

## Education: India Background

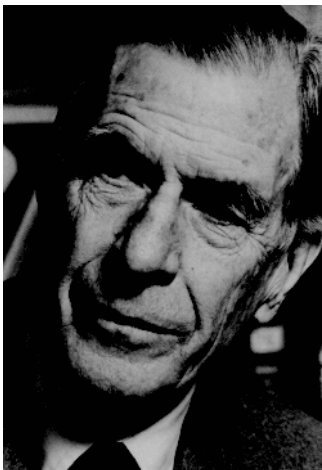
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Spring 2005

## Outline

- “Macro” view: the nation
- The satellite experiences
- “Micro” view: 7 schools

## John Kenneth Galbraith



*"There is in our time no well educated literate population that is poor, there is no illiterate population that is other than poor."*

## Stats: Quality

- Unesco's "Education for All Development Index" (EDI) for 2004:  
ranks 105 out of 127
- Unlikely to meet MDG by 2015

Source: Unesco, 2004

## Stats: Adult Literacy

- 34% of adult illiterates in 9 most populous countries
- Adult literacy rate: 61%
- An average Indian spends about 2 years in school

Source: Unesco, 2004, *Frontline*, volume 21, issue 16, July-August, 2003

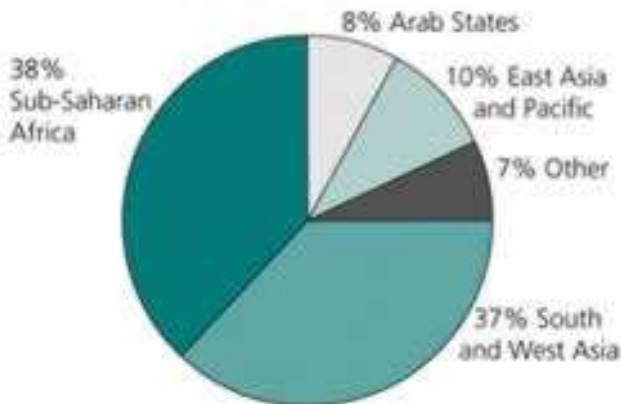
## Stats: Dropout Rates

- 47% of class 1 reach class 8: dropout rate=53%
- Primary level: class 1 through 5: dropout rate=34%

Source: *The Hindu* 2/21/2005, *The Telegraph* 2/21/2005

## Stats: Gender Equality

**There are nearly 60 million girls out of school worldwide**



Source: EFA Global Monitoring Report 2005

- Only half of the countries worldwide will achieve gender equality by 2005
- South Asia and sub-Sahara unlikely to meet MDG
- A very conservative estimate

## Stats: Gender Equality

- Adult male illiteracy: 25%, female: 46% (gender gap of almost 1:2)

Source: *The Telegraph*, 7/12/2004

## Stats: Quality

- Uttar Pradesh (Allahabad, Lucknow districts)
  - 79% of public school children 7-9 years old: can't read
  - 95% of kids 7-10 years old: can't do basic arithmetic
  - 65% can't do arithmetic by age 14

Source: *The Indian Express*, 9/12/2004

## Government Policy

- Emphasis on higher learning, so the country could produce own professionals
- Quality public school education never a priority
- Many policy makers question the wisdom of educating children of common folks

## Government Policy

- Long history starting in Nehruvian era
- Rajiv Gandhi, 1987: "I do not think literacy is the key to democracy."
- Higher education: sufficient to sustain a modern enclave economy
- Children inheriting family vocation: an increasingly false premise

## Government Policy

- Spends 1.9% GDP on public education (primary and elementary)
- Elementary education as fraction of education budget
  - 55% in 1950s
  - 35% in 1990s
- Less than most low-income countries
- Estimate: need to spend at least an extra 0.7% of GDP per year

## School Segregation

- The Education Policy of 1968: “the common school system”
- A promise not kept: existence of multi-tracks
- The poor: public schools
- The lower-to-middle socio-economic ladder: a wide spectrum of private schools
- The rich: elite private schools
- Not just differentiated market demand, but exacerbated by government policy

## “A private solution to the public deficiency”

- Proliferation of private English-medium schools
- Encouraged by the government
- 1970-2002
  - Private primary schools: “unaided” 6x growth, “recognized” 3x growth
  - Public schools: fell by 10%
  - Bihar and Rajasthan: no new public schools in urban areas in the last decade

## Breakdown of public schools

- Lack proper access to
  - Drinking water
  - Electricity
  - Toilets
  - Playgrounds
  - Furniture
  - Proper buildings
  - Teaching materials
- Teachers
  - Rampant absenteeism
  - Unfilled vacancies
  - No training
  - No motivation

## “Teaching shops”

- The poor giving up on public schools
- Pin hopes on any private English-medium school
- The poor spends considerable sums on private schools
- Exponential growth of unregulated “teaching shops,” especially in rural areas
- Most of very poor quality too
  - Most set up in the house of the school manager, very poor conditions
  - Usually unqualified teachers, with no training
  - Many unregulated

## Summary

- A failure of policies
  - Concentration on higher education and neglect of basic education
  - Premise of following parents' footsteps: doesn't hold
  - Privatizing basic education without regulation
  - Collapse of public sector deepens socio-economic division
  - Public sector still needs to play a role

## Implications for us

- Education a key and big problem: role played during the transition from an agrarian society
- Increased government budget on basic education? How should it be spent? And if on ICT, how? The EDUSAT fiasco?
- ICT: way of strengthening public education?
- Government regulation of private sector: how? Same standards for measuring ICT success?

