#### **Distance Learning as a Tool for Poverty Reduction: A Focus on Two Countries, China and Mexico**

Boston, as seen from MIT

Presented in Beijing, China, June 28, 2005

http://www.photo.net/photo/ pcd4229/boston-skyline-6.4.jpg

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International Conference on Promotion of Distance Learning and Service

Networks for Development in China and Other Countries

# Our Focus

Networked ICT Centers, Directed by Universities and Located in Underserved Communities --to Reduce Poverty and Enhance Economic Development via EDUCATION

### Two Countries and Two Highly Respected Universities

### China: Tsinghua University Mexico: Monterrey Technological University





![](_page_4_Picture_0.jpeg)

#### The Story of the Ten-Year Old Girl

![](_page_4_Picture_2.jpeg)

![](_page_5_Figure_0.jpeg)

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![](_page_6_Picture_0.jpeg)

![](_page_7_Picture_0.jpeg)

### Photo by Mr. LIU Fuchen

### Outline

- From Telecottages to Telecenters to Networked Distance Education System
- Our Trips to China and Mexico
- The Tsinghua University "Education-Aidingthe Poor Project"
- Monterrey Technical University's Social Development Program
- Detailed Examples from China
- Detailed Examples from Mexico
- A Framework for Continuing Improvement and Evaluation

### **From Telecottages to Telecenters to Networked Distance Education** *System*

- Tele-cottages in Scandinavia 1980's
- "Village Information Centers" in Pondicherry, India
- Peru's community computer centers
- Brazil's Computer Science and Citizenship Schools
- Costa Rica, the Little Intelligent Communities Project (LINCOS)
- South Africa and the Gaseleka Telecenter
- India, the Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) created a small network of three rural tele-centers

# The 'Milkman' Scenario: Any Village Can be on the Internet!

![](_page_10_Picture_1.jpeg)

### Our Trips

### China, Inner Mongolia and Ningxia, October 2004 Mexico, Neuvo Leon State, May 2005

![](_page_11_Picture_2.jpeg)

### The Tsinghua University "Education-Aiding-the Poor Project"

![](_page_13_Picture_0.jpeg)

Huade County Computer-Equipped Community Learning Center

![](_page_14_Picture_0.jpeg)

Learners and Leaders Associated with Huade County CLC

![](_page_15_Figure_0.jpeg)

![](_page_16_Picture_0.jpeg)

Students Using Multi-Media in a Village Middle School in Yuanzhou District

![](_page_17_Picture_0.jpeg)

![](_page_18_Picture_0.jpeg)

![](_page_19_Picture_0.jpeg)

### Monterrey Tec University's Social Development Program

#### The Four Phases of Implementation of Monterrey Tec's CLCs, with Feedback

		ongoing assessi	ment and feedb	201		
		0,13		<sup>a</sup> ck	_	
	Phase 1	Phase 2	Phase 3	Phase 4		
	Contact with the community	Instalation	Training of the organizational structure	Learning		
	Institutional Alliances Establishment of Regional Council	Establishment of the Local Base Committee (organizational structure)	Design of Action Plan	Promotion of Productive Projects		
	Assesment of the Operation Process					
	Assessment of the Socio-Economic Impact					
Ongoing assessment and feedback					-	

#### Hierarchical Organizational Structure of CLC's in Mexico

![](_page_22_Figure_1.jpeg)

#### Summary of Educational Offerings of Monterrey Tec's CLC Program

![](_page_23_Figure_1.jpeg)

![](_page_24_Picture_0.jpeg)

Elizabeth Murray speaking with a student from the Virtual High School Program

![](_page_25_Picture_0.jpeg)

Learners and Staff at Dr. Arroyo's CLC #1.

![](_page_26_Picture_0.jpeg)

