HCI and Design
Admin

No class next week... Spring Break!

Today: Designing for Marginalized Communities
New technologies provide new benefits
Most new technologies benefit a small fraction of the global population.

80% of world’s population lives in “developing” regions.
Design for Marginalized Communities

Goal: Create technologies that empower underserved or marginalized communities to overcome global challenges

There are marginalized communities everywhere!
Three defining characteristics

Global problems
- Poverty
- Education
- Gender equality
- Infant mortality
- Maternal health
- Human rights
- Conservation

Technology constraints
- Computers
- Cell phones
- Mobile devices
- Networks
- Connectivity
- Energy and power
- Transport

Human challenges
- Culture
- Gender
- Politics
- Language
- Literacy
- Social structures
- Communication
What platforms make sense?

Sub-Saharan Africa’s mobile market by the numbers

- Mobile cellular subscriptions per 100 people:
  - 2001: 2%
  - 2006: 18%
  - 2011: 53%

- 1 billion: Expected total number of mobile cellular subscriptions in Africa by 2015. Mobile cellular subscriptions in 2005 totalled 90.3 million and in 2010 that figure stood at 384 million.

Number of countries with at least one mHealth app:

- Sub-Saharan Africa: 14
- Latin America & Caribbean: 29
- East Asia and Pacific: 5
- South Asia: 3
- Middle East & North Africa: 8
- Europe & Central Asia: 1

Sources: World Bank, GSMA, Informa Telecoms & Media
Why target mobile devices?

Portable
Battery-powered
Familiar
Intuitive touchscreen
Built-in sensors
Network interfaces
Storage capacity
Built-in sensors provide many opportunities
Can we just use the same apps and systems that we use in the US?
Internet users in 2010 as a percentage of a country's population
Source: Percentage of Individuals using the Internet 2000-2011, International Telecommunications Union.
Many other constraints

No or intermittent electricity
Low levels of education
Low levels of literacy
Unfamiliar with technology
Linguistic challenges
Social and cultural challenges
Poverty
Political challenges
Many more....

How can we design technologies that work well under these constraints?
In the beginning…..

*Technology will save the world!*

How technology can help us eliminate, not alleviate, poverty

**THE BLOG**

*Technology to End Extreme Poverty*

09/24/2012 10:48 am ET | Updated Nov 24, 2012
Example: One Laptop per Child

Originally the $100 Laptop
Later OLPC, finally XO ($399 for 2)

Technological Innovation
Learning approach
Constructivism
Take laptops home, play with them

Critiques
“Little or no sustained and scaled effects on teaching, learning, and achievement” (Bain and Weston)
Problems with OLPC

Technology centric approach - no focus on humans
Did not fit people’s actual needs
Did not pay attention to local contexts and challenges
Did not provide on the ground support
Did not plan for sustainability

The Failure of OLPC:
http://hackeducation.com/2012/04/09/the-failure-of-olpc
How can we do better?

Amplification theory
- Technology can only amplify human intent (Toyama)

**Key idea:** Technology on its own won’t do anything

People have to want to change the situation, solve the problem
Example: Digital Green

Problem: Teach poor farmers better farming practices
Solution: Digital Green
  Mediation / Mediator
  Highly formatted, targeted video content
  Contextual content: local presenter, not “well-dressed” scientist
  Supporting organizations on the ground
Outcomes: 55% adoption of new practice over 8% in old system
Why it works

Pays attention to local culture and context

Specifically designed to suit the needs of target population

Gives people tools so they can solve their own problems

Provides support through organizations on the ground

Good design 😊
Design for Marginalized Communities

Everything you know about good design still applies!
- Pay close attention to user needs, understand the context, iterate

Design process often requires extensive fieldwork with target communities to understand the space

The work often requires input from multiple organizations and communities
  - Strong partnerships are essential

If done right, there is great potential for positive impact!
## A few example domains

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Summary

- Technology alone is not enough, focus on the humans!
- Everything you have learned about good design/HCI still applies
- BUT the context and complexities are often fundamentally different
Activity (can be done in pairs)

Design and paper prototype a social media application for low-literate people.
- Choose a specific population (country, community)
- Pick a few specific social media-related tasks to prototype
- Add captions/explanations to explain your prototype

Write your name and NetID on your prototype and turn it in.