@ National Science Foundation
May 24, 2011

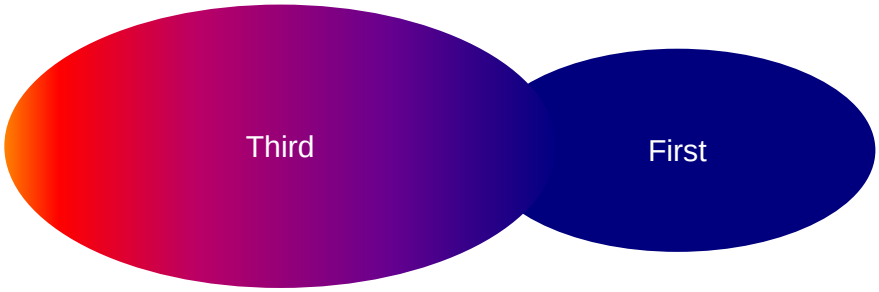
Building Advanced Education & Learning Bridges with the Third World: Lessons from an NNIN Experiment

international Winter School for Graduates (iWSG)

Sandip Tiwari
Director, NNIN
Charles N. Mellowes Professor in Engineering
Cornell University

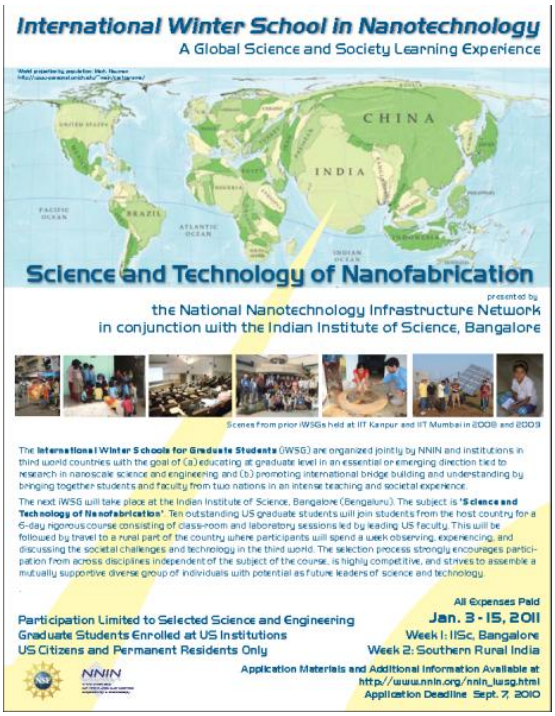
Thanks to all past participants, too numerous to list here, whose photography and insights from discussions are in this talk

The post-world war II period has been a period of big changes – socially and technologically,
with newly independent Asian countries and colonized New World countries coming into their own – particularly over the past decade and a half.



Feudal/Autocratic/Occupied	Democratic
National	International
Caste/Tribe/Religion/	Merit
…	…

iWSG



- *Development of the citizen scientist/engineer by fostering global awareness of future leaders, sharing knowledge, and promoting cooperation among future leaders and academics*

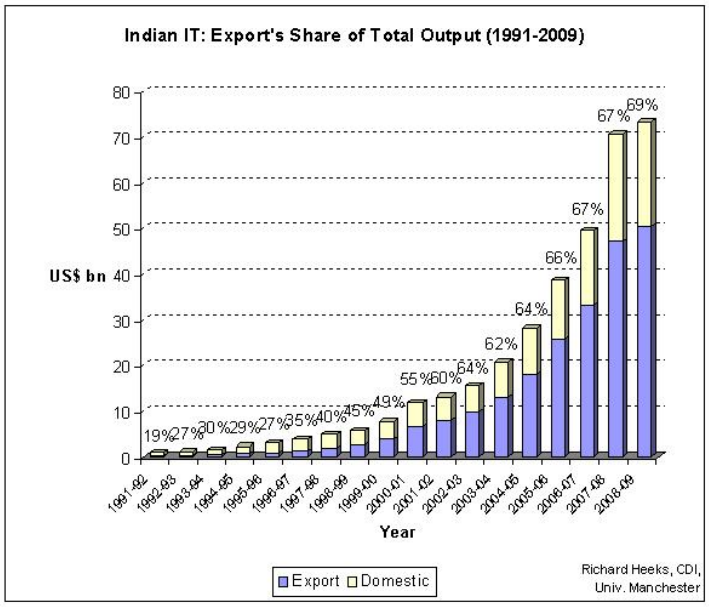
iWSG attempts to accomplish this objective by bringing together a select group of outstanding graduate students and adventurous faculty in an intense course of common interest in an emerging "nano" area in a third world country.

75-150 local students and faculty participate in the event

Sources: E&PW, WSJ, NYT,IEA, …

India

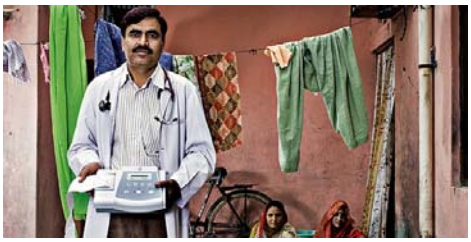
… Indian software industry, Tata Nano, pharmaceuticals, GE making inexpensive medical diagnostics, … GDP expanding at >8.5%/yr



