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## International Implementation Scheme for the UN Decade of Education for Sustainable Development (2005-2014)

In December 2002, the UN General Assembly adopted a resolution to put in place a UN Decade of Education for Sustainable Development, lasting from 2005 to 2014. UNESCO was tasked with leading the Decade and developing an International Implementation Scheme (IIS).

Starting with an initial consultation with UN partners in September 2003, UNESCO shared a framework for the Scheme worldwide. More than 2000 contributions were received, many of these representing the consolidation of opinions of hundreds. The draft Scheme was reviewed by leading academics and experts in the field, before it was submitted, in July 2004 to the High Level Panel on the Decade, which advises the Director-General of UNESCO on this topic. It was presented at the 59th session of the UN General Assembly on 18-19th October 2004 in New York.

The International Implementation Scheme sets out a broad framework

for all partners to contribute to the Decade. It is not prescriptive, but provides overall guidance and shows why, how, when and where the enormous range of partners can develop their contributions based on their particular contexts. It briefly presents the ESD challenge and outlines the kind of education that, collectively, partners consider essential in order to facilitate sustainable development.

The overall goal of the Decade is to integrate the values inherent to sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all. This goal is articulated around five objectives which are to:

1. Give an enhanced profile to the central role of education and learning in the common pursuit of sustainable development;
2. Facilitate links and networking, exchange and interaction among stakeholders in ESD;

3. Provide a space and opportunity for refining and promoting the vision of, and transition to sustainable development – through all forms of learning and public awareness;
4. Foster increased quality of teaching and learning in education for sustainable development;
5. Develop strategies at every level to strengthen capacity in ESD.

It addresses the wide range of stakeholders in the Decade and outlines seven key strategies: advocacy and vision building; consultation and ownership; partnership and networks; capacity building and training; research and innovation; information and communication technologies; monitoring and evaluation.

The International Implementation Scheme can be consulted online on the UNESCO DESD website ([www.unesco.org/education/desd](http://www.unesco.org/education/desd)).

**Message from Mr Koïchiro Matsuura,  
Director-General of UNESCO,  
on the occasion of World Environment Day 2004,  
5 June 2004**

**“Wanted ! Seas and Oceans - Dead or Alive?”**

The world's oceans and their adjacent seas, along with the living and non-living resources they contain, are essential for the survival of life as we know it. The sustainability of the air we breathe, the water we drink, the food we eat and the climate in which we live is dependent upon the health of our oceans and seas.

Coastal areas bordering oceans and seas are the home of 50% of the world's population. Forty-four of the world's nations are small island developing states (SIDS) which are especially dependent on oceans. Oceans, coasts and islands support a wide array of human activities of great value and significance. Fisheries, for example, are important economically and socially, providing livelihoods directly and indirectly for 400 million people. Marine aquaculture is a rapidly growing industry that accounts for 30 percent of global fish consumption. Moreover, the travel and tourism industry is the fastest growing sector of the global economy, especially with regard to coastal and marine areas.

The diverse activities undertaken in oceans, coasts and islands are placing increasing pressure on the integrity of coastal and marine ecosystems, whose resources are threatened by over-exploitation. Today, 75 percent of global fisheries are either fully utilized or over-utilized; 70 percent of 126 marine mammal species are threatened; 50 percent of the world's mangroves have been lost; and important seagrass habitats are rapidly being destroyed. The quest for food security for a growing human population is leading to intensified agricultural production reliant upon the increased

application of fertilizers, pesticides, and herbicides, thereby contributing to the degradation of coastal and marine ecosystems.

The ocean environment is complex and inaccessible. It is difficult and expensive to study. Furthermore, national and international jurisdictions, regional and global agreements and conflicting priorities bring added complications. As a result, inter-governmental cooperation is imperative if global issues are to be addressed and resolved. This requires strong global and regional institutions that bring scientists, researchers and policy-makers together. It also requires the involvement and full participation of local communities and stakeholders that are in direct relation with the marine environment and its protection. Moreover, future ocean-related developments, such as the exploitation and management of newly accessible resources, will certainly require a coherent and integrated approach to international cooperation as well as a careful stewardship of fragile environments.

The protection of oceans and seas is a theme of particular interest to UNESCO. As the sole UN organization specialized in ocean science and services, the Intergovernmental Oceanographic Commission of UNESCO has been fully engaged during the last 44 years in improving our understanding of the oceans and its resources, and notably by federating countries and partners to build a Global Ocean Observing System.

