

Shaping the mediating technology in humans' (with visual impairment) activities



Designing Guidance along Audio-haptically Augmented Paths in a City Environment

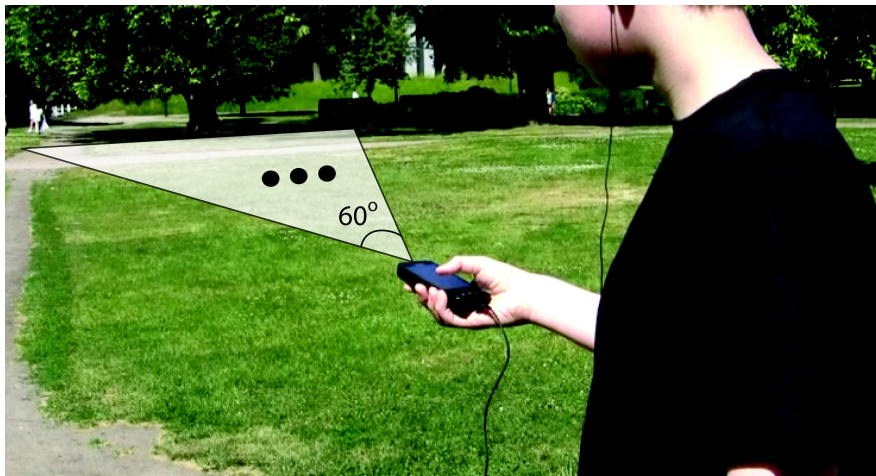


Tactile drawing program for visually-impaired children in school

Delphine Szymczak – ISCAR – 07/07/2012

Lund Time Machine : a tourist guide in a smartphone

Haptimap.org



Goal : using less vision in navigation

Vibration feedback when scanning for directions

Audio and visual tourist information at points of interest, as well as sound windows from the past.

Less visually centered tourist guide => More focus on the environment
cf. Licentiate thesis 2011
„Designing Guidance along Audio/haptically Augmented Paths“
=> *Half time of the PhD*

Why Activity Theory?

Assistive technology as necessary tool in the mediation

=> Need to try it in the real situation of use

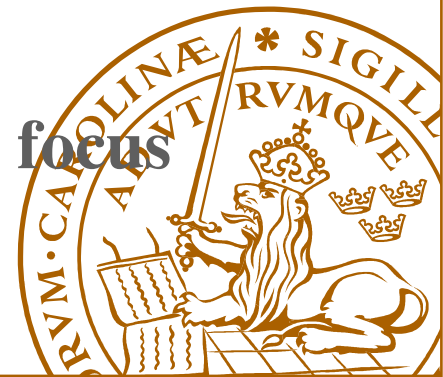
Giving a frame, for understanding a complex human behaviour

