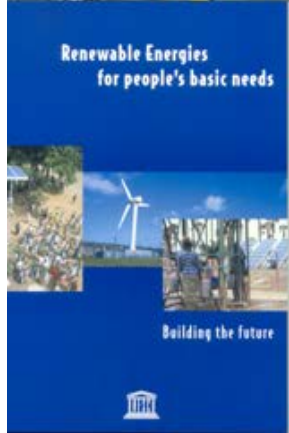
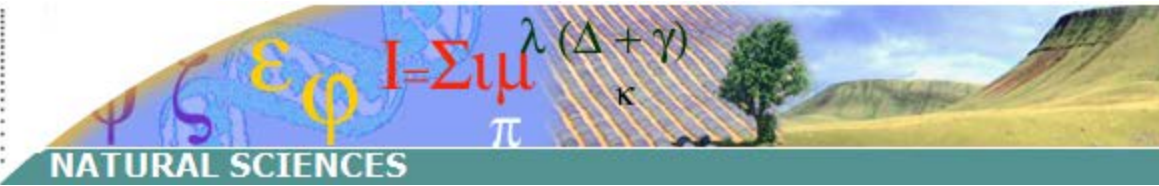


Imteyaz Khodabux

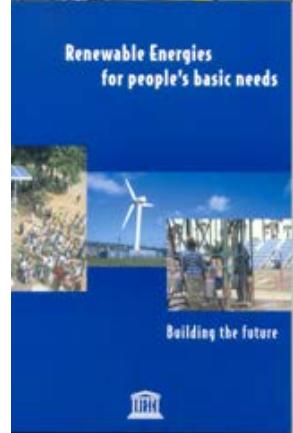
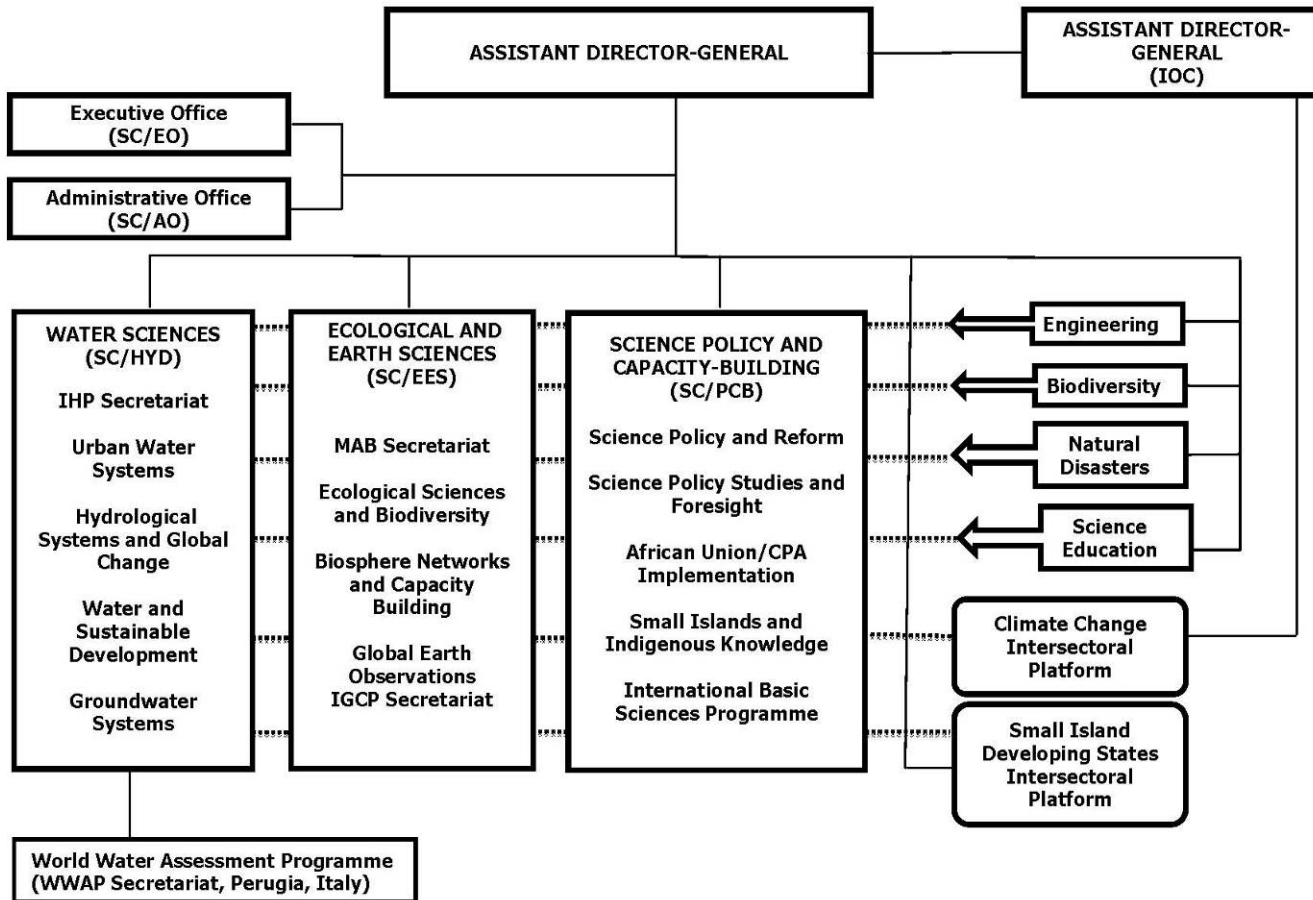
Science Education Unit