Sources: E&PW, WSJ, NYT,IEA, …

India

GE ECG in India ($1500) developed for $500K



Pharmaceuticals in India

From Wikipedia, the free encyclopedia

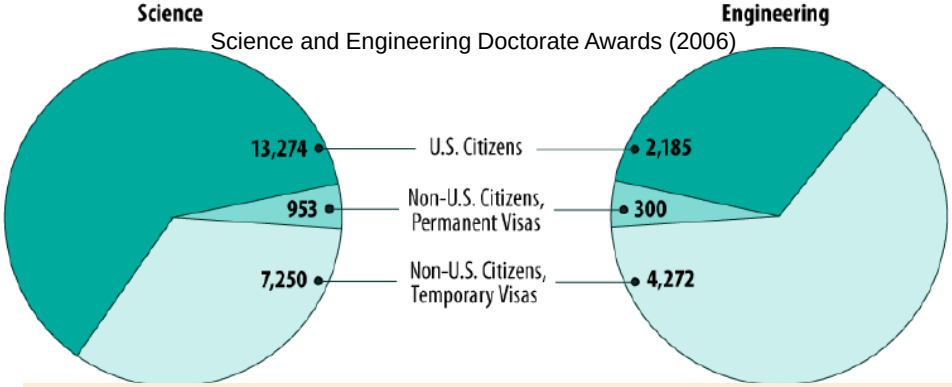
The Indian **pharmaceutical industry** is the world's second-largest by volume and is likely to lead the manufacturing sector of India.[1] India's bio-tech industry clocked a 17 percent growth with revenues of Rs.137 billion ($3 billion) in the 2009-10 financial year over the previous fiscal. Bio-pharma was the biggest contributor generating 60 percent of the industry's growth at Rs.8,829 crore, followed by bio-services at Rs.2,639 crore and bio-agri at Rs.1,936 crore.[2] The

Impact of International on USA

nationwide phenomenon. Here are some characteristics of the engineering and technology companies started in the U.S. from 1995 to 2005.

- In 25.3% of these companies, at least one key founder was foreign-born. States with an above-average rate of immigrant-founded companies include California (39%), New Jersey (38%), Georgia (30%), and Massachusetts (29%). Below-average states include Washington (11%), Ohio (14%), North Carolina (14%), and Texas (18%).
- Nationwide, these immigrant-founded companies produced $52 billion in sales and employed 450,000 workers in 2005.
- Indians have founded more engineering and technology companies in the US in the past decade than immigrants from the U.K., China, Taiwan and Japan combined. Of all immigrant-founded companies, 26% have Indian founders.

V. Wadhwa, A. Saxenian, B. Rissing and G. Gerreffi, in "America's New Immigrant Entrepreneurs"



Science and Engineering Doctorate Awards (2006)

Minorities as percentage of S&E doctorate holders, by position: Selected years, 1973–2006

Position and degree field	1973		1983		1993		2006	
	Under-represented minority	Asian	Under-represented minority	Asian	Under-represented minority	Asian	Under-represented minority	Asian
All positions	2.0	4.2	3.7	6.7	5.0	9.8	8.2	14.1
Full-time faculty	1.9	3.9	3.6	6.1	5.0	8.6	7.9	11.7
Full-time faculty researchers	1.7	4.3	3.2	7.4	4.8	10.1	7.6	13.5
Physical sciences	1.8	4.0	3.0	7.7	4.5	10.9	4.6	11.5
Mathematics	1.8	4.4	2.8	10.0	3.3	14.0	7.5	19.3
Computer sciences	NA	NA	NA	20.7	7.3	36.3	6.6	36.8
Life sciences	2.0	3.6	2.8	6.5	3.7	8.2	7.3	13.2
Psychology	1.7	S	3.1	1.9	5.7	2.2	8.5	4.3
Social sciences	1.7	4.3	4.8	5.4	7.0	6.2	9.9	8.1
Engineering	0.9	9.5	2.7	14.8	3.9	21.6	7.3	25.7
Postdocs	2.4	11.9	4.8	13.3	4.5	27.1	7.5	35.4
Other positions	2.9	5.7	4.1	8.2	5.3	8.9	9.3	13.7

Science and Engineering Indicators (2010)

Sources: E&PW, WSJ, NYT,IEA, …

India

But, a 1.2B population, abject poverty, increasing disparity

Income levels: >$34K/yr for 2.5 million and <$3K/year for 111 million (an increase of 10 million in past 6 years)

Economy: Manufacturing ~16% (same as 1991). Services ~55% (45% in 1991). Agriculture ~17% (30% in 1991) while agriculture employment nearly constant.

Development	1/3rd of country has benefited; 800 Million has not
Electricity	400M+ w/o electricity
Water	130M w/o any water (i.e., no community access)
Road	~70% of villages inaccessible by asphalt road
Food	Food inflation higher than general inflation (currently ~10%)
Education	<½ of 6-14 year old in "school", ~50% habitation has no primary school
Calorie consumption	Declining for bottom 50% since 1987 while obesity in rich
Childhood	46% of children below 3 yrs old too small for age (UNICEF)
Infrastructure	China has 10x electric power
Corruption	~50% of economy; was ~40% in 1996, ~5% in 50's

WSJ, 05-06-2011

In India, …es a More Activist Role

By Amol Sharma

NEW DELHI—India has an elected prime minister and Parliament and a large bureaucracy. But amid public outrage over corruption and the widespread perception that the nation is poorly governed, the Supreme Court's 29 justices increasingly are calling the shots.

The court has turned hyperactivist in the past year, injecting itself into policy making and governance. Justices are micromanaging government-corruption and money-laundering investigations, issuing orders to agencies on issues from malnutrition to caste violence to education, and venting a frustration held by many Indians but rarely articulated from such a lofty perch.

"What the hell is going on in this country?" railed Supreme Court Justice B. Sudershan Reddy on March 3 as he heard arguments in a public-interest case brought against the government for not pursuing tax evaders who are allegedly stashing billions of dollars in overseas tax havens.

At the court's behest, government authorities the following week arrested a rich businessman from the western city of Pune who authorities believe has billions of untaxed dollars—or "black money" in Indian parlance—in bank accounts outside the country.

India has the world's second-fastest-growing major economy after China and has been on a path of economic liberalization for the past 20 years. Yet there is growing frustration among millions of Indians that the government is failing to crack down on graft, ensure the middle class and poor get their fair share of the fruits of growth, and do away with outdated social strictures.

The Supreme Court has taken upon itself the task of trying to solve many of those problems. After hearing a case on malnutrition on Saturday, the court ordered the government to distribute five million tons of food grains to the poorest districts of the country, saying state-owned warehouses stocked with supplies weren't getting to the needy. The court also told the government to review the official poverty line—$10 a month in rural areas and $13 a month in cities—saying it grossly underestimates the number. Food aid is typically to households below the line.

"We cannot have a bench led by J. Bhandari said at a hearing on the same case. "In the world to believe strongest emerging but millions of people are a stark contrast."

