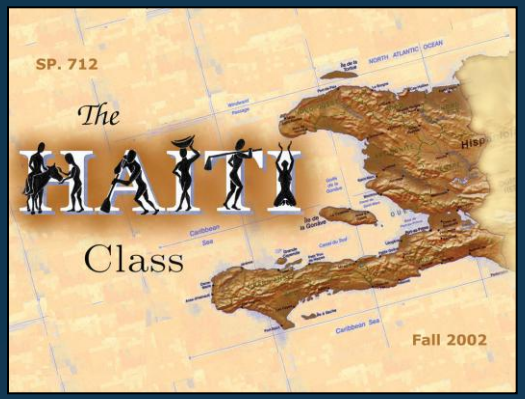


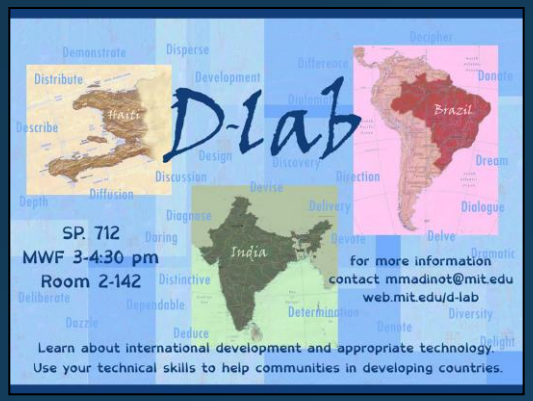

# D-Lab
## Fall 2009

Development through
Dialogue, Design and Dissemination



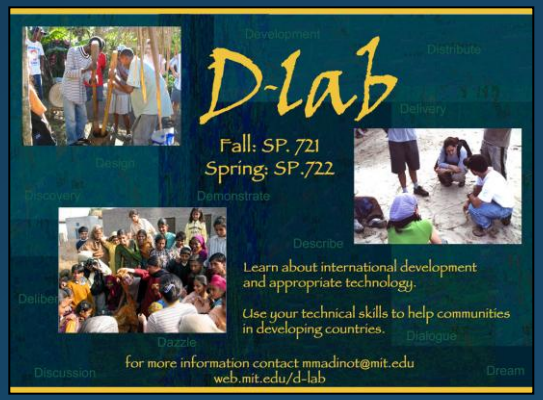

## 2002-2003

- 2 classes
- 20 students
- 1 country




## 2003-2004

- 2 classes
- 50 students
- 3 countries




## 2008-2009

- 8 classes
- 200 students
- 20 countries

# D-Lab Offerings

## Development

Introduction to Int'l Development

- D-Lab I: Development

## Design

Prototyping and Product Development

- D-Lab II: Design
- D-Lab ICT
- D-Lab Health
- Wheelchair Design
- Developing World Prosthetics
- Cycle Ventures

## Dissemination

Implementation and Business Models

- D-Lab III: Dissemination
- Development Ventures

# Course Goals

- Gain awareness of third world communities and the technical challenges they face
- Learn about appropriate technologies for developing communities, their impact, and how they can be conceived, designed and implemented
- Understand the role MIT can play in helping and advancing developing communities throughout the world
- Learn the hands-on skills required to implement selected development projects
- Gain exposure to the culture, history, economic and developmental state of the host countries
- Work with community organizations to prepare projects for the IAP fieldtrips

# Fall Class Overview

- Lectures
- Guest Speakers
- Hands-on Labs
- Project Development
- Area Studies

# Topics Covered

- History of Development
- Appropriate Technology
- Participatory Development
- Co-creation
- Poverty Reduction
- Gender Issues
- Market Approaches
- Institutions of Development
- Cross-Cultural Skills
- Indigenous Knowledge
- Sustainability
- Agriculture
- Energy
- Water
- Information Technology
- Health
- Sanitation

# Toolkit of skills

- Water testing
- Charcoal making
- Solar lighting
- Peanut shelling
- Latrine building

# IAP Trip Overview

- Time commitment…
  - 2 - 29 January
- Monetary commitment…
  - $500
  - Living expenses
  - Visa and passport fees
  - Medicine and vaccines
- Personal commitment…
  - YES!!

# Where will we be working?

# What types of organizations will we be working with?

- Government
- Non-government
- Universities
- Peace Corp Volunteers
- Villages


Shelling corn by hand

Pedal-powered corn shellers at Maya Pedal in Guatemala


# Talking to farmers in Tanzania


Working on the mobile maize sheller in D-Lab II

Training the technicians at Tumaini workshop

The sheller in action!