#### CLC located in rural school in village of La Asuncion

#### Summary of Key Descriptors of Four Implementations

	Huade	Yuanzhou	Dr. Arroyo	La Asuncion
	County	District		
<b>Development Goals</b>	Spread	Spread	Access to	Access to
Short-term	knowledge	knowledge	education	education
Long-term	Eliminate poverty	Eliminate poverty	Promote equity and development	Promote equity and development
Partners	Tsinghua U.;	Tsinghua U.,	Monterrey	Monterrey
	Service Center of	Service Center of	Technical U.;	Technical U.;
	China's Poverty	China's Poverty	Dept. of	Dept. of Education;
	Alleviation;	Alleviation;	Education;	Ministry of Social
	UNESCO; World	UNESCO, World	Ministry of Social	Development;
	Bank Institute;	Bank Institute;	Development,	State and local
	Provincial and	Provincial and	State and local	community
	county education	county education	community	leaders
	officials	officials	leaders	
User Population	Gov. officials;	Gov. officials;	All community	All community
	teachers, farmers	teachers; farmers	members	members
Planning Process	Top-down by	Similar to Huade	Bottom-up by	Limited bottom-up
	university,	county but limited	community	with community
	provincial and	top-down due to	members	members accepting
	county officials	extensive initial	requesting	offered services
		needs assessment	services	
Access	Courses for gov.	Courses for gov	Courses open to	Courses open to all
	officials, teachers,	officials, teachers,	all community	community
	farmers	farmers	members	members

#### Summary of Key Descriptors of Four Implementations II

	Huade County	Yuanzhou District	Dr. Arroyo	La Asuncion
Services Provided	Continuing	Continuing	All Monterrey Tec	All Monterrey Tec
	education for	education for	course offerings to	course offerings to
	teachers and	teachers and	CLC's	CLC's
	gov officials	gov officials	(see Figure 3)	(see Figure 3) as
			as well as various	well as various ICT
			ICT services	services
Utilization	Initial course	Initial course	Wide utilization of	Marked under-
	offerings well	offerings well	courses available	utilization of
	received by user	received by user	from Monterrey	resources available
	population	population	Tee and other	from Monterrey
			services provided	Tec
<b>Community Awareness</b>	Awareness	Awareness	Initial successful	Limited success of
of ICT's Value to Them	process limited to	process limited to	awareness	awareness process;
	user population	user population	process, must to	must be ongoing
			be ongoing	
Plan for Community	Publicity to target	<ul> <li>Publicity to target</li> </ul>	Publicity left to	Publicity left to
Participation	population;	population:	discretion of	discretion of center
	participation tied	participation tied	center facilitator.	facilitator, no
	to cadre	to cadre	no pressure or	pressure or
	evaluation	evaluation	incentives to	incentives to
			participate	participate
Clustering of CLC's	Isolated center	This pilot project	Central center in a	Isolated center, not
to Share Resources	receiving one-way	has one teaching	very loose	strongly networked
and Support	courses from	<ul> <li>station as the</li> </ul>	network of rural,	with Dr. Arroyo
	Tsinghua U	central point of a network of 19	village centers	center
		receiving centers		

### Framework

- Conceptualize overall program design as a complex system
- Establishing awareness of the benefits available at the CLC Market assessment and segmentation
- Location analysis
- Balance center capacity with local demand
- Computer maintenance, repair and replacement.
- Qualify and certify center facilitators. Make them professionals
- Student achievement
- Tie between school location and teaching in the school
- Learning centers as cyber cafés?
- Use of appropriate technologies
- Business incubators.
- Become a self-learning organization, using natural experiments

Health Awareness is a Necessary Part of Poverty Alleviation

- Need transparency in educating about threats to good health
  - SARS
  - HIV/AIDS
  - Avian Influenza
  - Hazards of pesticides
  - Risks of Carbon Monoxide poisoning
  - "Medical treatment' by unqualified persons

![](_page_31_Picture_0.jpeg)

Find Suppliers

![](_page_31_Picture_2.jpeg)

![](_page_31_Picture_3.jpeg)

Pupils sickened after receiving unauthorized hepatitis A vaccine are still hospitalized for treatment in Sixian cunty, Anhui Province June 20, 2005. [newsphoto]

The tragedy unfolded in Sixian County in East China's Anhui Province.

Village doctors vaccinated about 2,500 students in 19 schools in 17 villages on June 16 and 17, a move without official permission, according to local police.

The Dazhuang Township Health Care Epidemic Prevention Station purchased 1,000 Hepatitis A vaccines from the county Epidemic Prevention Centre and 3,000 vaccines from a private medicine provider Zhang Peng, who has since disappeared.

Local police are still hunting for Zhang, and tracing other vaccines.

The three detained workers were Zhou Shimin, director of Dazhuang Township Hospital, Hou Huafeng, head of Dazhuang Township Health Care and Epidemic Prevention Station, and Zhou Shikai, a health worker who allegedly purchased the vaccines.