Civil-society activists are hopeful the court's outsize role in governance will force the other branches of government to address glaring social and economic problems.

But some judiciary experts and government officials say the court is overstepping its authority and trampling on the separation of powers in the Indian constitution. They also say judges are going beyond their capabilities by directing the activities of criminal investigators and trying to shape policy in complex areas where they have few resources to follow up on orders they issue.

"It is perfectly all right to in-

been directly harmed—and cases can bypass lower courts and go directly to the Supreme Court. More than 250 such public-interest cases are currently pending.

The Supreme Court took special interest in the "black money" tax evasion case in the past few months amid media reports that Indian government investigators were letting off the hook a Pune-based businessman, Hasan Ali Khan, who is suspected by authorities of being a large tax evader. A lawyer for Mr. Khan vigorously denied the allegations against him, saying the government has a weak case without evidence, and said Mr. Khan was cooperating with investigators.

Tax-Evasion: The court is overseeing a government probe into tax evasion and money laundering by the rich and well-connected.

Caste: The court ruled recently that people convicted of honor killings—murdering others to protest mixed-caste relationships—should receive the death penalty. It also outlawed informal

Malnutrition: In a longstanding public-interest case, the court has directed the government to increase the availability of food grains to the poor.

sale of mobile-phone spectrum. Former Telecom Minister Andimuthu Raja, among others, has been arrested and charged.

Andimuthu Raja res… minister post amid…

governance. Justices are micromanaging government-corruption and money-laundering investigations, issuing orders to agencies on issues from malnutrition to caste violence to education, and venting a frustration held by many Indians but rarely articulated from such a lofty perch.

"What the hell is going on in this country?" railed Supreme Court Justice B. Sudershan

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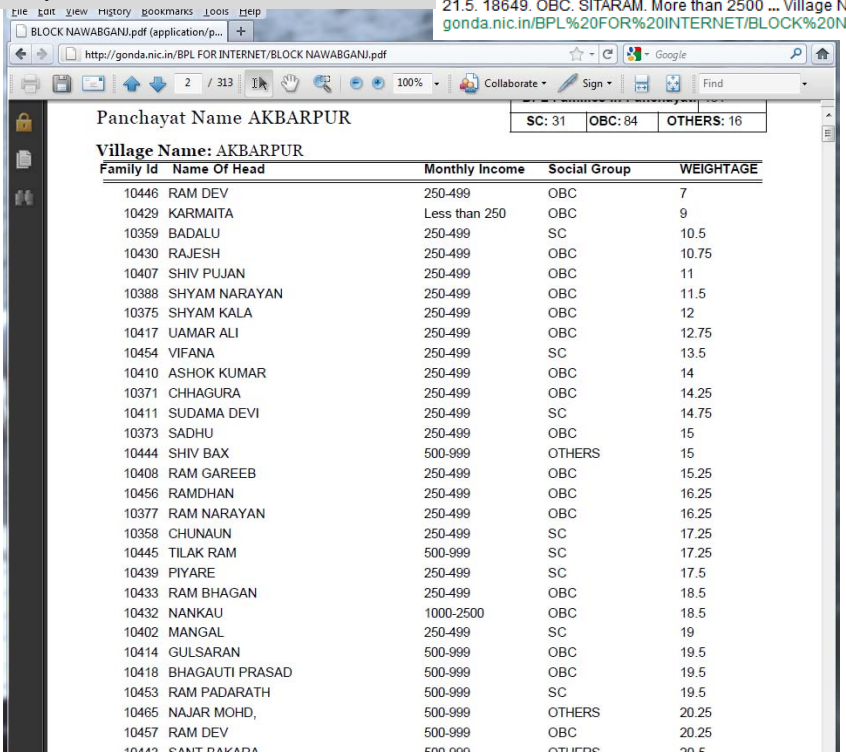
But you can search who is below poverty line on the web!
e.g., Sandeep Tiwari

[PDF]
BELOW **POVERTY** LINE LIST FOR BLOCK NAWABGANJ DISTRICT GONDA ...
File Format: - Block all gonda.nic.in results PDF/Adobe Acrobat
Nov 26, 2006 ... **SANDEEP**. 1000-2500. 21.5. 18610. OBC. VIJAY KUMAR. 1000-2500. 21.5. 18649. OBC. SITARAM. More than 2500 ... Village Name: **TIWARI** PURWA ...
gonda.nic.in/BPL%20FOR%20INTERNET/BLOCK%20NAWABGANJ.pdf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Panchayat Name AKBARPUR

SC: 31	OBC: 84	OTHERS: 16

Village Name: AKBARPUR

Family Id	Name Of Head	Monthly Income	Social Group	WEIGHTAGE
10446	RAM DEV	250-499	OBC	7
10429	KARMAITA	Less than 250	OBC	9
10359	BADALU	250-499	SC	10.5
10430	RAJESH	250-499	OBC	10.75
10407	SHIV PUJAN	250-499	OBC	11
10388	SHYAM NARAYAN	250-499	OBC	11.5
10375	SHYAM KALA	250-499	OBC	12
10417	UAMAR ALI	250-499	OBC	12.75
10454	VIFANA	250-499	SC	13.5
10410	ASHOK KUMAR	250-499	OBC	14
10371	CHHAGURA	250-499	OBC	14.25
10411	SUDAMA DEVI	250-499	SC	14.75
10373	SADHU	250-499	OBC	15
10444	SHIV BAX	500-999	OTHERS	15
10408	RAM GAREEB	250-499	OBC	15.25
10456	RAMDHAN	250-499	OBC	16.25
10377	RAM NARAYAN	250-499	OBC	16.25
10358	CHUNAUN	250-499	SC	17.25
10445	TILAK RAM	500-999	SC	17.25
10439	PIYARE	250-499	SC	17.5
10433	RAM BHAGAN	250-499	OBC	18.5
10432	NANKAU	1000-2500	OBC	18.5
10402	MANGAL	250-499	SC	19
10414	GULSARAN	500-999	OBC	19.5
10418	BHAGAUTI PRASAD	500-999	OBC	19.5
10453	RAM PADARATH	500-999	SC	19.5
10465	NAJAR MOHD,	500-999	OTHERS	20.25
10457	RAM DEV	500-999	OBC	20.25

Mumbai, 2010

The existence of gated communities is often the earliest sign of trouble.

