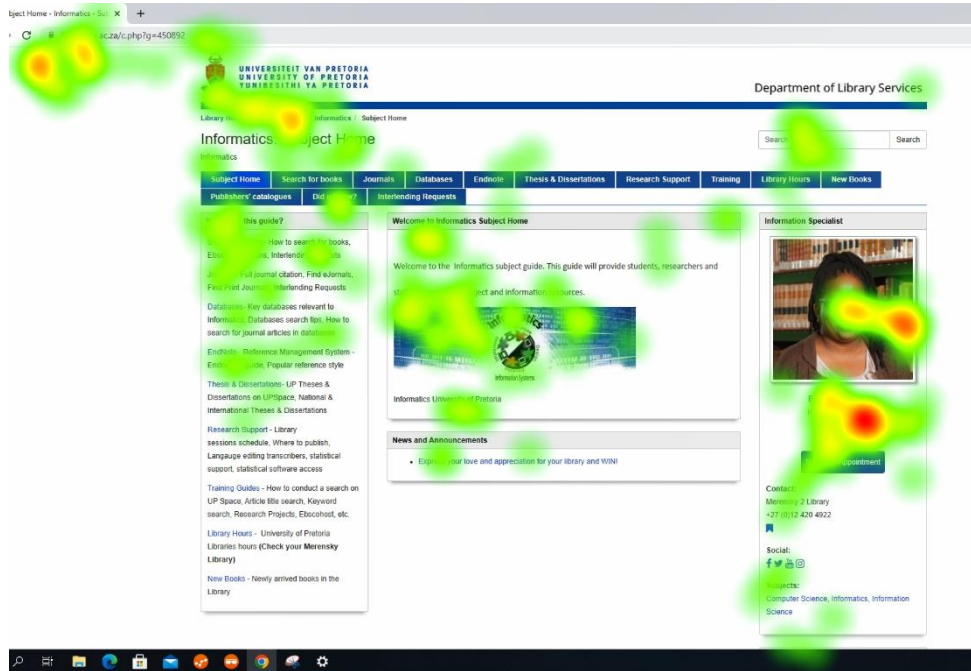
- Red denotes the most intense fixations, yellow moderate ones, and green the least intense ones

- Areas with no colour indicate that users did not fixate on those parts of the stimulus

