HUMAN-CENTERED DESIGN FOR DEVELOPMENT

BEST Lab Presentation
Friday, November 4, 2016

Julia Kramer
The goal of theDesignExchange is to support the design and design research community in exploring, developing, learning and discussing human-centered design.
“Innovation Model”

- Observe and Notice
- Frame and Reframe
- Imagine and Design
- Experiment to Learn

Source: Beckman & Barry, 2007
RESEARCH
ANALYZE
IDEATE
BUILD
COMMUNICATE
We have collected over **300 design methods**, and organized them into an ontology with five main categories.
Design Methods

• Three characteristics [1]:
  – Provides a specific way to proceed in a design process
  – Is general in that it can be used to solve more than one specific problem
  – Is observable in its use

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[2]: Jagtap, Warell, Hiort, Motte, & Larsson, 2014
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  – Provide structure to a fuzzy open-ended process
  – Support designers in accomplishing goals systematically
  – Have been linked to successful outcomes in design practices [2]

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• But, they’re not used!
  – Designers aren’t aware
  – Methods aren’t taught with interdisciplinary lens
  – Methods aren’t taught in context

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[2]: Jagtap, Warell, Hiort, Motte, & Larsson, 2014
Example Design Method: AEIOU

Activities,
Environments,
Interactions,
Objects, and
Users
Example Design Method: AEIOU

<table>
<thead>
<tr>
<th>(time)</th>
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  - Midwives providing contraceptive counseling |
| 2:40 | - Woman is called for arm bar contraceptive placement | - Partitioned exam area | - Midwife swabs arm  
  - Midwife opens sterile packages  
  - Midwife inserts arm bar | - Jadelle arm bar contraceptive device  
  - Sterile instruments  
  - Sterile examination table | - Woman receiving contraceptive implant  
  - Midwife performing implant procedure |
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How can we understand how design methods are used in context?
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... in particular, the context of global development
Design for Development

Things we know:

• Successful engineering feats: largely been made by and designed for the Global North [3, 4]
• Engineers and designers are increasingly tasked to address complex challenges plaguing our world

Design for Development

Things we know:
• Successful engineering feats: largely been made by and designed for the Global North [3, 4]
• Engineers and designers are increasingly tasked to address complex challenges plaguing our world

Things we don’t know:
• How can we support engineers and designers around the world, not just in the Global North, to work on addressing these challenges?
• How can we leverage the human-centered design framework to address global challenges?

Our goal is to build theDesignExchange to be a platform to support designers around the world in choosing appropriate design methods to address complex design challenges.
How?

300+ design methods descriptions and instructional guides
How?

80+ contextualized global development case studies

300+ design methods descriptions and instructional guides
How?

Design Exchange
Where designers and researchers share methods and best practices.

Learn
Browse methods and case studies to improve your design skills. Learn what to do and what to not do to successfully complete your next design task.

Invite
Participate in discussions and invite your friends to join the Design Exchange community.

Case Studies
Read about how real design problems were solved.

Methods
Learn about the methods you could use on your next design.

Adapting Usability Testing for Oral, Rural Users
The study is conducted to analyze whether usability methods can be implemented in communities that are distant in multiple ways. The design team focused on oral, rural communities to improve the use of communicative devices between users.

Cultural Probes
Cultural Probes are used to gain insight into and inspirational responses about the daily life and habits of communities.
Finding Examples of Design for Development

• Systematic literature review of human-centered design for development
  – 15 keyword pairs
    • “human-centered design” + {something about development, e.g. developing countries, low-resource settings}
  – Publish or Perish [5] to search over Google Scholar

• 1441 papers

[5]: Harzing, 2007
Finding Examples of Design for Development

Cut papers cited 0 times if published before 2014

Cut books

Cut:
- Papers not about HCD+D
- Papers not available in English
- Papers not accessible online or in Berkeley library

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83 peer-reviewed academic examples of on-the-ground human-centered design for development work
Caption from Source: “Typical setting for a usability study”

Source: “Adapting usability testing for oral, rural users” by Gorman et al, 2011
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Caption from Source: “Prototype platform consisting of USB probe and netbook (above). Ultrasound scanning screen of the prototype simplified UI (below).”

Source: “Portable antenatal ultrasound platform for village midwives” by Brunette et al, 2010
Writing Case Studies of Design for Development

1. **Author characteristics:** Names? Locations?
2. **Project focus area:** What kind of project is this? (e.g., education or global health)
3. **Country:** Where is the work being done?
4. **Parts of the design process covered:** Research? Analyze & Synthesize? Ideate? Build? Communicate?
5. **The Problem:** What is the problem these authors are working to address?
6. **Project Background:** How was the project conceived? How long has it been happening?
7. **Summary of Design Process:** In brief, what did the team do?
8. **The Process:** In detail, what methods did the team use?
9. **Retrospective:** What did the team learn? What are the next steps?
Design Methods in the Case Studies

Methods were used 431 times

119 unique methods were used
Design Methods in the Case Studies
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Methods were used 431 times. 119 unique methods were used.

Random sampling, design ethnography, focus group, literature review, brainstorm, stratified random sampling, empirical investigation, rapid ethnography, high-fidelity prototype, expert evaluation, survey, think-aloud protocol, inductive coding, observation, participatory design workshop, statistical analysis, usability test, interview, content analysis.
Design Methods in the Case Studies

- Random sampling
- Design ethnography
- Focus group
- Visual anthropology research
- Randomized controlled trial
- Sensor data collection
- Sketch
- Community Engagement in Research
- Evolutionary prototype
- Ecology
- Immersion
- Aspiration Cards
- Action research
- Design workshop
- Longitudinal study
- Literature review
- Brainstorm
- Stratified random sampling
- Empirical investigation
- Modified grounded theory approach
- Survey
- Pilot test
- Pilot evaluation
- Rapid ethnography
- Fidelity prototype
- Expert evaluation
- Journey map
- Simulation test
- Intuitive comparison
- Understand
- Mind mapping
- Shadow
- Persona
- Scenario
- Existing survey data
- Coding
- Think-aloud protocol
- Usability test
- Observation
- Purposive sampling
- Paper prototype
- Market review
- Living Lab
- Final system test
- Low fidelity prototype
- Proportional to Size sampling
- Voting
- Heuristic evaluation
- Conceptual mockup
- Technical investigation
- Co-design workshop
- Photo elicitation
- Design probe
- Rapid assessment process
- Design study
- Diary study
- Requirement analysis
- Diagramming
- Anthropological study
- Design by playing
- Modeling
- Board mockup
- Mutual consensus
- Conceptual investigation
- Deductive coding
- Convenience sampling
- Statistical analysis
- Participatory design workshop
- Joint application development session
- Camberwell Assessment of Need for the Elderly
- Critical incident technique
- Cause-of-error analysis
- Critical process analysis
- Conceptual analysis
- Video presentation
- Content analysis
- Interview
- 58
- 31
- Survey
- Observation
Next Steps

Short-term:
– Continue writing and updating case studies on theDesignExchange
– Continue writing method descriptions on theDesignExchange

Mid-term:
– Find more case studies from community members
– Find case studies in other contextual areas
  • Sustainable design
  • Inclusive / Universal design

Long-term:
– Study how designers use theDesignExchange
– Build more features to support global designers
Thank you!

QUESTIONS?