COVER STORY May 19, 2011, 1:00AM EST

Graduate of IIT, 1971

How Rajat Gupta Came Undone

The former McKinsey head was a gilded member of the corporate elite. But a tape of his voice, divulging secret details of a Goldman board meeting to a convicted hedge fund manager, cost him what no amount of money can buy

Photo illustration by Gordon Magnin

By Suzanna Andrews

US Attorney for Southern District of NY
Born, Punjab (India)

Although he would be described later by frie
conversation captured on an FBI wiretap—a
verge of "a massive implosion," Rajat K. Gup
relaxed as he greeted hundreds of guests o
lawns of his estate
June 21, 2008. Th
of his four daught
affair—"the wedding of the decade," one guest called it in an account published in the *African Sun Times*. The invitations had been trimmed with gold, many of the guests

RELATED ITEMS
Gupta's Rolodex

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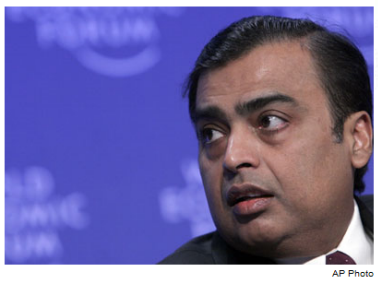
The World's Billionaires
#4 Mukesh Ambani
03.10.10, 06:00 PM EST

Previous: Warren Buffett Next: Lakshmi Mittal


AP Photo

Net Worth:	**$29.0 bil**
Fortune:	**Inherited and Growing**
Source:	**petrochemicals, oil & gas**
Age:	**52**
Country Of Citizenship:	**India**
Residence:	**Mumbai**
Education:	**Stanford U, Drop Out; U Bombay, Bachelor of Arts / Science**
Marital Status:	**Married, 3 children**

SATURDAY, JANUARY 18, 2003
THE TIMES OF INDIA

WORLD: THE UNITED STATES

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Home
CLASSIFIEDS

IITs better than US institutes,

THE UNITED STA
HEADLINES

But the moment of supreme irony comes when she interviews Infosys co-founder NR Narayana Murthy and asks him about his son's education.

Murthy: Well, my son, he wanted-probably wanted to do computer science at IIT. To do that, you have to be in the top 200 and he couldn't do that, so he went to Cornell instead.

Stahl: (awed voiceover amid footage of IIT students on campus): Think about that for a minute. A kid from India using an Ivy League university as a safety school. That's how smart these guys are.

Murthy: I do know cases where students who couldn't get into computer science at IIT, they have gotten scholarships at MIT, at Princeton, at Caltech.

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COMMENTS ON THIS ARTICLE

Times of India, Jan. 17, 2003

NNIN

The Expectations and the Stress

tell a Friend Print Email to Friend | *Posted on 14 May 2011*

SOCIETY & LIFESTYLE EDUCATION

IIT's stressed-out geeks opt for suicide solution

Management and counseling cells come under fire for failing to tackle spike in deaths

Sai Manish
Chennai

By the time Nitin Reddy's door on the third floor of the Jamuna Hostel in IIT Madras was broken open by his friend after a frantic call from his father, it was too late. The 24-year-old's limp body was hanging from the fan.

Barely hours before he cut his life short on 4 May, Nitin had made his intentions clear to his father and friends. "I tried hard but I lost," wrote Nitin, lovingly called 'Swamy' by his friends, on his Facebook wall. He emailed his father A Lakashmana Murthy who works in DRDO and told him he was going to kill himself and what should be done with his possessions after he was gone. By the time Murthy, who works in New Delhi, alerted the local guardians in Chennai, it was all over.

On 2 May, Nitin, a final-year MTech (mechanical engineering) student was ordered to do another semester, which meant he could not pass out with his batchmates and faced the prospect of losing the lucrative job that he had landed at a Bengaluru-based software company.

NNIN

Almost a 0.5% rate over a program

India

- Nonviolent political success of an oppressed society against an oppressor
- Democracy in the midst of mass illiteracy and a history of feudal and religious and ethnic divisions
- …

Society, Education, Values, Technology

The tension of Values with Technology:
Content to Context - of creators with users, of technology generators with the greater society

iWSG

Number of US Participants, Topic and Location

iWSG1:	12; Organic Electronics & Optoelectronics	IIT Kanpur
iWSG2:	10; Nanoelectronics with emphasis on Silicon	IIT Mumbai
iWSG3:	13; Science and Technology of Nanofabrication	IISc Bangalore

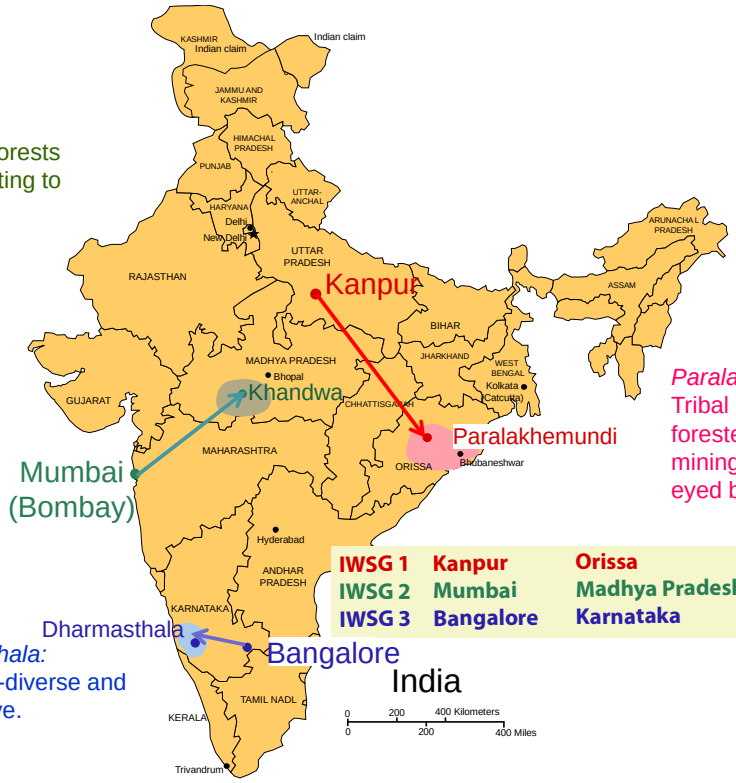
Students who show promise for leadership – in academia and industry, and a global interest
Selected from national pool

