

# ICT in Science Education

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# Facts and Figures

- India has one of the largest proportions of population in the younger age groups in the world. 35.3% in the age group of 14 years at the Census 2001. 41% account for less than 18 years of age.

| Age group     | Populatin     | Percentage |
|---------------|---------------|------------|
| All Ages      | 1,028,610,328 | 100.0      |
| 0 - 4         | 110,447,164   | 10.7       |
| 5 - 9         | 128,316,790   | 12.5       |
| 10 - 14       | 124,846,858   | 12.1       |
| 15- 19        | 100,215,890   | 9.7        |
| 20 - 24       | 89,764,132    | 8.7        |
| 25 - 44       | 284,008,819   | 27.6       |
| 45 - 64       | 139,166,661   | 13.5       |
| 65 - 79       | 41,066,824    | 4.0        |
| 80+           | 8,038,718     | 0.8        |
| Less Than 18  | 422,808,543   | 41.1       |
| Less than 21  | 492,193,906   | 47.9       |
| Age no stated | 2,738,472     | 0.3        |

Source : C2 and C14 Table, India, Census of India 2001.

# Expenditure on education

- Only 3% of GDP spent on education. Apparently, only 0.37% on higher education against 1.41% in the US, 1.07 % in the UK and 0.6% in China.
- As a relative measure , expenses per child for education are as follows.

| Country | Expenses (USD) |
|---------|----------------|
| US      | 9689           |
| UK      | 8502           |
| Brazil  | 2728           |
| Russia  | 1024           |
| China   | 3986           |
| India   | 400            |

# Questions

- Why is it hotter in summer than in winter ?
- How to break a regular Cadbury 3 x 5 bar into single pieces ? You can break a given piece along any line at a time.

# Problems

- Negligence in designing text books.

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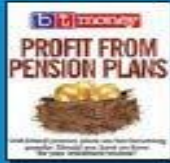
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## AICTE: Time to Revamp

The regulator of technical education is doing more harm than good.



**BT Money**  
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## Licence to Bank

NBFCs are muscling into banking territory.



### PLUS:

- BT-TeamLease Employment Outlook Survey
- Will Orchid Change Hands?
- IITians Bet on India



### ECONOMY

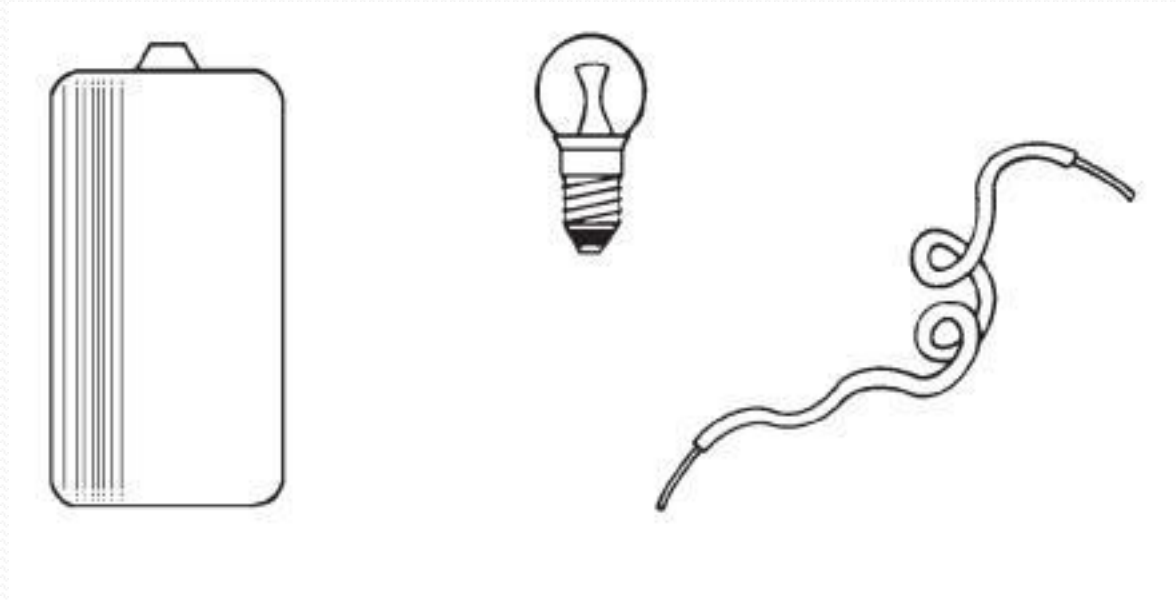
# Why the Slowdown Won't Kill You

# Problems

- Disinterest amongst teachers and lack of proper training .
- Lack of infrastructure.
- ICT can provide for certain infrastructural facilities.