LI Wei, a six-year-old student in Shuiliu Primary School in Dazhuang Town, was vaccinated on June 17 and died a few days later after suffering from a serious infection and breathing problems.

The county government has offered 90,000 yuan in compensation (US\$ 10,800) to Li's family.

Local hospitals received 120 sick students.

Several students reported dizziness, breathing difficulties and limb numbress on June 17.

"Soon after receiving the vaccine, my granddaughter felt numb in her hands and feet and couldn't stand up straight," recalled Hu Juren, who works at Shuiliu Primary School. "As more and more students showed similar symptoms, we realized something had gone wrong and called the hospital."

Pan Longgen, a paediatrician at Sixian County Hospital, said the students' hearts and livers are damaged, and the damage caused is worse than if they

7.1. Conceptualize program as a complex system	Create Systems Plan with Many Stakeholders
7.2. Establishing awareness of the benefits of a CLC	Design and Implement and Awareness Campaign
7.3. Market assessment and segmentation	Undertake a carefully designed survey using both questionnaires and semi-structured interviews
7.4. Location analysis	Analyze all available locations for the CLC, and select the one that best matches local needs
7.5. Tie between school location and teaching in the schools.	Create an integrated program that maximizes the use of the technologies in the classrooms
7.6. Balance Center Capacity with Local Demand	Retain statistics on computer usage and review them monthly. Rebalance among CLC's when necessary.
7.7. Computer maintenance, repair and replacement	Record performance statistics such as Mean Time Until Repair, for the various types of repair
7.8. Qualify and Certify Center facilitators	Administer tests to facilitators and record fraction of facilitators who are certified.
7.9. Student Achievement.	Record grades, dropout rates and ultimate impacts on jobs, home life, health, farm productivity, etc.
7.10. Learning Centers as cyber cafés?	Undertake survey of users and nonusers of the CLC, to understand what additional services are desired.
7.11. Use of Appropriate Technologies and Pedagogies	Publish mix of technologies used. Publish distribution of pedagogical models used.
7.12. Business Incubators	Is the CLC available as a Business Incubator? Yes or No. If Yes, give statistics related to this use.
7.13. Become a Self- Learning organization	Are CLC performance statistics led back monthly to provide information about what is working and what needs fixing? Are processes in place to do the fixing?

Internet-based Virtual Laboratory Experiments

If your student cannot come to the laboratory, let the laboratory come to him or her.

# Real Virtual Labs: Web Lab Bring the Laboratory Experience to Those Without Labs

![](_page_34_Picture_1.jpeg)

#### Professor Jesus del Alamo, EECS Microelectronics WebLab An MIT I-Campus Project

Page	O Apple	() iTools	O Apple Support	O Apple Store	O Microsoft MacTopia	() MSN	Office for Macintosh	Internet Explorer
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![](_page_35_Picture_1.jpeg)

#### WebLab System Manager: David Zych

To use the weblab system, your browser must support:

Requirement	Your Browser
JAVA	supported

![](_page_36_Picture_0.jpeg)

# 4) MIT's PIVoT Project

### **Physics Interactive Video Tutor**

![](_page_37_Picture_0.jpeg)

# MIT's PIVoT Project

### **Physics Interactive Video Tutor**

### Another Pedagogy: On Line Video Tutors • Fundamental Hypothesis

![](_page_38_Picture_1.jpeg)

PIVoT can i

ent face-to-

face contact between learner and mentor by an order of magnitude or more.

![](_page_39_Picture_0.jpeg)

- CyberTutor is a software agent that monitors a student's progress on solving a problem <u>http://cybertutor.mit.edu/</u>
- It detects all mistakes immediately, arithmetic and conceptual
- Can give hints or corrections
- Can grade the final work

### 7) Research in e-Learning

![](_page_40_Picture_1.jpeg)

### Designing Student Teams, Local or Virtual

![](_page_41_Picture_1.jpeg)

http://www.haltonrc.edu.on.ca/news/may00/news5.jpg

### **Designing Student Teams**

### Can we do better than random?

- Wide and diffuse literature without clear results
- Issue of objective function:
  - Try to make teams 'compatible' according to some score
  - Try to 'cover' required attributes in each team

# Thank You!

![](_page_43_Picture_1.jpeg)

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from: http://web.mit.edu/ and http://web.mit.edu/afs/athena.mit.edu/org/o/orc/www/