Students from: Columbia, Cornell, GaTech, Harvard, Michigan, Montana State, MIT, Northwestern, Penn State, RPI, Stanford, U. Arizona, UC Berkeley, UCLA, UT El Paso, U Illinois, U.Mass, U.Minnesota, U. Penn, U. Rochester

Faculty from: ASU, Columbia, U Colorado, Cornell, GaTech, IBM, UCLA, U Illinois, U Minnesota, U Washington

iWSG Locations

Khandwa:
Tribal region, forests cut, tribals shifting to agriculture.



IWSG 1	Kanpur	Orissa
IWSG 2	Mumbai	Madhya Pradesh
IWSG 3	Bangalore	Karnataka

Paralakhemundi:
Tribal region, still forested, but with rich mining resources being eyed by industry.

Dharmasthala:
Highly bio-diverse and progressive.

Course Schedule

	Monday, Jan. 3	Tuesday, Jan. 4	Wednesday, Jan. 5	Thursday, Jan. 6	Friday, Jan. 7	Saturday, Jan. 8
9:00-10:15	Scope and Objectives **-N. Bhat** Centre of Excellence in Nanoelectronics : Background and Vision **- S. Mohan** Indian Nanoelectronics Users Program : Empowering Research **-Venkat/Suresh/Vinoy**	Lithography : Resists, Optical , Self Assembly **-Ilic**	Inauguration of New Clean room at the "Centre for Nano Science and Engineering" **-Dr. R. Chidambaram, Principal Scientific Advisor to Govt. of India**	Material Modification : Implantation, Annealing and Diffusion **-Campbell & Tiwari**	CMOS and MEMS Process Integration **-N. Bhat**	**9:00 – 9:45** Society and Technology **-Tiwari** **9:45 – 10:10** Camera Trap Technology for Wild Life Conservation **-A. Pitet** **10:10-10:35** Photovoltaics for Rural Electrification -A. Narayan **10:35-11:00** Water Purification Technologies **-H. Chanakya** **11:00-11:30** Break **11:30-12:00** Food-Nutrition-Health : Technology and Tradition **-Raghu** **12:00-12:30** Crisis in Farming: Revisiting Green Revolution and Millets **-Dineshkumar** **12:30-1:00** Mahatma Gandhi and Quantum Enigma : A suggestion to Nano Scientists and Technologists **-T S Ananthu**
10:15-11:30	Introduction to Winter School: Materials & Structures towards Applications **-Tiwari**	Lithography : E-beam, FIB, Soft Lithography **-Ilic**	Tour of the facility , Poster session by select PhD students at IISc	Characterization: Optical Microscopes, Ellipsometry **- Van Zeghroeck**	Characterization: MEMS Devices and Dynamic characterization **-Pratap**	
11:30-11:45	Break	Break	Break	Break	Break	
11:45-1:00	Deposition and Growth Processes: Oxidation, CVD, ALD **-Campbell**	Etching and Assembly : Soft Lithography, Wet chemical, More Self-Assembly, Wafer Bonding **-Böhringer**	Etching Processes Continued: Dry Chemical, Plasma Enhanced **-Böhringer**	Characterization Optical Interferometric Techniques and Applications **-Varma**	Characterization: AFM, Profilometer, Scanning Electron Beam **-Van Zeghroeck**	

Course Schedule

1:00-2:00	Lunch Break	Lunch Break	Lunch break	Lunch break	Lunch Break	Lunch Break
2:00-3:15	Deposition and Growth Processes: Vacuum, PVD Processes– Sputtering & Evaporation **-Campbell**	Precursor Synthesis Techniques for CVD **-Shivashankar**	Stress and Defect Evolution during Thin Film Growth and In-situ Characterization Techniques **-Raghavan**	Characterization Low temperature Experiments, Chiral Spectroscopy, Life Time Measurements of Electron Bubbles **-Ambarish Ghosh**	Applications to different Technologies **-Campbell**	**Conclusions and Discussions**
3:15-3:30	Break	Break	Break	Break	Break	Break
3:30-5:30	Lab Sessions	Lab sessions	Lab Sessions	Lab sessions	Lab Sessions	
5:30-6:30	Break		Break		Break	
6:30-7:30	Veena Recital		Flute & Sarangi		Yaatra : Dance Ensemble	

US Participants: Böhringer: Karl F Böhringer (Washington), Campbell: Steve Campbell (Minnesota), Hockett: Ilic: Rob Ilic (Cornell), Tiwari: Sandip Tiwari (Cornell), Van Zeghbroek: Bart Van Zeghbroek (Colorado), Larry Goldberg(NSF);

Other instructors from IISc (Indian Institute of Sciences)

All lectures will have short quizzes prepared by the instructor that will be handed out at the end of the session. To be returned by participants at the end of the day for grading by the lecturer.