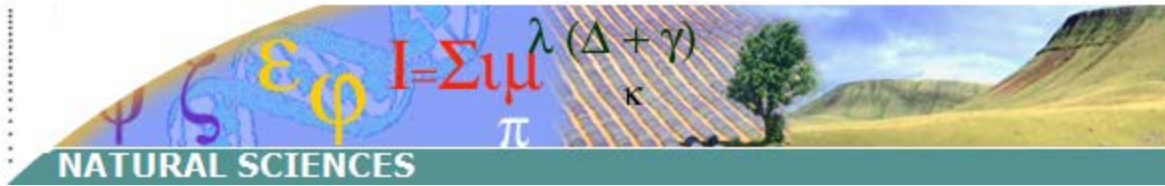
UNESCO





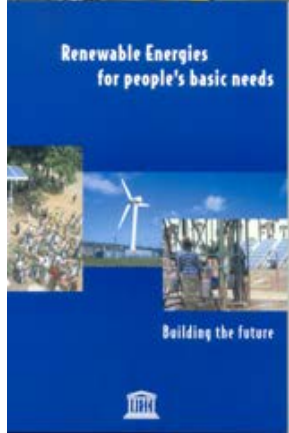
Natural Sciences Sector

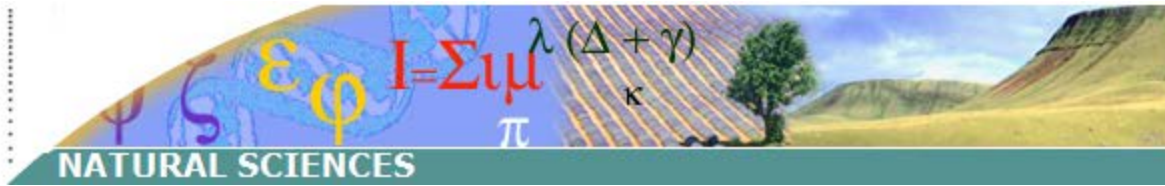




Challenges:

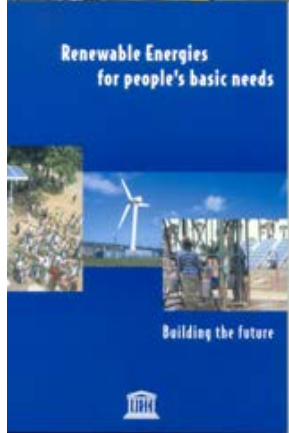
- **Steady decline of enrolment of young people in the sciences**
- **Participation of girls and women in science is not ensured**
- **methodologies used for teaching science subjects resulting in loss of interest in sciences early on in students' development**

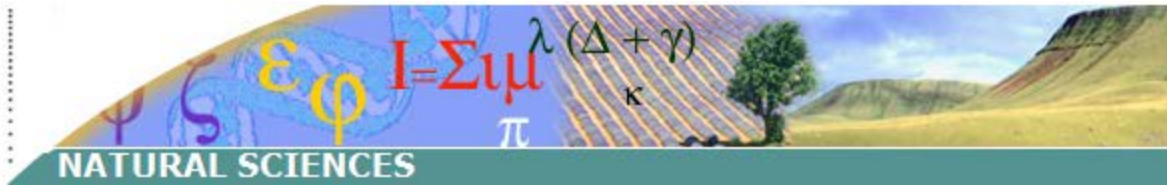




Our strategy

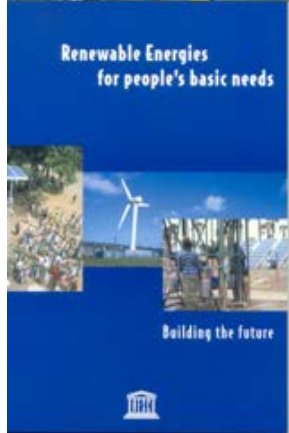
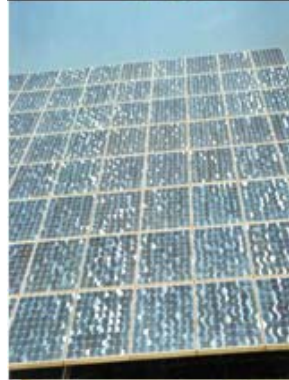
- Innovative, interesting and dynamic tools and methodologies developed and/or integrated into science teaching in order to capture the interest of young students (Make science interesting)
- Training and retraining of teachers is a vital step in attaining these objectives
UNESCO's efforts - focus on training activities in the teaching of Chemistry, Physics, Mathematics and Biology as well as interdisciplinary sciences, from primary school to tertiary levels
- Emphasis laid on enquiry based investigation and hands-on teaching methodologies as a means of improving science curricula



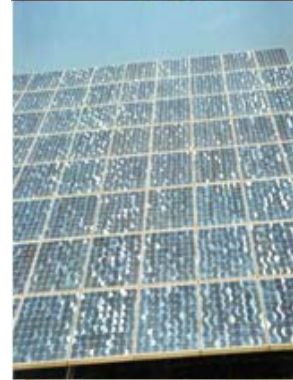
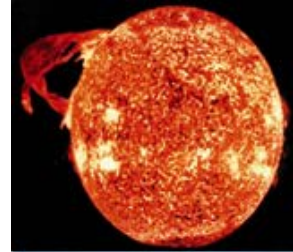


What we do: (Focus on the content)

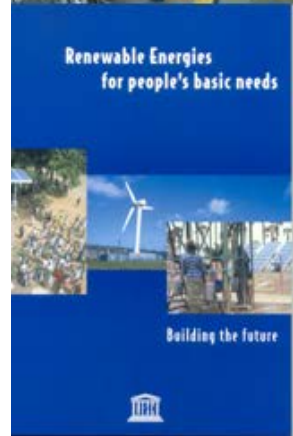
- Training of teachers and trainers
- Clearing House
- Awareness raising amongst students