# Technology transfer: soymilk-making in Peru


Making soy milk

Drinking soy milk at the orphange

# World Facts Quiz

# What % of the world's population lives on less than $1 per day?

~20%

| | |
|---|---|
| India? | 33.5% |
| Honduras? | 14.9% |
| Zambia? | 63.8% |

# How many people in the world do not have access to safe drinking water?

~1,100,000,000

*World Health Organization, 2007*

# What is the leading cause of death in children under 5?

Acute respiratory infections caused by burning fuels and poor ventilation

*Smoke, the Killer in the Kitchen, ITDG Publishing*

# What was the average life expectancy in Lesotho...

In 1990? 57

In 2002? 37

*World Bank Development Indicators, 2005*

# How many deaths per 100,000 people were caused by HIV/AIDS?

| | |
|---|---|
| US | 5 |
| Zambia | 840 |
| Ghana | 131 |
| Ecuador | 12 |

*WHO Global Health Indicators, 2009*

# How much does it cost to light a household for a year in the developed world?

$82

*(Evan Mills, 2002)*

# How much does it cost to light a household for a year in the developing world?

$96

*(Evan Mills, 2002)*

# What is the energy use in:

| | |
|---|---|
| US | 7,768 |
| Brazil | 1,184 |
| Guatemala | 608 |
| Tanzania | 527 |

*World Bank Development Indicators, 2009*

# What is the electricity use per capita in:

| | |
|---|---|
| US | 13,564 |
| Brazil | 2,060 |
| Guatemala | 628 |
| Tanzania | 59 |

*World Bank Development Indicators, 2009*

# What percent of energy comes from the combustion of biomass?

| | |
|---|---|
| US | 3.4 |
| Brazil | 29.6 |
| Guatemala | 51.5 |
| Tanzania | 91 |

*World Bank Development Indicators, 2009*

# What percent of the population lives in urban areas in each of the following countries?

| | |
|---|---|
| US | 81 |
| India | 29 |
| Brazil | 85 |
| Zambia | 35 |

*World Bank Development Indicators, 2009*

# What percent of the population works in the agricultural sector in:

| | |
|---|---|
| US | 2% |
| India | 58% |
| Peru | 28% |
| Sierra Leone | 60% |

*World Bank Development Indicators, 2006*

# How many kilograms of grain are produced per hectare in:

| | |
|---|---|
| US | 6,683 |
| India | 2,294 |
| Peru | 3,084 |
| Sierra Leone | 1,014 |

*World Bank Development Indicators, 2009*

# How many tractors are there per thousand agricultural workers in:

| | |
|---|---|
| US | 1,619 |
| India | 6 |
| Peru | 4 |
| Sierra Leone | <1 |

*World Bank Development Indicators, 2005*

What percentage of crop yields are lost due to post-harvest storage issues?

~20%

# What is the average daily caloric intake in:

| | |
|---|---|
| US | 3,754 |
| India | 2,417 |
| Honduras | 2,396 |
| Tanzania | 1,940 |

*UN Food and Agricultural Organization, 2003*

# What portion of the average daily caloric is fat:

| | |
|---|---|
| US | 37% |
| India | 19% |
| Ecuador | 34% |
| Tanzania | 15% |

*UN Food and Agricultural Organization, 2003*

# How many personal computers per 100 people are there in:

| | |
|---|---|
| US | 81 |
| India | 3 |
| Honduras | 2 |
| Tanania | 1 |

*World Bank Development Indicators, 2009*

# How many telephones (land lines) per 100 people are there in:

| | |
|---|---|
| US | 54 |
| India | 4 |
| Honduras | 12 |
| Tanzania | 0 |

*World Bank Development Indicators, 2006*

# How many telephones (mobile) per 100 people are there in:

| | |
|---|---|
| US | 85 |
| India | 20 |
| Honduras | 58 |
| Tanzania | 21 |

*World Bank Development Indicators, 2006*

# How many researchers per million people are there in:

| | |
|---|---|
| US | 4,484 |
| India | 119 |
| Honduras | 78 |
| Zambia | 51 |

*World Bank Development Indicators, 2006*

# Some web resources:

- www.gapminder.com
- www.worldmapper.com

MIT OpenCourseWare
http://ocw.mit.edu

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