And quizzes

17 of them.
One for each lecture

Quizzes

NNIN — National Nanotechnology Infrastructure Network

Quiz 1
Topic: Introduction

Q1 Q2 Q3 Q4 Q5

Student Name:

Institution:

INUP — Indian Nanoelectronics User's Programme, Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science

3rd International Winter School for Graduate Students (iWSG)

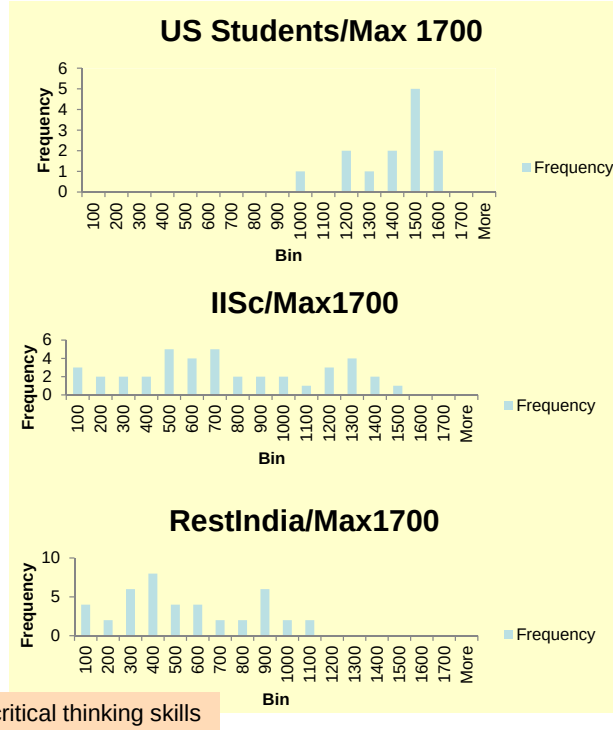
Q1 (20 pts): Can you guess if plexiglass is crystalline or amorphous? What about Quartz? Why?

Q2 (20 pts): Most of biological processes take place at room temperature? What does it say about the activation energy for these processes? How many eVs? Why?

Q3 (20 pts): Do electrical signals propagate at a speed faster, slower, or at the speed of light (adjusted for index of materials)? Why?

Q4 (20 pts): What is approximate size of an atom in nm?

Q5 (20 pts): With an STM does one observe a charge cloud or a wave function?



Very marked disparities in learning and critical thinking skills

THE HINDU

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NEWS » NATIONAL

NEW DELHI, May 24, 2011

"IITs' success because of students"

SPECIAL CORRESPONDENT

SHARE · PRINT · T+

RELATED TOPICS
education
universities and colleges
upbringing

In a frank and controversial assessment of the Indian Institutes of Technology, Union Minister of State for Environment and Forests Jairam Ramesh dismissed both faculty and research at these institutions as "not world class."

Instead, the IITs have gained their premier status due to the "quality of their students", he said.

If a student is bright & passionate, …, she/he still needs nourishment and nutrition. Challenge to be creative and "out of the box"

The “Old”

The Technology Education Transformation

The “New”

The Technology Education Transformations

Inexpensive Bootie Covers

The Tension

Technology intervention in society

- Control? Solve problems but also change vectors? Have's and Have not's?

- Technology that is non-locally grown versus external
- Nanotechnology context:
  - All encompassing !?
    - Intervention at a scale to influence all technologies? And if so its implications.
  - Interdisciplinarity and its tensions (whose and what culture, e.g.?)
  - Its claims to energy, environment and healthcare

  i.e. its expanding ambition and scope, unbounded space for innovation, and its claims to essentiality for civilization.

Field Trip Itinerary: iWSG3

PROGRAMME LIST

Date		Programme
9-1-2011	7:00AM - 6:00PM	Leave Bangalore at 7.00 AM. Visit Belur and Halebidu on the way. Arrive in Dharmasthala by evening
		Halt at Dharmasthala
10-1-2011	9.00 AM - 11.00 AM	Gather at SKDRDP office, Brief of the programme,
	11.00 AM - 2.00 PM	Energy innovations : Visit to SDM Engineering College, SELCO lab, Solar units, gobargas units, solar driers
	3.00 PM - 6.00 PM	Livelihood Innovation : RUDSETI, SIRI, Savanal garment unit
		Halt at Savanal
11-1-2011	9:00AM - 1:00PM	Microfinance programs: Suvidha, PBG, JVK, Cooperative Bank
	2:00PM- 6:00PM	Agricultural Innovations : Visit to Farm, Possible activities in planting saplings
		Halt at Center for Rural Excellence, Belthangady
12-1-2011	8:30AM - 5:00 PM	Community innovation : Banjarumale PICO Hydro project, Milk society-Ujire, Rubber society-Ujire, Ratnamanasa
		Halt at Dharmasthala
13-1-2011	8:30AM - 5:00 PM	Health care innovation & Education initiatives : Naturopathy, SDM College, Belal High School, Ujire Kannada Medium school, Siddavana
		Halt at Dharmasthala
14-1-2011	8:30AM - 2:00PM	Manjusha Museum, Temple Meeting with Dr. D. Veerendra Heggade Sum up at SKDRDP
	2:00PM	Departure from Dharmasthala
	9:00PM	Arrive in IISc guest house

SAI TRAVELS
CALL: 9845747395
|| Om Sri Manjunathaya Namaha ||
Indian Institute of Science, Bangalore
S. K. D. R. D. P.® Dharmasthala
Rural Field Trip for the Participants of
Indo-US workshop on
Nanofabrication Science and Technology
Date: 09.01.2010 to 14.01.2010
Sai Travels

Technology & Childhood & Village

House across the street from where we stayed during a visit to a village

Two daughters
Night
Homework

Technology & Childhood & Village

Schools as integrating environments for community access

Early Education; Tribal Schools from iWSG1

Up in Tribal Regions

In non-tribal villages

Contrasts; iWSG1

Tribals living off forests and land

Early Education: from iWSG2

In non-tribal villages

Early Education; Tribal schooling from iWSG2

In tribal areas, where forest cover has been removed and the tribals have had to become marginal farmers
Only time for children's education is in evening.