A

B
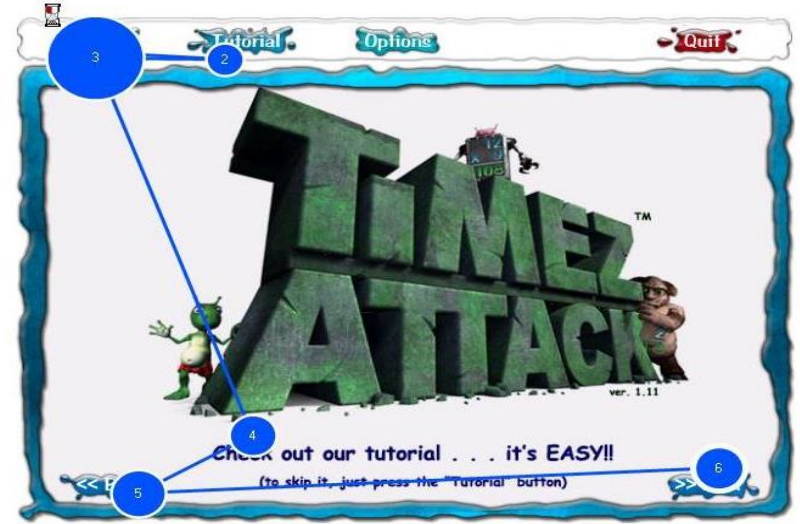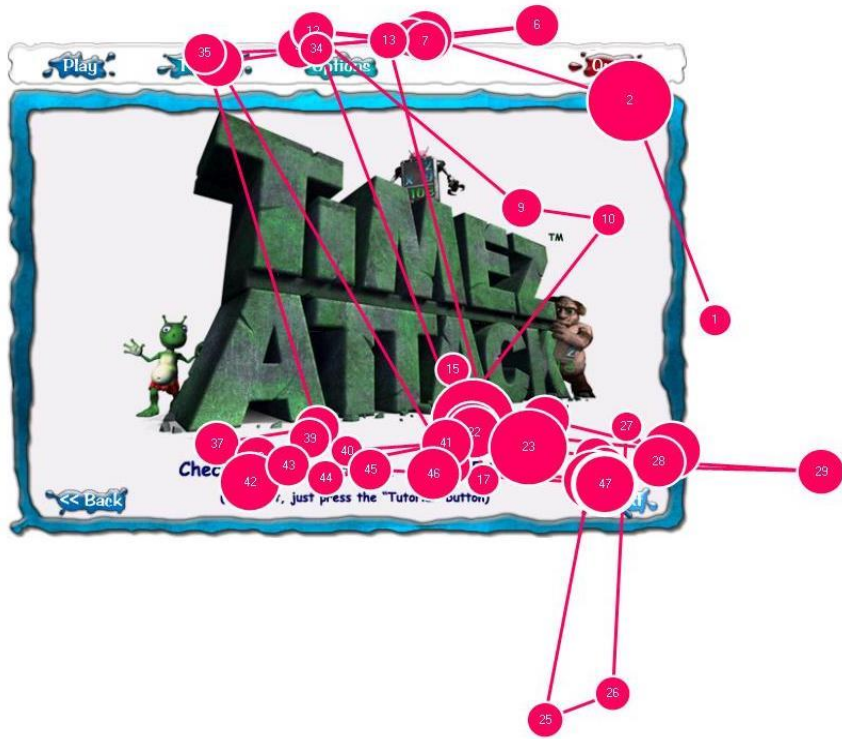
Comparing user groups UX evaluation: children vs. adults

UP Medical Campus Library UX Evaluation

- The medical campus library underwent refurbishment

- Requirements elicitation from the library users (students) prior to refurbishment

- A 24-hour space for students

- Following refurbishment, UX evaluation of the library to determine…

    - The extent to which students would be able to use the library spaces unaided

    - The Tobii eye-tracking glasses used to track study participants' gazes

Study Participants

- Ten participants

- None has used the medical campus library prior to study

- All have used other UP libraries (Merensky, Law, & Music)

- All, except 1, are returning students

- Five enrolled for degrees in the Faculty of Health Sciences

- Four enrolled for degrees in the EMS Faculty

- One enrolled for a degree in the EBIT Faculty

Evaluation Process

- Explanation of eye-tracking and purpose of evaluation

- Informed consent from participants

- Task immersion before each task

- Completion of tasks by participants

- The post-test questionnaire (each participant)

Participants Tasks

- Explore the entrance of the library

- Find the office of Linda Mbonambi, an Information Specialist

- Find Discussion Room 3

- Use the technology in Discussion Room 3

- Find Discussion Room 15

- Find the bathroom

Findings from Task 1: Explore Library entrance

Aim:

- Ensure participants are comfortable with the eye-tracking glasses

- Get their views on the design of the entrance

- All participants acknowledged the modern design of the entrance

- Participants loved the colour combinations

Findings from Task 2: Find Information Specialist Office

Aim: Can participants find the information specialist's office using the library signage?

Signage on entrance to corridor

Corridor leading to offices

Findings from Task 2: Find Information Specialist Office

- Only five participants able to find the office unaided

- Four of these five participants stopped at the "Staff only" sign, asked if they could enter

- All participants able to find the Information specialist's office once they passed the "Staff only" sign

- Average time: 1 min 49 secs

- Shortest time: 45 secs

- Longest time: 3 min 20 secs

Findings from Task 2: Video Clip

Findings from Tasks 3: Find Discussion Room 3

Aim: Did participants notice signages around them? Can they find their way back to discussion room 3?

