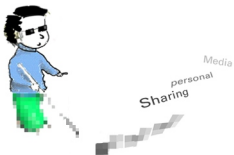


Interactive Device for Physically Challenged



Microsoft Research

Industrial Design Center
Indian Institute of Technology

Design Team

Rashmin

Product Designer
Architect

Faculty of Design

Areas of Interest

Interaction Design
Design Education
Product Design

Ravi krishna

Metallurgical Engineer
Software programmer

Areas of Interest

Information Design
Graphic Design

Viswanath

Architect

Areas of Interest

Parallel cinema
Anthropological studies
Design for the third world

Media
personal
Sharing



Part 1

project brief
and understanding the problem

Design for Physically Challenged

current reality

adaptation to the devices designed for the privileged.

narrow user group

existing devices and services cater to a very small percentage

affordability and economic feasibility

“Because of technological revolution, we have traveled. But what about a person who has physical limitations to travel along with us?”

the need

addressing the sector in society, which is least addressed

products no longer being special devices

more design interventions in this area

design affordances for users in different economic levels, professions and cultures

Ubiquitous devices, as the existing devices are very complex.

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Special Devices

educational

mobility

vocational

daily living

**"communication is the
natural state of human
existence "**

lack of special communication device

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Information revolution has blurred the boundaries.
Communication has been made unimaginably easier & faster.....

..... But not for the visually challenged

80% of information that a normal person gets is through visual means

So,

an interactive **communication** device for
visually challenged



User group

Specific – people with **acquired visual impairment**

“trauma that the acquired blind has to go through is greater than congenitally blind”

Extended user group

Broad – people with congenital blindness
normal people

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Blind some statistics

500 million in world is disabled

42 million blind

9 million in India... largest percentage of blind
from India

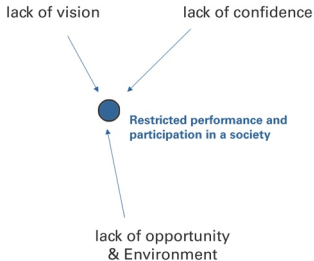
70% illiterates

only 10% know Braille



challenges & problems faced

“Conflict between how the society looks at them and how they want the society to look at them”



dependency

lack of medium for self expression

very less input from the visually dominated world

trauma,frustration and depression

activity limitation and participatory restriction

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A decorative graphic in the bottom right corner consisting of a series of gray rectangular blocks arranged in a staircase pattern, with a dark gray shadow cast to the left and slightly behind it.

sharing for visually challenged

what we share

Secrets
Space
Ideas
poems
writings
Thoughts
Gossip
Vision
Internet
greeting cards
knowledge
memory
sorrow
books
anger
photos
experiences

what blind share

Secrets
Space
Ideas
poems
writings
Thoughts
Gossip
Vision
Internet
greeting cards
knowledge
memory
sorrow
books
anger
photos
experiences

“

Civilization is all about sharing and it grows by sharing. ones status in the society is defined by the level of sharing

Sharing is a therapy...
one feels psychologically very comfortable by sharing and externalizing things!

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Sharing



Personal for visually challenged

personal for us

Dreams
Space
Choice
comfort
ownership
proximity
cost
attachment

Opinion
gifts
letters
photos
diary
creations
moments
experience
choice
solitude

personal for blind

Dreams
Space
Choice
comfort
ownership
proximity
cost
attachment

Opinion
gifts
letters
photos
diary
creations
moments
experience
choice
solitude

“

blind and us have very few
personal things in common,
because of mobility and
visual constraints

”

Media
personal
Sharing



media for visually challenged

Media is nothing but
an extension of oneself

“

Our media are visually rich
and dominant, which cuts
down the option for a blind
to choose a media of his
interest..... For them a
television is a big size radio
and theatre is a radio kept in
a big hall

”



Design Methodology

Being Sensitive...

Habits and activity analysis
understanding existing devices
questioning the pedagogic approach
user and agents study
ideation, concept generation, prototype
user testing



Associations

all, who are Sensitive...

occupational Therapist
psychologist
toy Designers
sociologist
acoustical engineer

social worker
programmer
product Designer
communication Designer
aroma therapist



Various Perspectives of looking the problem

sociological
psychological
economical
therapeutical

Design intent

Integrating blind into the community & Social fabric
reducing the dependency of blind over family & Friends
improves Self- Confidence & Self Respect
Gives Satisfaction & a medium for self expression

Thus bringing about Comprehensive rehabilitation

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Part 2

user study
understanding the user

User Studies

getting into their shoes

Prof. Uday Boumik

Profile

Acquired blind, Professor - Chemical Engg Dept, IIT Bombay



Feedback

- Listens to his wife as she reads novels.
- Listens to the news/movies on the television.
- Isn't comfortable with Braille. Finds audio to be a greater advantage than Braille.
- Records relevant information when someone reads out his technical papers on an audio tape.
- Is aware of computers but requires some help.
- Is very organized.
- Remembers telephone numbers by way of memory chunking.
- Recognises people by the height from which the voice emanates, tone and mannerisms of the other person.
- Goes out with an escort. recognises the path based on landmarks like speed breakers and familiar sounds.