Advocate use of Hands-on Experimentation to teach science



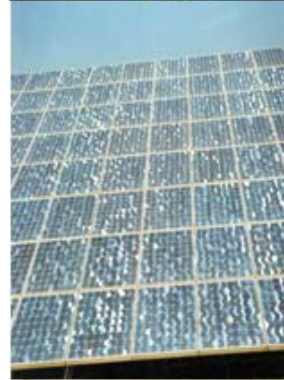
- **Microscience kits (Mini laboratories) + Manual for teachers and students**
- Physics
- Chemistry
- Biology



Hands-on Experimentation

- Cote d'Ivoire: Re-Opening of the University Academic Year (30 August 2012)

H.E President Ouattara



Renewable Energies
for people's basic needs

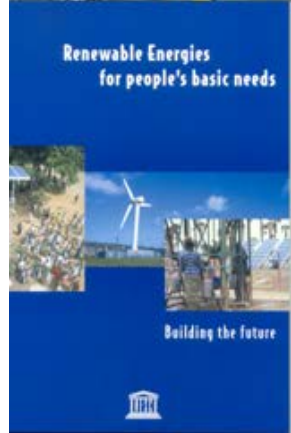
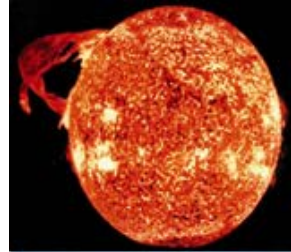


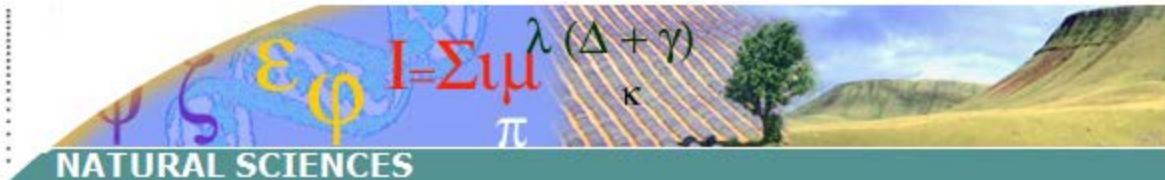
Building the future

Hands-on Experimentation



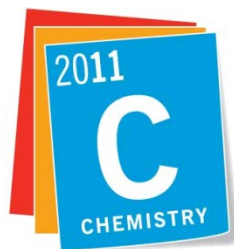
- Sudan, Republic of Congo, Tanzania, Burundi.....





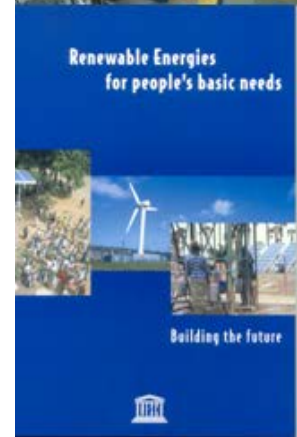
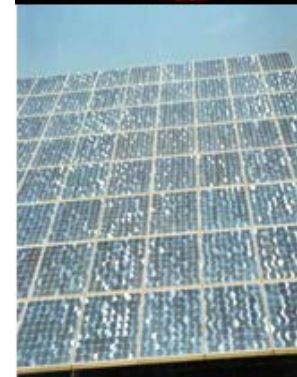
International Year of Chemistry (2011)

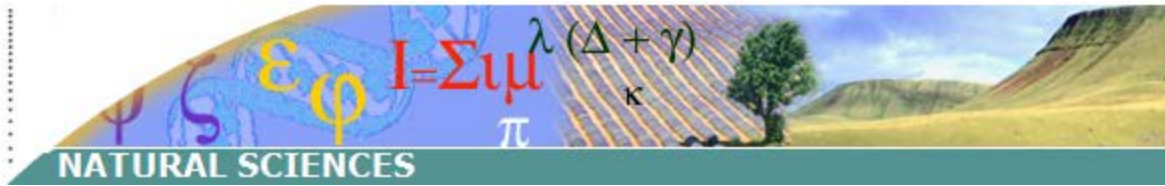
Promotional video to show the importance of Chemistry in everyday life



IYC 2011

International Year of
CHEMISTRY

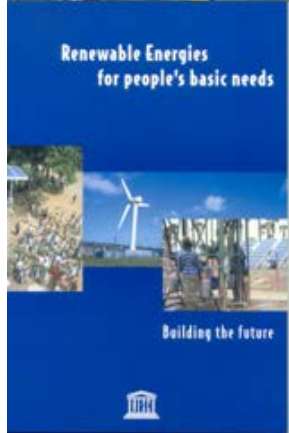
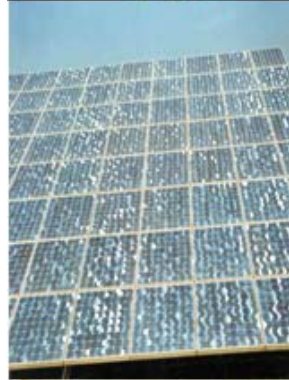




UNESCO and Nature Publishing Group

The World Library of Science

- Transformative event in the world science education landscape
 - The Library will contain 2500 – 3000 learning modules in all concepts of life and physical sciences, arranged into standard curricula but capable of full customization by all institutions;
 - A robust web-based and mobile-based delivery system providing access to materials, tutors, and academic information to any faculty or student with basic connectivity.
 - <http://www.nature.com/scitable>
 - Collaborative effort – inputs from different regions of the world e.g. African Academy of Sciences





What Is Scitable?

Scitable is a free science library and personal learning tool brought to you by Nature Publishing Group, the world's leading publisher of science.

