D-Lab
Spring
2010
Development through
Dialogue, Design and Dissemination
D-Lab Offerings

Development
- Introduction to Int’l Development
- D-Lab: Development
- D-Lab: Urban

Design
- Prototyping and Product Development
- D-Lab: Design
- Wheelchair Design
- Prosthetics Design
- D-Lab: Energy
- D-Lab: Discovery
- D-Lab ICT
- D-Lab Health
- Cycle Ventures

Dissemination
- Implementation and Business Models
- D-Lab III: Dissemination
- Development Ventures
Spring Class Overview

- Introduction
- Mini-Project
- Design Challenges
- Build-It Modules
- Case studies and guest lectures
- Design Review sessions
- Final Presentations
Course Goals

- To learn about the design process
- To develop technical solutions for underserved communities
- To practice creative design in a real-world context
- To learn hands-on prototyping and manufacturing skills
- To develop problem solving and critical thinking skills
- To recognize the potential impact of engineers in the world
Course Staff

- Instructors
  - Victor Grau Serrat
  - Amy Smith
- Teaching Assistant
  - Mike Kozlowski
- Shop Manager
  - Dennis Nagle
- Design Mentors
Course Logistics

• Main Text:
  – Out of Poverty by Paul Polak

• Other Texts:
  – Cradle to Cradle by William McDonough and Michael Braungart
  – The Fortune at the Bottom of the Pyramid by C. K. Prahaland
  – Small is Beautiful by Ernst Schumacher
  – Gaviotas by Alan Weisman
Course Logistics

- Prerequisite
- Design team meetings
- Meeting Space
- Work Space
  - Safety
  - Collaborative Use
- Attendance
Grading

• Class participation and attendance 15%
• Homework assignments and design notebooks 30%
• Mini project 10%
• Design review sessions 25%
• Final design/prototype 20%
D-Lab Projects: Soy Milk Maker
D-Lab Projects: Vac-Cast
The Jaipur Foot Organization

Courtesy of Dr. Pooja Mukul, Bhagwan Mahaveer Viklang Sahayata Samiti - Jaipur Foot Organization, Jaipur, India. Used with permission.
The D-Lab Philosophy
Traditional Approaches to Technology in Development

• 1950’s & 60’s: Industrial Development
  • Urban focus
  • Large scale manufacturing
  • Competitive advantage of cheap labor
• 1960’s: The Green Revolution
  • Rural focus
  • Large scale farming with hi-tech inputs
Movements that Shape D-Lab’s Approach to Development

- 1970’s & 80’s: Appropriate Technology
- 1980’s & 90’s: Participatory Development
- 2000’s: Creative Capacity Building (?)
Appropriate Technology

- Low cost
- Locally available materials
- Small scale
- Improves livelihood
- Can be understood, maintained and repaired locally
- Environmentally sustainable
- Open source
Appropriate Technology

Photos removed due to copyright restrictions:
• “Pot in Pot” for temperature controlled food storage
• treadle water pump
• weaving cloth on a home loom
Participatory Development

- Working with communities to identify needs and resources
- Decentralization of decision-making
- Building local capacity
Creative Capacity Building

- Promotes co-creation in the development context
- Enables people to be involved in the entire design process
- Builds upon Appropriate Technology and Participatory Development
Chlorination System in Honduras
Community Involvement in Technology Development

Problem -> Solution

The Design Process

Community Involvement
Guiding Principles

- Identify functional requirements
- Encourage participatory development
- Value indigenous knowledge
- Promote local innovation
- Strive for sustainability
Design...
There’s no solutions, there are only trade-offs.

-- T Sowell
Design Boxes

- Which is your favorite example and why?
- What drove the design of each example?
- What trade-offs were made?
Coming up...

• Class Lottery-- results by e.mail on Friday
• Project Selection (Feb 24)
  – Design challenge descriptions due for review by Wednesday, Feb 17
  – Slides due by noon on Friday, Feb 19
• Readings on course website
• Homework 1 (due Feb 10)