

# Design Challenges in working with low-literate users

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# ICTD Applications and illiteracy

- ICTD applications to alleviate poverty and boost socio-economic development.
- Challenges - illiteracy among target populations; up to 2 billion illiterate.



**Goal: Devise and implement design principles such that a non-literate person can, at first contact with a computer, immediately realize useful interaction with minimal or no assistance**



# Research Methodology

- Ethnographic interviews.
- Participatory and Iterative Design.
- Controlled usability studies.

Studies conducted with people from urban slums of Bangalore, with over 180 hours spent.



# Communities Studied

- Informal Sector jobs.
- HH income: 18\$ -67\$
- Low level of formal education.
- Mobile phone users and non-users.
- Almost no experience with PC's.
- Some households with TV, music player.
- Local language spoken, no English.



# Designed applications

- Job information for domestic helpers
- Map Navigation.

Both Applications : PC based.

# UI Design Principles

and **why** we came up with them

# What is illiteracy ?

Inability to read text.

# No text; Liberal use of graphics and imagery

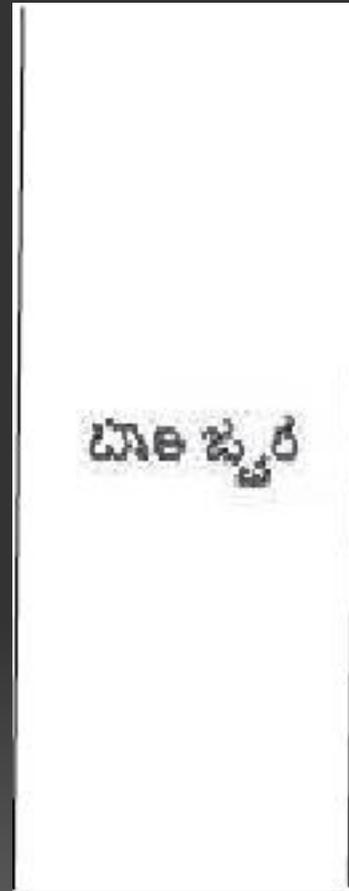
Inability to read text



What is the optimal visual representation ?

# Use of static hand-drawn representations

Problems with accurate interpretation of other interpretations.



# Paying attention to subtle cues

Response dependent on psychological, cultural or religious biases.



# Voice feedback in local language for all functional units



Single modal information: not enough

# Consistent help icon on all the screens



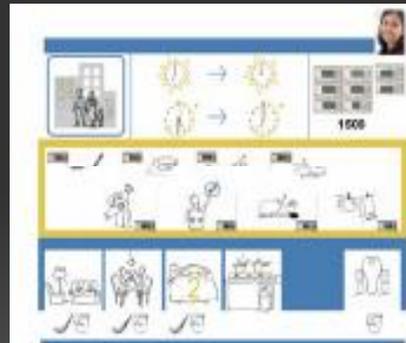
# No text, BUT number are OK



# Other principles

- Text free, but not click free
- Landmarks in geographic navigation.

# Final prototype: Job search



# Final prototype: Map Navigation



# Experiments and results

## Cultural Considerations:

- Test site: usually homes
- Conducted through trusted contacts
- Indirect story based approach.

## Application:

- Find a Job for a friend, and reach the neighborhood
- Three different tasks for the map.

# Experiments and results

## Subjects:

4 single participants and 2 collaborative groups of 5 participants.

## Quantitative results:



- Text UI : no use.
- Text free UI : prompting required in most of the cases.

# Qualitative Results

## **Immediate comprehension of voice feedback:**

- Fun for the new users
- Local language factor

## **Collaborative use:**

- Nervousness and discomfort in single usage scenario.
- Enhanced User Experience in collaborative scenario.

# Qualitative Results

## Value of help:

- Encouragement to explore
- Reassurance.

## Navigation metaphors:

- Metaphors are important (analogy to book).

## No faith in technology:

- Need to change the mindset.

# Qualitative Results

- Difficulty in conceptual abstraction when a skill required generalization from instruction material, compared with the case when instructional material was specifically tailored to the skill.
- Presence of proximate users might deter motivation to learn.

Thank You