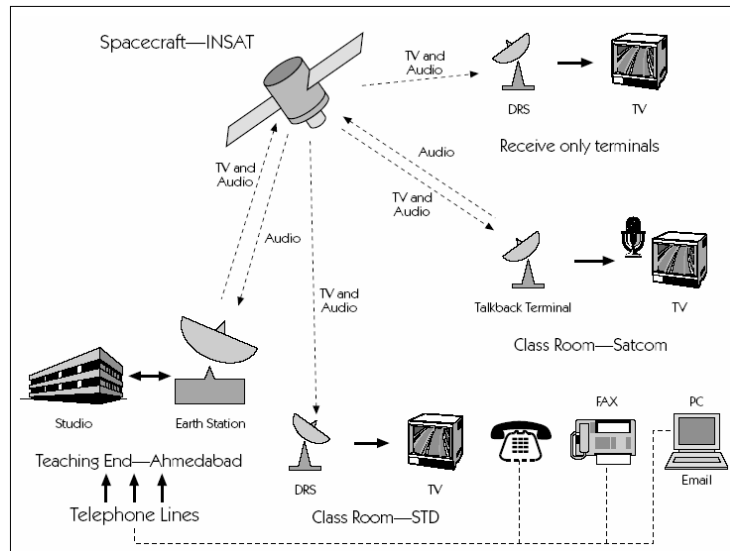
## Implications for us

- ICT: means of lessening public/private-sector division?
- Better training for both public and private school teachers
- Private school staff: different skill levels
  - Regulation to weed out quacks
  - Increased competition/choices
  - Standards (tests): gives them (and us) something to shoot for
  - Make the most of honest, but unskilled, staff

## Outline

- “Macro” view: the nation
- The satellite experiences
- “Micro” view: 7 schools

## Satcom for rural training



- One-way video broadcast, two-way audio teleconferencing

## Satcom for rural training

- Primary school teachers
- Child development workers
- Rural women managers of SEWA: Self Employed Women's Association
- Distance education
  - (Indira Gandhi National Open University)
- Rural development
- Industrial training
  - (State Bank of India)

## Satcom for rural training

- 2,400 villages, 6 states
- 4 hours of rural development programs per day
- 40,000 teachers trained
- Difficulty of coordinating broadcast ground support

## EDUSAT

- Launched 9/20/2004
- World's first dedicated educational satellite
- Capable of two-way communication
- Chief aim: distance education for remote rural India
- Initial investment: 1,000 crore (US\$230mil)

## EDUSAT: five months after launch

- All systems functioning in space
- No ground readiness, no money for ground support, no technology, no content, no trained manpower
- Maximum possible achievement this year: add to facilities at a handful of national universities

## What needs to be fixed?

- Need at least an additional US\$230mil
- None of the promised 74 channels has begun
- Build 17 uplink hubs
- Upgrade ground equipment from one-way C-Band to two-way Ku Band
- Install interactive satellite transponders at 5000 rural schools
- Train people to use equipment
- Prepare content in 18 official languages and 400 dialects

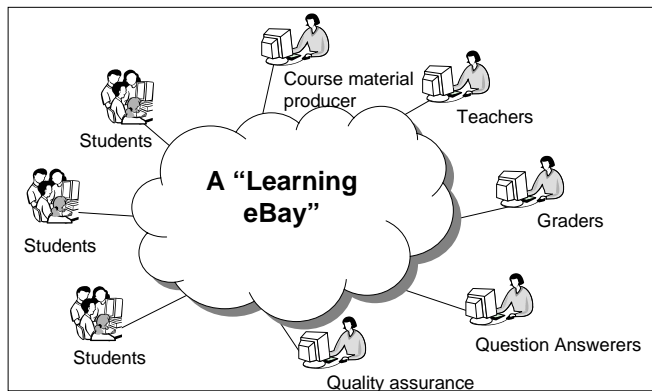
## Where is it heading?