Scitable currently concentrates on **genetics** and **cell biology**, which include the topics of evolution, gene expression, and the rich complexity of cellular processes shared by living organisms. Scitable also offers resources for the budding scientist, with advice about **effective science communication** and **career paths**.

Inside Scitable



Browse + Search Science Articles
Free in-depth overviews of key concepts.



Get Help or Connect with Peers
Ask experts, join discussions, network.



Build an Online Classroom
Engage students through articles and discussions.



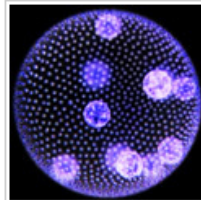
Contribute + Share Your Content
Communicate with the world of science.



Genetics

Editor: Iona Miko

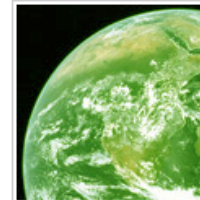
Genetics is the study of genomes and how they define the growth, development, and function of organisms.



Cell Biology

Editor: Iona Miko

Cell biology is the study of cell structure and function focusing on the cell as the fundamental unit of life.



Ecology

Editor: Sara Tenney

The field of ecology studies the interactions of organisms with each other and their environment.

NEW! AFFORDABLE INTERACTIVE SCIENCE TEXTBOOKS

Nature Education's Principles of Biology

Nature Education is pleased to announce the launch of a series of affordable, high quality interactive textbooks in college-level science. The first textbook in the series, *Principles of Biology*, intended for the majors introductory biology course, is now available for review.

Principles of Biology is a high-quality digital reinvention of the textbook, using more than 175 interactive lessons and continual assessments to help students master basic concepts. *Principles of Biology* draws on the *Nature* journals' extensive archive of research papers to cultivate mature scientific skills, including data analysis and critical



START LEARNING CELL BIOLOGY

Essentials of Cell Biology



This eBook teaches readers the core concepts of cell biology. It provides an introduction to cell biology for students

of all ages or is a springboard to more specialized topics for advanced students.

Each unit concludes with an assessment for learners to test their knowledge. More advanced learners can try our eBook for seminars, which includes articles from *Nature*.

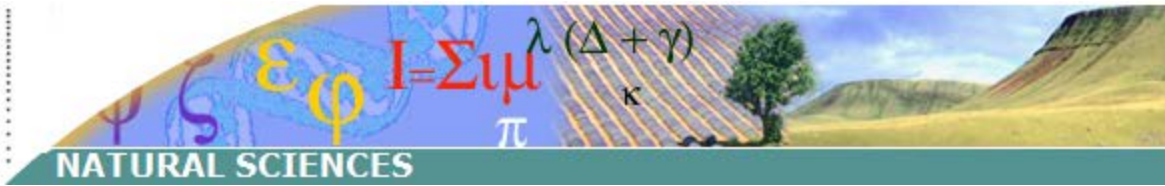


Renewable Energies
for people's basic needs

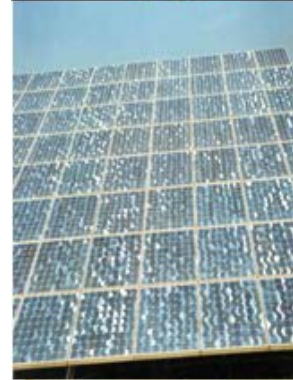
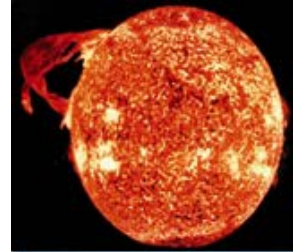


Building the future



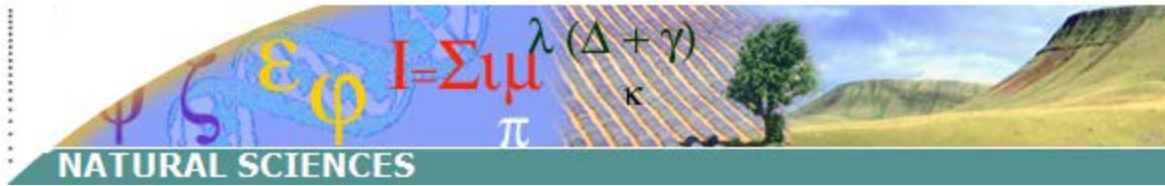


- UNESCO/NPG



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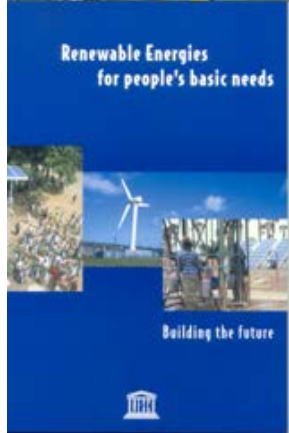
Building the future

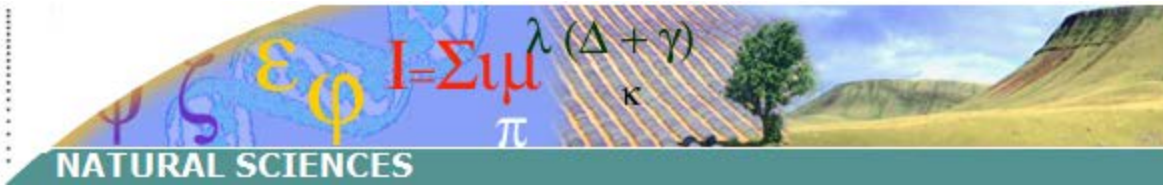


International Travelling Exhibition in Mathematical Sciences (Experiencing Mathematics)

To show that Mathematics are:

- astonishing, interesting and useful,
- accessible to everyone,
- plays a large part in daily life,
- that they lead to many trades,
- and has an important role in our culture, development and progress.
- <http://www.mathex.org/MathExpo/EnHomePage?setskin=en>





Experiencing Mathematics

Burkina Faso, Senegal, Mozambique



Maths Experiencing - Mozilla Firefox

UNESCO | Scribble | Learn Science at Nature | Maths Experiencing

unesco.cern.training

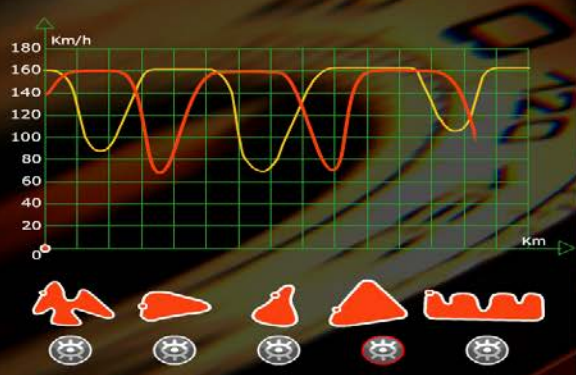
Constructing

Curves & Speed

Curves & Speed | Curves & Volumes | Smooth curves

Read the Nature
Tiling a floor
Filling space
Connections
Calculating
Constructing
Estimating - Predicting
Optimisation
Proving
Concluding

Which race circuit is it?



1 / 6


EN FR SP PT

Experiencing
EXPERIENCING
mathematics


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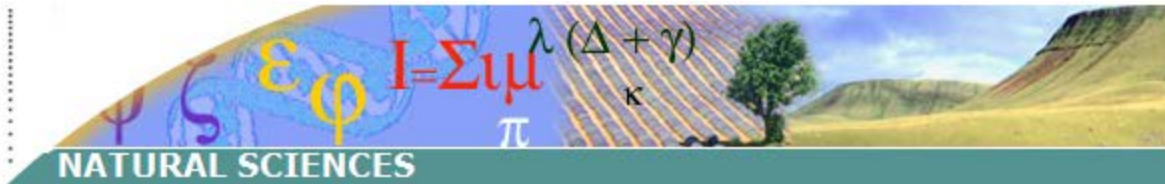
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for people's basic needs



Building the future





UNESCO/INTEL collaboration on STEM Education

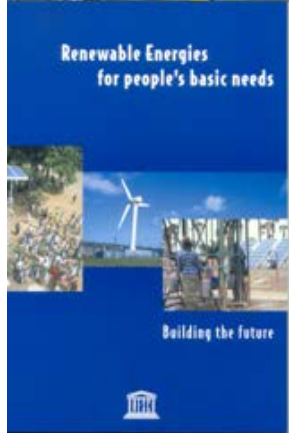
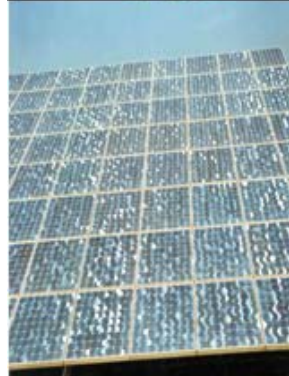
Intel International Science and Engineering Fair

- World's largest international pre-college science fair
- Competition

1500 high school students from about 70 countries, regions and territories to showcase their independent research.

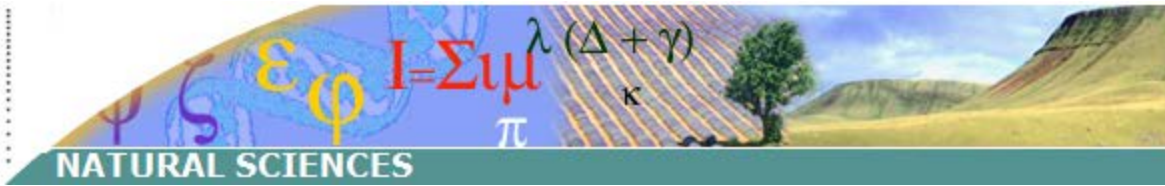
The Intel ISEF is the premier global science competition for students in grades 9–12.

- Develop regional science fairs ... Discussion on going with the UNESCO category 2 centre in Nsukka centre Nigeria at PanAfrican level





United Nations Educational, Scientific and Cultural Organization



UNESCO/INTEL Teaching Resources

Welcome to skool.co.uk - Mozilla Firefox

Announcing Principles of Biology, an Inte... Intel Education - K-12 STEM Education skool.com: A new concept in e-learnin... Welcome to skool.co.uk Intel Education: The Journey Inside

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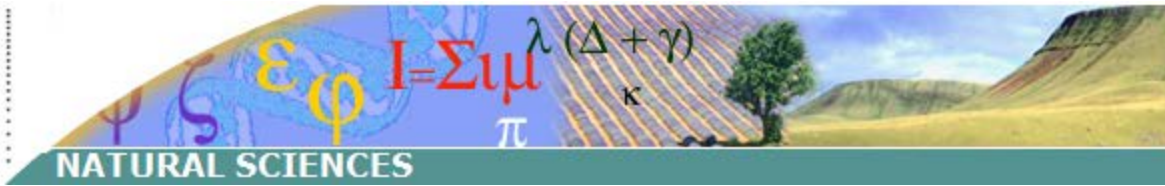


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For Science content click [here](#)

1. **24 hour time**
To introduce the concept of digital (24 hour) time.
[Launch](#)

2. **Analogue time**
An introduction to telling and reading time on an analogue watch.
[Launch](#)