Communication needs

- an alternative for braille keeping in mind the present pace of information exchange.

Inferences

- the blind would want to be as independent as possible.
- a major hurdle for the blind is the lack of immediate availability of information.
- the blind wouldnt want their blindness to be made obvious.

Insight

- audio is a friendlier option than braille for communication.
- but some key points to be addressed with sound like :
"I SCREAM" and "ICE CREAM"

User Studies

getting into their shoes

Mr. Kumar

Profile

Acquired blind(Partially), Businessman



Feedback

- Lost his sight after class X in school.
- Was interested in business since school days.
- Started by selling liquid phenyl, soap ,agarbatti etc and now deals with supply of computer hardware.
- Does only salesmanship while father takes care of accounting and monetary transactions.
- Intends to encourage other blind people to start their own businesses.
- Enjoys playing chess.
- Doesnt like to use the cane for navigation
- Meets friends over the weekends and talks about business, movies and music.

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Communication needs

- something which could help him manage his accounts.
- some way of communicating with his children when away.

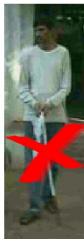


Inferences

- need for personal documentation and sharing.
- there aren't many personal devices for the blind.
- the blind would be independent if given adequate training.

Insight

- any device used by the blind should not carry the stigma associated with blindness.



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User Studies

people associated with the blind

Mr. Nayak

Profile

Physical Instructor at the National Association for the Blind.

Feedback

-NAB aims at building up the confidence of the newly blind and the uneducated blind so as to make them self reliant.

-teaching includes home economics and domestic science

-orientation and mobility to get a sense of their physical environment

-Learning Braille and social behaviour

-Physical education: short put, cricket, chess and playing cards.

-Vocational guidance

-Typical jobs for the blind :telephone operator, help desk, computer operator/steno.



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Typical devices used by the blind are:

cane(most important),
hand brailler,
notex (to recognize currency notes) and
short hand machine.



- Talking books: the textbooks are available in 9 Indian languages recorded on a tape.
- The communication devices known to the blind are:
FM radio, television and telephone.
- Sources of information gathering is through the residual senses:
tactile(touch), smell, taste and audio(prominent source)
- Not averse to new technology although they might hesitate initially.
- The popular interests of the blind are music and movies.



Experiences with user

-the blind are capable of handling any task provided that they are trained for the task and the tools used by them can be designed keeping in mind their limitations.



Inferences

-the games are not designed for the blind but adapted.



-need for expressive/physical interaction.

Insight

-better recreational activities can be designed specifically for the blind.

-care for a consistency of mapping in the new designs.

User Studies

people associated with the blind

Profile

Counselor at Happy Home and School for the Blind.

Feedback

- The blind children are trained so that they treat themselves as normal and not disadvantaged.
- After 12th Class the students do not have much choice in terms of pursuing education further.
- They lack books in Braille at the university level.
- The school doesn't yet encourage activities with the computer.

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Experiences with user

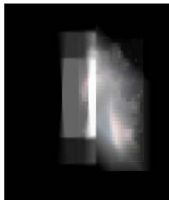
-low awareness among parents about existence of special schools for the blind.

Inferences

-low awareness among faculty about technological innovations which could help enhance the learning abilities of the blind children.

Insight

-the partially blind have almost negligible vision.



Observation/analysis & inferences from user study

Inferences

- low awareness among faculty about technological innovations which could help enhance the learning abilities of the blind children.
- the games are not designed for the blind but adapted.
- there aren't many personal devices for the blind.
- the blind would be independent if given adequate training.
- the blind would want to be as independent as possible.
- a major hurdle for the blind is the lack of immediate availability of information.
- the blind wouldn't want their blindness to be made obvious.
- need for personal documentation and sharing.

Insight

- the partially blind have almost negligible vision.
- better recreational activities can be designed specifically for the blind.
- care for a consistency of mapping in the new designs.
- any device used by the blind should not carry the stigma associated with blindness.
- audio is a friendlier option than braille for communication.

Metaphors

public spaces
radio
wearable/carriable device
diary
camera
post-it notes
message board.