Changing focus

- From product to user centered
- Having and doing, from user to activity

=> From user-tool in focus

=> To user-object (with tool mediation) in focus



Giving a frame



Unit of analysis :
activity

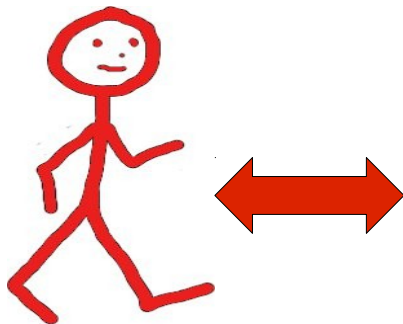
Tool to hold the
complexity in
mind

Changing focus

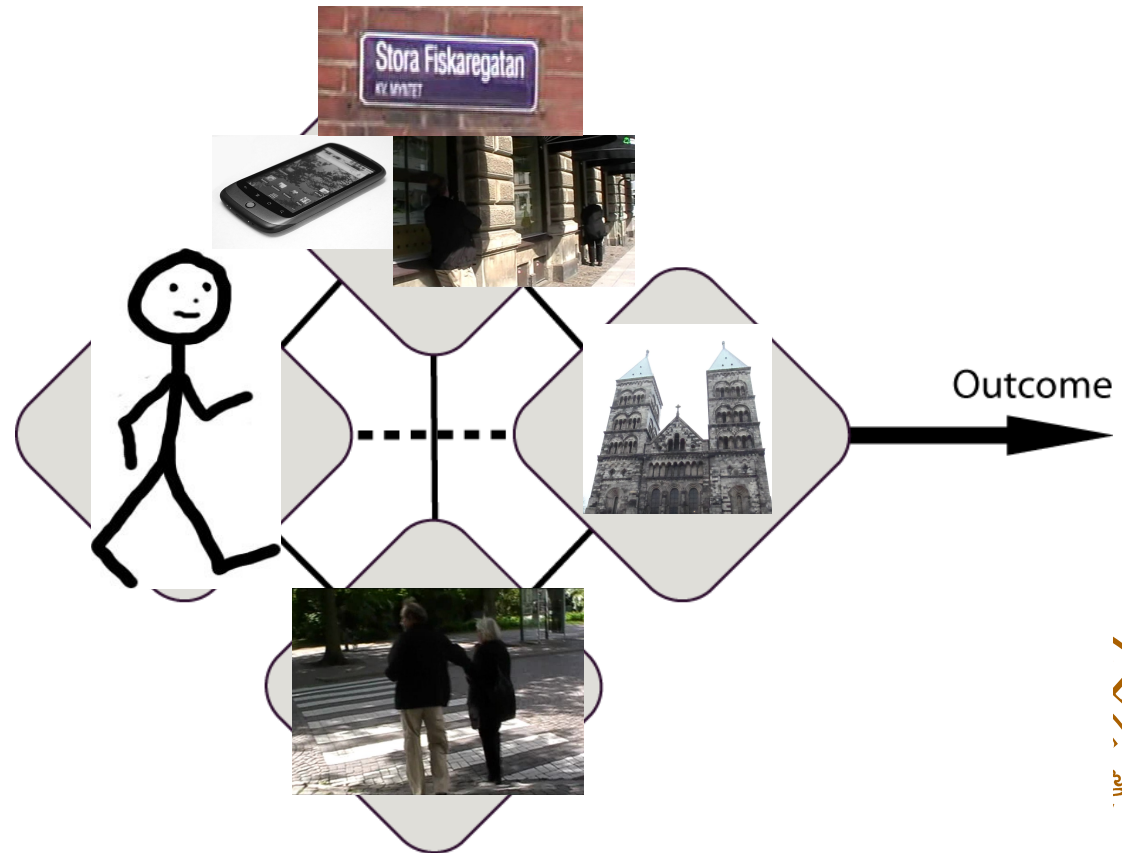
Product



User and interaction

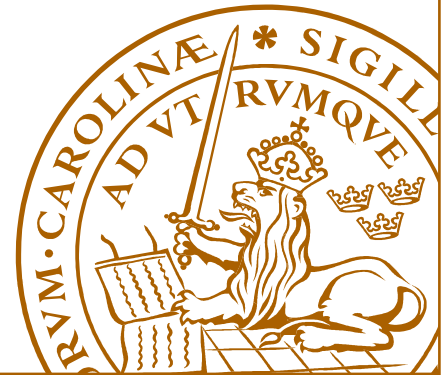


Activity with motive



Activity Theory Tools

- ➔ **The Activity Checklist**
(Kaptelinin 1999)
- ➔ **Environmental focus : The Activity Diamond**
(Hedvall 2009)
- ➔ **The hierarchical structure : a practical solution**
(Leontiev)
- ➔ **Benefit of the extended framework**
(Huang 2009)



Haptics In Pedagogical Practice (HIPP)

- Drawing programme
- For children in school with visual impairment / blindness
- Through tactile and audio interaction

hipp.certec.lth.se



HIPP : the study

Several children in swedish schools received the robot and the drawing program. (5 at the time of study)

In one location, two children were filmed, one over a period of several months (9 years old). The program also evolved during that time through iterative user centered design (ÅÄÖ example).

Direct observations and interviews/focus group during a week field-study on that location. Dialogue with the pedagogs involved in HIPP in that location.



HIPP : the activity

The child and...

The human environment (teachers, assistants, swedish organisation for the blind... and the classmates... and me as a technical support & researcher)

The artefactual environment (HIPP program and robot, other numerous assistive devices... and the rest of the classroom)

The object(s) (learning 2D material, drawing on your own, integrated in class, in family...)



HIPP and Vygotsky

several considerations...

Possibility to interpret through Vygotsky „Imagination and Creativity in childhood“

=> Horizontal relationship between the teacher and the child, giving access to the child's inner world with his drive of drawing / creating

Field observation : the child engages and learns more in drawing than in exploration.

Result for the technical : HIPP drawing programme seems to be a better facilitator than any previous options. Need to keep those properties of the program.

Side note : Is the ZPD between child and teacher changed by the presence of HIPP?

=> Engagement in technology as roots for future professional life.

Field obs. : The drive of drawing with HIPP facilitates the keyboard learning

Result : Importance of having a very standard program.

Side note : Also important for the teachers and assistants...



HIPP : the question(s)...

Analysis to come (videos, field notes, interviews).

=> *What not to miss?*

(Goal : take back ideas into the program)

Thank you for your attention!

=> Any comment and/or critique is very welcome!