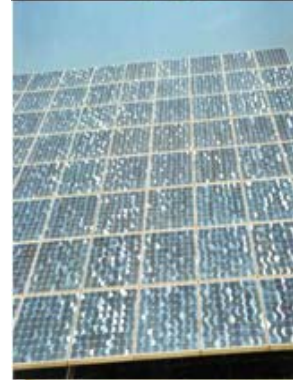
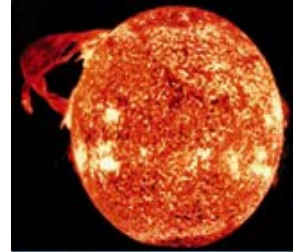
3. **Data handling**
A basic introduction to tallying raw data and drawing up a bar graph.
[Launch](#)

4. **Addition**
Introduce various methods of addition.
[Launch](#)

5. **Addition and subtraction of fractions**
Addition and Subtraction of fractions.
[Launch](#)

6. **Common fractions**
An introduction to common fractions.
[Launch](#)

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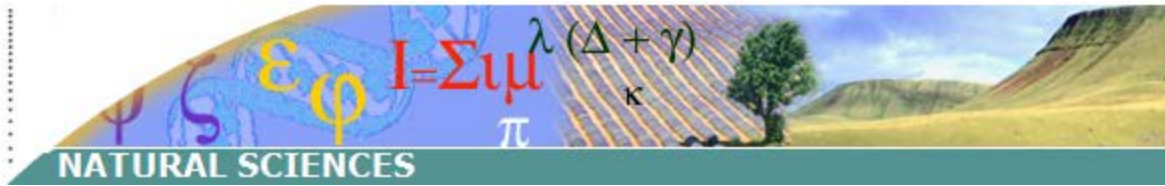


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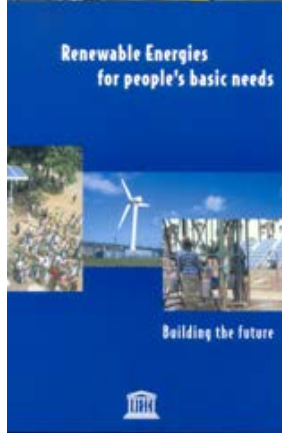
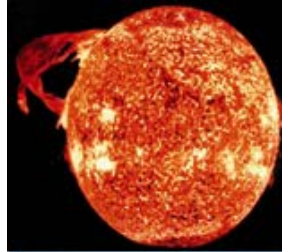
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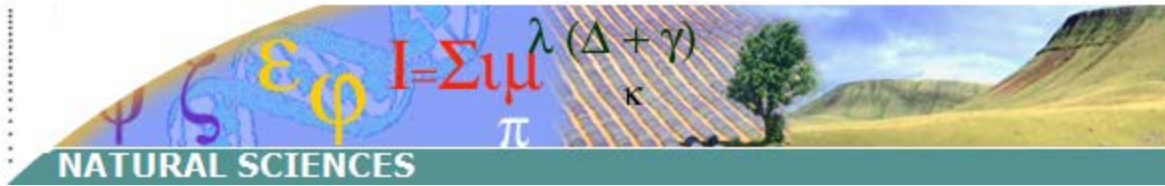




Collaboration with IEEE

- IEEE – Institute of Electric and Electronic Engineer
 - World’s largest association of engineers
- MOU with IEEE to work on:
 - accreditation standards and/or bodies to improve the quality of university-level engineering education - Malawi
 - Teacher In-Service Program (TISP) - provides a forum for IEEE volunteers to demonstrate the application of STEM concepts by sharing their real-world experiences with local pre-university educators.
 - <https://ieeetv.ieee.org/player/html/viewer#teacher-in-service-workshop>
(Nigeria)
 - IEEE Student-Teacher and Research Engineer/Scientist (STAR) Program - to create a technical support network for teachers and a mentoring program for students.

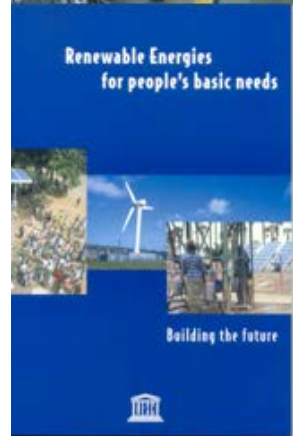
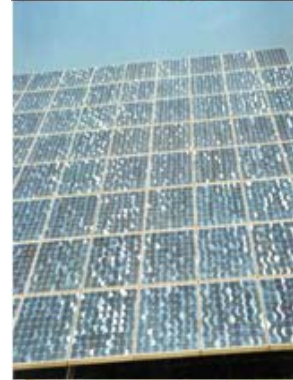
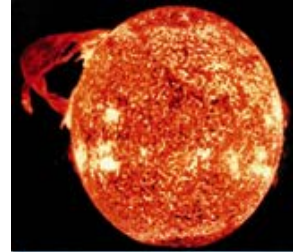


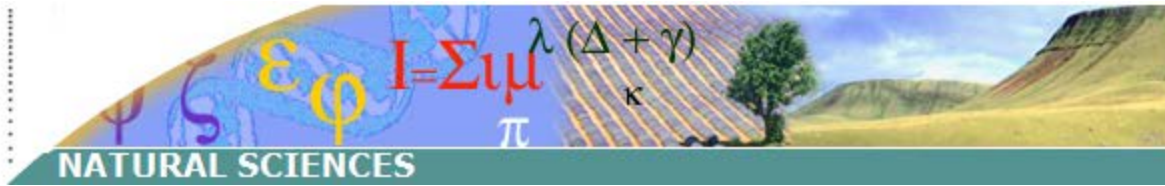


Collaboration with IEEE E-Scientia



- Developed by IEEE Uruguay
- Directed toward pre-university level students ages 8-16 with preliminary interest in science and engineering. (South Africa and Nigeria)