- EDUSAT's planned life span: 7 years!
- Best case: remote use limited to about five years
  - Targeting children in remote villages: limited to two districts in each state
- Classic case of putting the cart before the horse

## What's wrong with satellites

- Expensive, extensive support infrastructure
- Good broadcast medium
  - One way
  - Small number of content producers
    - Dictates what, when
  - Large number of content consumers
- Can be made to do non-broadcast or even two-way
  - Problem: severe aggregate bandwidth limitation, especially on the uplinks

## What we would like to have



- Any-to-any communication and high-bandwidth
- Customized content, customized schedule
- Build "systems," not just providing connectivity

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## Uttar Pradesh Background

- Urban school: StudyHall in Lucknow
- After-school programs for girls from the slums
- Affiliated village schools
- Preliminary role played by computers
- (Should not over-generalize)

Source: Matt Kam, UC Berkeley

## Uttar Pradesh



- Uttar Pradesh: one of the 5 poorest states of India

## StudyHall



- Urban private school in Lucknow
- Principal: Dr. Urvashi Sahni

## StudyHall students



- Middle-income students
- Fee: 1,000 rupees per month
- Regular classes run in the morning

## StudyHall



- Well-furnished
- Lots of facilities: sports, science labs, music rooms, computer labs

## Classes

- Primary school: classes 1-4, ages 6-9
- Junior school: classes 5-8, ages 10-13
- Senior school: classes 9-10, ages 14-15
- Pre-college: classes 11-12, ages 16-17
- University: ages 18 onwards
- StudyHall: pre-nursery through pre-college

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## After-school program



- 1pm to 4:30pm
- Targets girls from the urban slums
- Would not have had access to education otherwise

## After-school program

- Offers up to class 8
- Government school offers poor alternative
- Subjects: arithmetic, English
- Instruction given in Hindi
- Better discipline, better personal hygiene, dispels superstitions, attitudinal changes, confidence building

## A holistic education



- Dance and music lessons

## Slum families



- Average monthly wage: 3500 rupees, monthly expenditure on food is 1500 rupees
- Parents uprooted from their village seeking better educational opportunities

## Slum families



- 3-4 meters by 6-7 meters
- A typical household: parents plus 4-5 kids
- Little furniture: cooking utensils
- No electricity, but some have battery-powered TVs
- Gender bias

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## Village schools

- 6 affiliated village schools:
  - 5 public, 1 private (founded by Urvashi)
- Classes
  - StudyHall: pre-nursery through pre-college
  - Village schools: classes 1-5
  - Lack of affordable education beyond class 5
- May be only one rural public school within 15 km

## Village schools teachers



- About 250 students per school
- 2-6 teachers
- Little training
- Difficult subjects: English, math, science

## Village school students



- Classes run in the morning
- Free textbooks by the state government

## Subjects

- Syllabus by state's education board
- Flexibility by teachers
- English, Hindi, Sanskrit, science (physics, chemistry, biology), mathematics (arithmetic, algebra, geometry), history, social studies, home science, agriculture, general knowledge, arts & craft and bookcraft, computer literacy, as well as games

## Attendance



- Pressure for kids to work instead of going to school
- State government provides incentives to keep kids in schools:
  - e.g. rice bribery
  - Teacher visits

## Physical Environment



- Lack of indoor space
- Poor buildings
- No furnitures (not perceived to be a problem)
- Theft
- Have outdoor open space

## Electricity



- Among the six school
  - One has solar
  - The others have either intermittent or stable access to the grid
- Situation expected to be worse in general

## Electricity



- The “last meter” problem
- Summer heat: 118F (or 48C), ceiling fans a big help
- Voltage stabilizer needed to protect equipment

## Pride in ownership and self-sufficiency



- Result of isolation
- A library, a fruit garden, a toilet, built by the students and the teachers
- Promising: involving the locals to take ownership

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## Digital Courseware



- 6-member team developing small lesson units
- for science lessons, classes 5-8
- Teachers use courseware as an effective lecturing tool
- (Students at the back can't see well)

## Courseware for village schools



- Helps address shortage of qualified teachers
- Helps fill in gaps in their subject knowledge
- (Students at the back have trouble seeing)

## Group-learning



- Small groups help members learn
- Senior students help juniors
- Eager to take electronic tests, repeatedly

## Student authoring



- Enthusiastically embraced by both content producers and content consumers
- Opportunity for harvesting peer resources!

## Computer literacy



- Classes 5-8
- Students learn in groups
- Some “computer geniuses” emerge (retain them?)
- Students drive: teachers watch
- Teachers don’t see computers undermining their authority or as a distraction

## Ownership of technology



- Source of pride for the school
- An incentive for parents to send kids to school

## What have we learned?

- Facts
  - Big regional differences
  - Big differences between what’s available for the middle-income and the poor
  - Lack of qualified teachers in villages
  - Resource constraints in villages
  - Technologies show promise
  - Group learning shows promise
    - Bribery works (for retaining “geniuses”)?

# What have we learned?

- What we need
  - Connectivity
  - A cohesive “system” of information sharing
  - Faster means of content production at headquarters
  - Need to solve the display problem
  - Need to address pedagogy
    - How to bring the local teachers into the loop
    - How to harvest group-learning (“geniuses”)
    - How to harvest peer content production
  - Need to do all this in a cost-effective fashion