The bottom 50% really do not have any meaningful education.
Education for most comes from practical experience of daily survival

तकनीकी शिक्षा के ग्रामीण क्षेत्रों पर प्रभाव का किया अध्ययन

● मुंबई व अमेरिका से 19 सदस्यीय दल पहुँचा

भीकनगाँव। युवा सौर उर्जा वैज्ञानिक डॉ. चेतनसिंह सोलंकी द्वारा बनाए जा रहे एजुकेशन पार्क के अवलोकन के लिए आईआईटी पवई, मुंबई एवं अमेरिका से 19 सदस्यीय दल नगर में पहुँचा। दल के सदस्यों का निमाड़ी संस्कृति के अनुरूप स्वागत किया गया। डॉ.सोलंकी एवं सदस्यों ने स्थानीय जैन मंदिर से बस स्टैंड तक रैली निकाली।

दल में जॉर्जिया यूनिवर्सिटी के प्रोफेसर पॉल, यूनिवर्सिटी ऑफ मैनचेस्टर के प्रो. यॉन व जॉन, करनेल यूनिवर्सिटी के प्रोफेसर संदीप तिवारी, नॉर्थवेस्टर्न यूनिवर्सिटी के केन व जॉन हेनेर, यूनिवर्सिटी ऑफ मिशीगन के छात्र जेफ्रेम, यूनिवर्सिटी ऑफ वॉशिंगटन की छात्रा एंजेला, यूनिवर्सिटी ऑफ रोचेस्टर की छात्रा एब्बी, ओरिजाना स्टेट यूनिवर्सिटी के छात्र इवे, जॉर्जिया टेक्नालॉजी के छात्र पॉल, स्ट्रेटफोर्ड यूनिवर्सिटी के छात्र स्कॉट ली, यूनिवर्सिटी ऑफ टेक्सास के छात्र ब्रेन्डन, पेन स्टेट के छात्र एन्ड्रे सहित आईआईटी पवई, मुंबई के छात्र प्रसाद, जितेन्द्र, अक्षय, नरेन्द्र व अनिकेत शामिल थे।

प्रोफेसर सोलंकी ने बताया कि अमेरिका के विभिन्न प्रांतों के कॉलेजों से आए प्रोफेसर व छात्र भारत में "विन्टर स्कूल" के लिए आए हैं। इसका उद्देश्य तकनीकी शिक्षा के साथ-साथ इस शिक्षा का समाज पर विशेषकर ग्रामीण क्षेत्रों में पड़ने वाले प्रभाव को देखना हैं।

अरविंद जायसवाल ने बताया कि ये सभी प्रोफेसर एवं छात्र 5 दिवसीय निमाड़ भ्रमण के दौरान मंगलवार को झिरन्या तहसील के तितरान्या, बुधवार को नेमित व गोराड़िया, गुरुवार को ओंकारेश्वर व बड़वाह एवं शुक्रवार को खण्डवा के केशवधाम सहित सेवा भारती द्वारा संचालित गतिविधीयों को देखेंगे।

भीकनगाँव में रैली में शामिल विदेशी छात्र व प्रोफेसर।

शैक्षणिक भ्रमण पर आए प्रोफेसर एवं छात्रों ने भीकनगाँव में उन्नत एग्रो इंडस्ट्रीज की कपास फैक्ट्री में कामकाज देखा। कुलदीपसिंह सोलंकी ने बताया कि आदिवासी अंचल में सेवाभारती के एकल स्कूलों सहित दल शासकीय स्कूलों के कामकाज भी देखेगा।

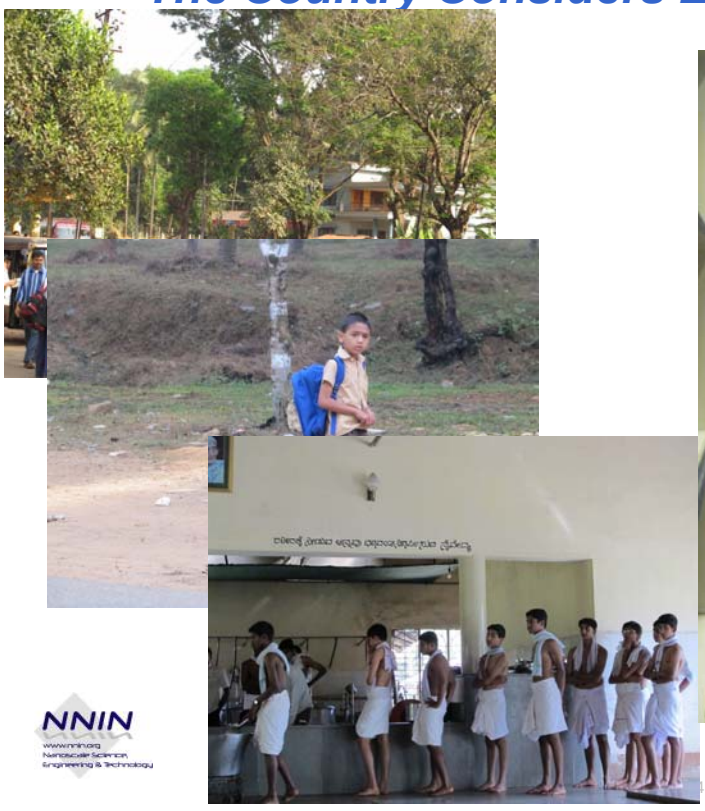
एजुकेशन पार्क में नगर के पत्रकारों एवं गणमान्य नागरिकों ने विदेशी छात्रों एवं प्रोफेसरों से भारत के बारे में अमेरिका के नागरिकों की सोच के बारे में बात की जिसके जवाब में प्रोफेसर यॉन ने बताया कि भारत ने शिक्षा एवं टेक्नालॉजी के क्षेत्र में बहुत तरक्की की हैं, यहाँ के नागरिक बहुत मेहनती हैं। दल के सदस्यों का विनोद अग्रवाल, विक्रम सोलंकी, सतीश जायसवाल, राजू सोलंकी व अनिल राठौर ने स्वागत किया।

Schooling

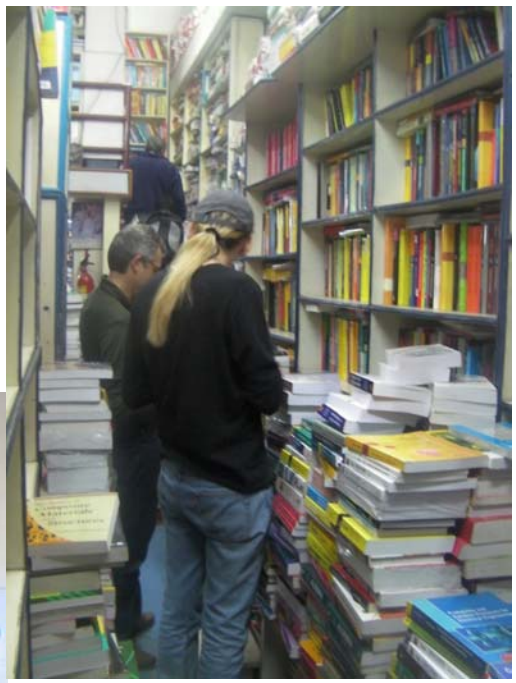
Children's desires similar everywhere
Schools that teach practical life needs in addition to academics