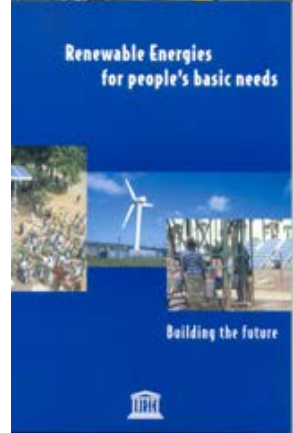
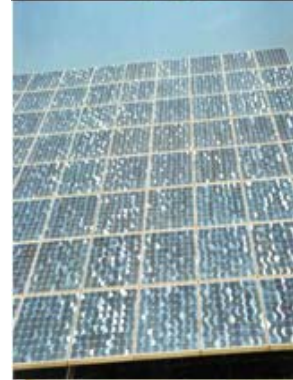


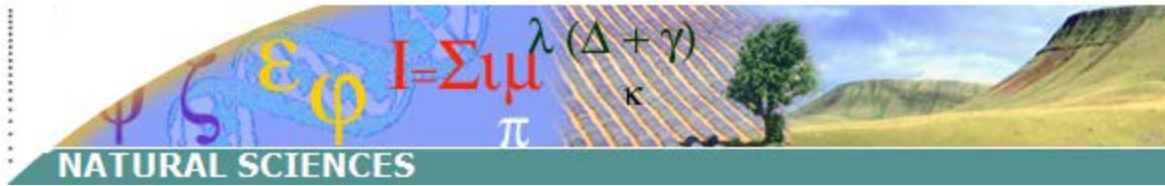
Teacher Training in collaboration with CERN (Centre Europeen de Recherche Nucleaire) in Physics and on using the Invenio digital library

Objectives: training in the CERN digital library system Invenio for the purpose of establishing open access to research

Activities:

- A one-week school in a Member State for training of teacher trainers in Open Access principles and opportunities, the setting up and operating a national e-repository, introduction to Invenio and establishing working routines for the operation of the repository. (Rwanda, Senegal) - Ghana
- A one-month follow-up advanced training at CERN in Geneva, Switzerland, for trainers and teachers in Physics.



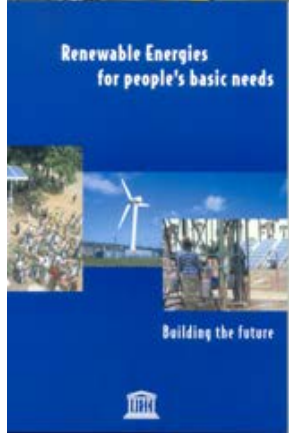
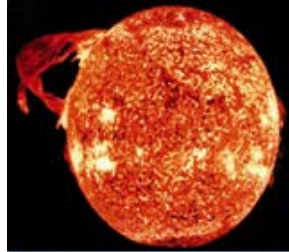


International Centre for Theoretical Physics

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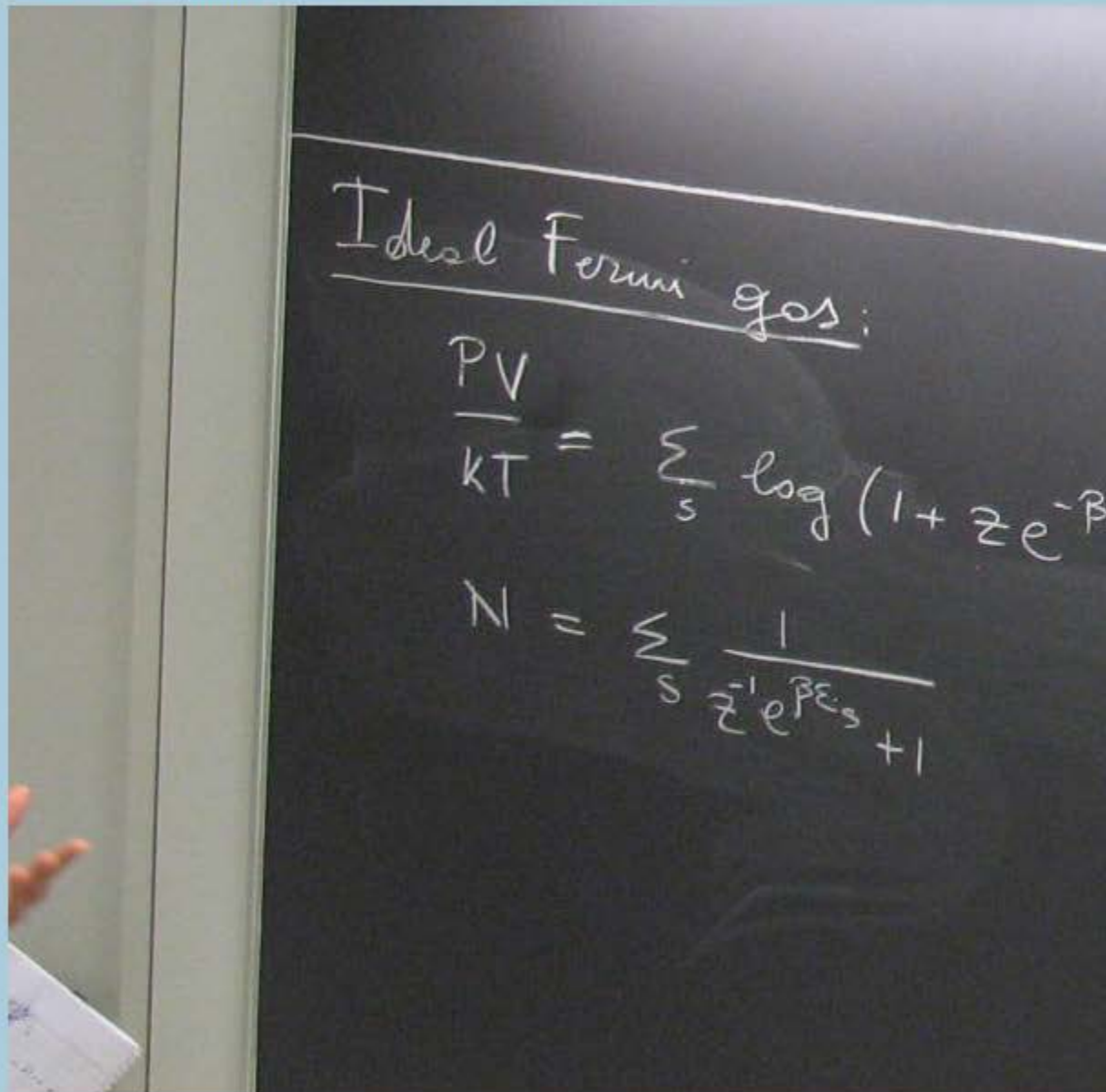