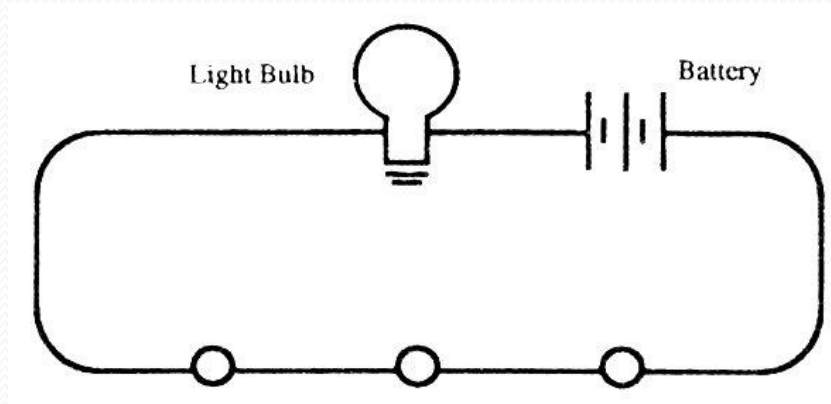
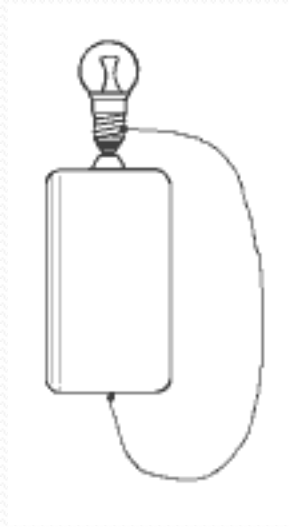


# Gap between theory and Practice





# Solution



# Overload



# Innovative learning methods

- Understanding common misconceptions
- Creating situation for learning through experimentation and observation.



By: Rosa Y Dani

# Quality Content

The screenshot shows a Mozilla Firefox browser window with the following details:

- Browser Title:** Motion Mountain - The Adventure of Physics : The Free Physics Textbook - Mozilla Firefox
- Address Bar:** http://motionmountain.dse.nl/index.html
- Navigation:** Home, Back, Forward, Reload, Stop, Print, Home, Search (athanu dey)
- Bookmarks:** Gmail - Inb..., Google Rea..., Jonathan Dr..., [Ffmpeg-us..., Wikimedia ..., Welcome to..., Free Educa..., Motion ...
- Website Content:**
  - Header:** MOTION MOUNTAIN THE FREE PHYSICS TEXTBOOK
  - Navigation Menu (Left):** Home, Contents, Download, Chapters, Author contact, Suggestion wiki, Help, Mailing list, Guestbook, Project, Reviews, Win a prize, Links, Search, 1 December 2007
  - Main Text:**

**How do objects and images move? How can animals move? What is motion?**

How does a rainbow form?  
Is levitation possible?  
Do time machines exist?  
What does 'quantum' mean?  
What is the maximum force value found in nature?  
Is 'empty space' really empty?  
Is the universe a set?  
Which problems in physics are still unsolved?

**Download the text (21st edition, December 2007).**

This site provides a free physics textbook that tells the story of how it became possible, after 2500 years of exploration, to answer such questions. The book is written for the curious: it is entertaining, surprising and challenging on every page. With little mathematics, starting from observations of everyday life, the text explores the most fascinating parts of mechanics, thermodynamics, special and general relativity, electrodynamics, quantum theory and modern attempts at unification. The essence of these fields is summarized in the most simple terms. For example, the text presents modern physics as consequence of the notions of minimum entropy, maximum speed, maximum force, minimum change of charge and minimum action.

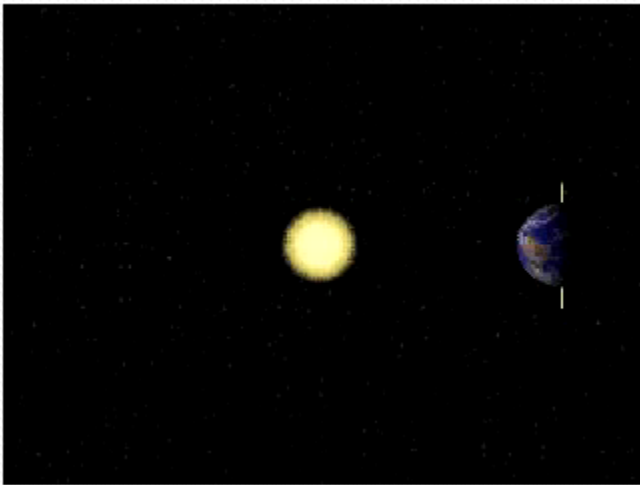
**Quote of the month:**
  - Language List (Right):** Benvenuti, Benvinguda, Bienvenida, Bienvenue, Bine ati venit, Boasvindas, ברוכים הבאים, Добре дошли, Добро пожаловать, 欢迎, 歡迎, Hoş geldiniz, Karibu, مرحبا, Ondo etorri, Salve

# Quality content

- Physics
  - Julius Sumner Miller experiments.
- Mathematics
- Chemistry
- General

# Our experiences

- Teaching 'seasons on the earth' to students at Vidya.
- Students were excited to learn from videos.



# ICT case study

- Integration of ICT to science education through professional development of teachers . *Jari Lavonen, Kalle Juuti, and Veijo Meisalo*

*Department of Applied Sciences of Education,  
University of Helsinki, Finland*

# Goals

- Developing new approaches for science education where ICT can be utilised in a versatile manner.
- Helping science teachers to adopt and develop models for utilising ICT.
- Developing digital learning material for science education.





# Case Study : Results

- Permanent, positive changes occurred in schools participating in the activities:
  - Teachers increased ICT use in science education, (developed together, tested in practice and evaluated)
  - Once the teachers had adopted a certain ICT use they did not drop it
- Use of available ICT tools as medium for active learning increased amongst students.

# Our proposal

- Collaboration between teachers around Mumbai and IITB.
- Share innovative methods of teaching science.
- What about feasibility?