From iWSG1: The $25 School Science Box

The Country Considers Education as Key



Technical Bookstores; 1/10th US Prices



Education as the way out

Plastics! Technology as Good or Bad?

from iWSG1

Community Experiences

Village life
Living with very little
But, a rich life through culture and sharing

Students' Love of Humanity

iWSG3

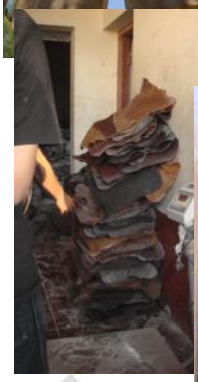
iWSG2

Ground-up Community Organization

Small farmer organizations supporting common growth

Bottom-Up: Cooperatives for Self-Help

Rubber



Milk

Self-help groups eliminating middlemen

Garments

Existentialism of a Stressed Planet: Technology

Solar

Wind

Hydro

Small-scale technology in an appropriate context

Technology

Cooking

Water Testing

Thermoelectric Refrigerator

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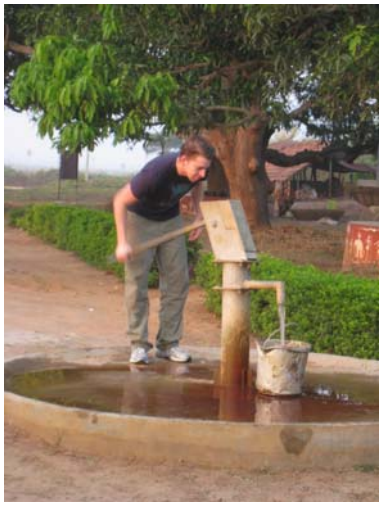
Mass Transportation

Co-existentialism of a Stressed Planet

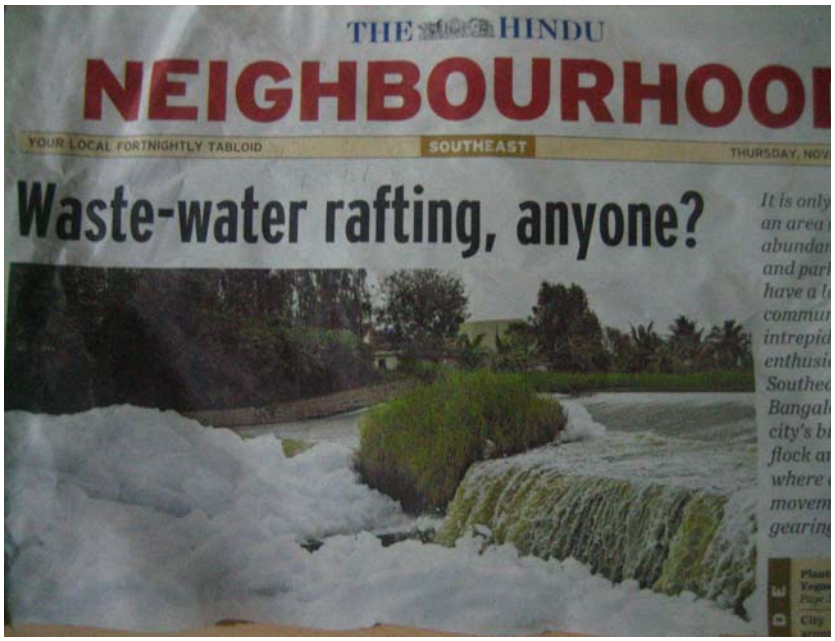
Finding a middle ground

Living as Part of Nature

Water



In Villages, if available



Bridges over Divides

And Being at Home in the New World

And Honest Fun Too; From iWSG2

Discussions

Outcomes and Prognosis

Archive of integrated lectures in an emerging subject on NNIN Web Site

Most student participants are still in graduate school

Feedback

The field trip as a wonderful experience. {SKRDRP} is clearly a model for rural areas to develop themselves into self sustaining and progressive societies.

I was struck most by the fact that most of the programs involved local people providing help, support, and education to each other, rather than an outside group imposing help.

Among the things I particularly enjoyed was the visit to the hydroelectric village and the science experiments with the high school students.

My two favorite sites were the pico hydroelectric plant and SELCO. SELCO is a great model of using technology to solve problems in developing countries. They are developing appropriate (technology) that meets the local populations' need. The pico hydroelectric plant was also an example of an appropriate technology. It was environmentally friendly and met the needs of the local community.

I have never been able to sit under the stars and just think… Just think about how a technology that is so cutting-edge yet practical to implement, that we think it could "help" people in a community culturally, economically, and socially different than our own. I came to many conclusions over the course of my time there, but one of them was that there is no panacea that engineers can create to solve all the world's problems. Many times the solutions we believe are so ingenuis tear apart communities and destroy cultures that have existed harmoniously since the beginning of time! So I wondered, what is my role here? I have to solve relevant problems because that is the reason that I became an engineer but to solve them responsibly I must also understand the cultural, ethical, and social implications of my solutions…

course 6 blogger:
joy johnson
microsystems technology lab, processing & fabrication techniques at the micro/nano scale
north carolina state university '07

Jan 05, 2009

from iWSG1

Common Themes in Response

Equal opportunity for all

- Shelter
- Health (disease, food, water, …) and treatment of disease
- Education
- Happy and sheltered childhood – sanctuary from the tensions of the reality of the world

And these cannot all be separated;
they are integrated in a common whole that we call
Values

And,
a. Inter-faculty joint projects
b. Student-student long term international connections
c. Even some redirection in student research directions
d. A global perspective to humanity's needs and what science can do

This talk is a personal reading of the experience.

With unconditional love to the nation of my birth and my adopted home and the nation of my family.