- Evaluation briefing was in Room 2

- Participants walked past Room 3 while trying to locate the Information specialist's office

- Four participants were **unable** to find room on their own

- Average time: 53 secs

- Shortest time: 15 secs

- Longest time: 2 min 30 secs

Findings from Task 3: Video Clip

Task 4: Use the technology in Discussion Room 15

This task required participants to:

- Connect a laptop to the big screen using available technology

- Project a video on the laptop to the big screen

- Use the controller on the table to change the volume of the video

- Three participants **could not** connect laptop to the big screen using HDMI cable

- Four **struggled** to adjust the volume

- Participants used volume control as a **slider**…not a button that should be pressed

Task 4: Use the technology in the discussion room

Discussion room audio controller

Laptop connected to HDMI cable

Findings from Tasks 5: Find Discussion Room 15

Aim: Can participants find discussion room 15 unaided?

- Discussion room 15 located at the back of the library

- Participants could use either of two corridors

- Only **one participant found** the discussion room on their own

- Some participants tried to go down the stairs to the archive

- Some participants made a full circle, going back to their starting point

- Participants **struggled** with the glass door leading to the quiet area

  - **Unsure** whether to **push** or **pull glass** door

  - **Unsure** which of the two glass doors to use

- Average time: 2 min 9 secs

- Shortest time: 1 min 42 secs

- Longest time: 3 min 3 secs

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Findings from Tasks 5: Find Discussion Room 15

Signages on corridor leading to the "quiet" area of library

Findings from Tasks 5: Find Discussion Room 15


Stair leading to the archive

Discussion room 15

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Findings from Tasks 6: Find the Bathroom

Aim: Can participants find the bathroom unaided?

- **All** participants **found** the bathroom unaided

- Average time: 18 secs

- Shortest time: 50 secs

- Longest time: 8 secs

- Find Discussion Room 3

- The speed of task completion attributable to them noticing the bathroom sign while attempting to find discussion room 15
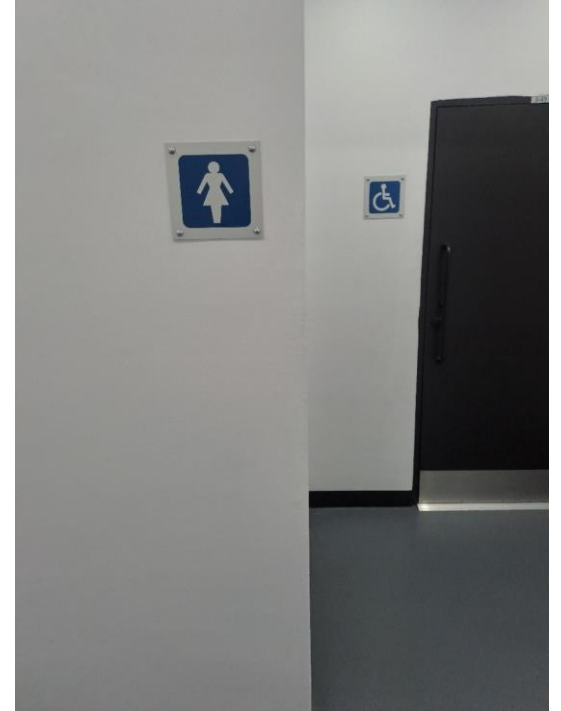
Recommendations

- Have additional signage to the Information specialists' offices

- Remove the "Staff only" signage

- Update the signage at the entrance of the library to include directions to all discussion rooms

- Include instructions on how to use the technology in the discussion rooms next to the audio controller

- Update the signages leading to the quiet room to include the discussion rooms at the back of the library

- Add signage on the glass door to indicate which door to pull/push

Concluding Remarks

- We commend the library for their commitment to improving their stakeholders' user experience

- Study provides objective, evidence-based results of the extent to which students would be able to use the library unaided

- Video results showed that participants were only able to find the bathrooms unaided

- Participants' verbal feedback corroborates the video recordings

- While the evaluation tasks were straightforward, participants struggled due to the absence of, or confusing signages

- Implementation of the recommendations will decrease students' confusion and improve their user experience

- Physical spaces can also benefit from the incorporation of UX design