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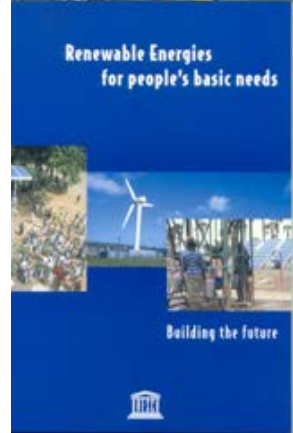
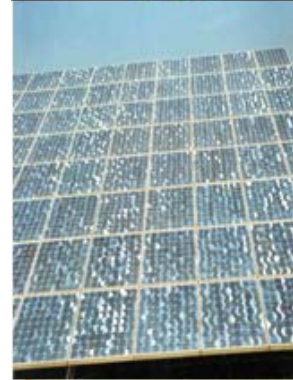


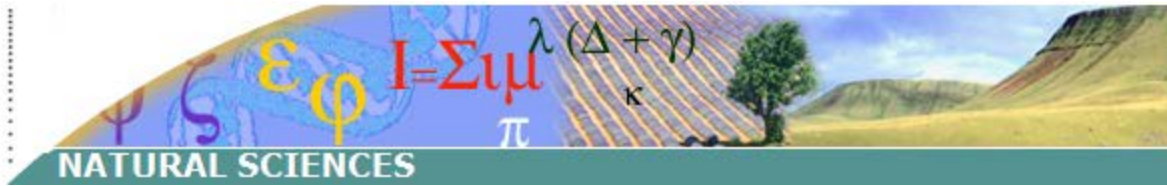
Date: 2012/07/27 09:00-09:59

Open the **image 30** in a new window.

Women Role Models (Inspiring young girls)

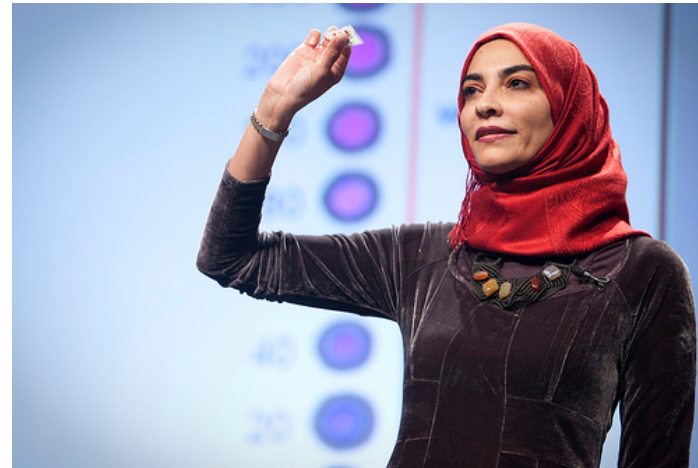
Anousheh Ansari



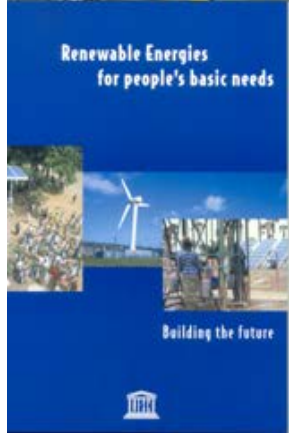


Women Role Models (Inspiring young girls)

Hayat Sindi

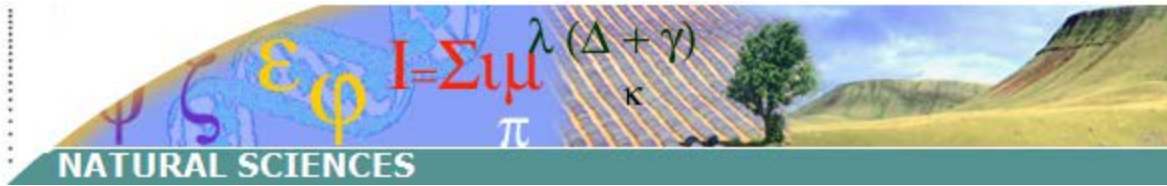


- **Inventor**
- **low cost diagnostic tools**
- First woman in the Gulf region to obtain a PhD in biotechnology



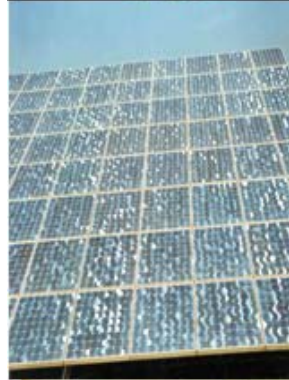


United Nations Educational,
Scientific and Cultural Organization



<http://www.unesco.org/new/en/natural-sciences/special-themes/science-education/>

Thank you



Renewable Energies
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