UNESCO has always sought to bring the power of science and technology to bear upon the needs of oceans, coasts and islands, and this

continues to require that the results of science are made widely available to governments and the different segments of society. In addition, UNESCO has placed great emphasis on the need to preserve our common natural and cultural heritage. Indeed, the conjunction between science and culture, between natural heritage and cultural heritage, and between socio-economic development and environmental protection serves to place UNESCO at the heart of contemporary efforts to ensure the sustainable development of oceans, coasts and islands.

At the World Summit on Sustainable Development (WSSD) in August/September 2002, Governments agreed on an action plan, with specific targets and timetables for action, to address the many problems and threats facing the sustainable development of oceans, coasts and islands. These targets and timetables represent an important global consensus, reached at the highest political levels, on the need for urgent action. The assumption underpinning this agenda for action is that the world is still capable of making significant choices but time is running out. If we do too little too late, in effect we will be choosing to let our oceans and seas die.

On World Environment Day, UNESCO reaffirms its commitment to sustainable development in general and to the sustainable development and protection of the ocean environment in particular. In the face of the stark alternatives before us, the making of timely and informed choices is crucial if our oceans, seas and islands are to remain alive.



## Students' perceptions of science and technology

In most OECD countries there is a concern about the lack of interest among young people to pursue studies and careers in science, engineering and technology (SET)<sup>1</sup>. Many wealthy nations 'solve' their recruitment problems by importing able students from poorer countries. About half of the PhD students in SET in the US come from such countries, mainly from Asia<sup>2</sup>. Such a 'brain drain' has positive as well as negative effects on both parts, and will not be discussed here. It is, however, noteworthy that the recent preoccupation with the 'fight against terror' has complicated the migration of these able students, in particular to the US.

It is a paradox that the most SET-driven economies in the world experience a lack of interest in SET studies and careers among young people. The economic significance for a country to have a high number of skilled scientists and engineers is well accepted. But young people do not choose their studies or careers because it is good for the economy of their country. They base their choices (when they have them) on their own interests, values and priorities. It is obvious that SET studies and jobs do not have the same appeal to students in wealthier countries as they used to some decades ago.

The lack of interest in SET in schools and further studies is not only a problem for the economy. It is also a threat to democracy, since most decisions in modern societies are highly dependent on considerations that involve weighting scientific arguments against value judgements. A scientifically illiterate voting population can easily be manipulated by propaganda in a voting process. From the above perspectives, it becomes urgent to get to know the SET-related attitudes, priorities and interests of the young generation. The ROSE-study has the ambition to do so. Some details about ROSE are given in the information box below.

### ROSE (The Relevance Of Science Education)

ROSE is an international comparative study that taps into the diversity of interests, experiences, priorities, hopes and attitudes that children in different countries bring to school (or have developed at school). The underlying hope is to stimulate an informed discussion on how one may make science education more relevant and meaningful for learners in ways that respect gender differences and cultural diversity. It is also hoped that light will be shed on how students' interest in choosing SET-related studies and careers can be stimulated. Through deliberations that involved science educators from all continents, ROSE has developed an instrument with around 250 single items that tries to map out attitudinal or affective perspectives as seen by 15 year old learners. All items are simple in wording and the responses are given on a 4-point Likert scale. This justifies the use of standard statistical methods like calculations of means, correlations etc. About 40 000 students from 35 countries are taking part in ROSE on whose data 10 students from different countries will base their theses. A full report on the project rationale, development and logistics is available<sup>3</sup> which includes reports on data collection from the participating countries. Data collection for international reporting is now finalized. Several articles and international reports with comparisons will be published during 2005 and the following years. Networks of science educators like ESERA (European Science Education Research Association); NARST (National Association for Research in Science Teaching) – US-based but with international outreach - and in particular, IOSTE (International Organization for Science and Technology Education), have been used to establish the network of research partners.

#### Positive perceptions of SET in society

When we note the lack of interest in SET studies and careers in some countries, the first and most obvious hypothesis - often voiced in public debates - might be that young people in such countries have negative or hostile attitudes to SET. SET is blamed for many of the evils of modern societies, like pollution, destruction of the environment, overuse of natural resources and even modern warfare and conflicts. How true are such assumptions about negative attitudes to SET among young people in modern societies?

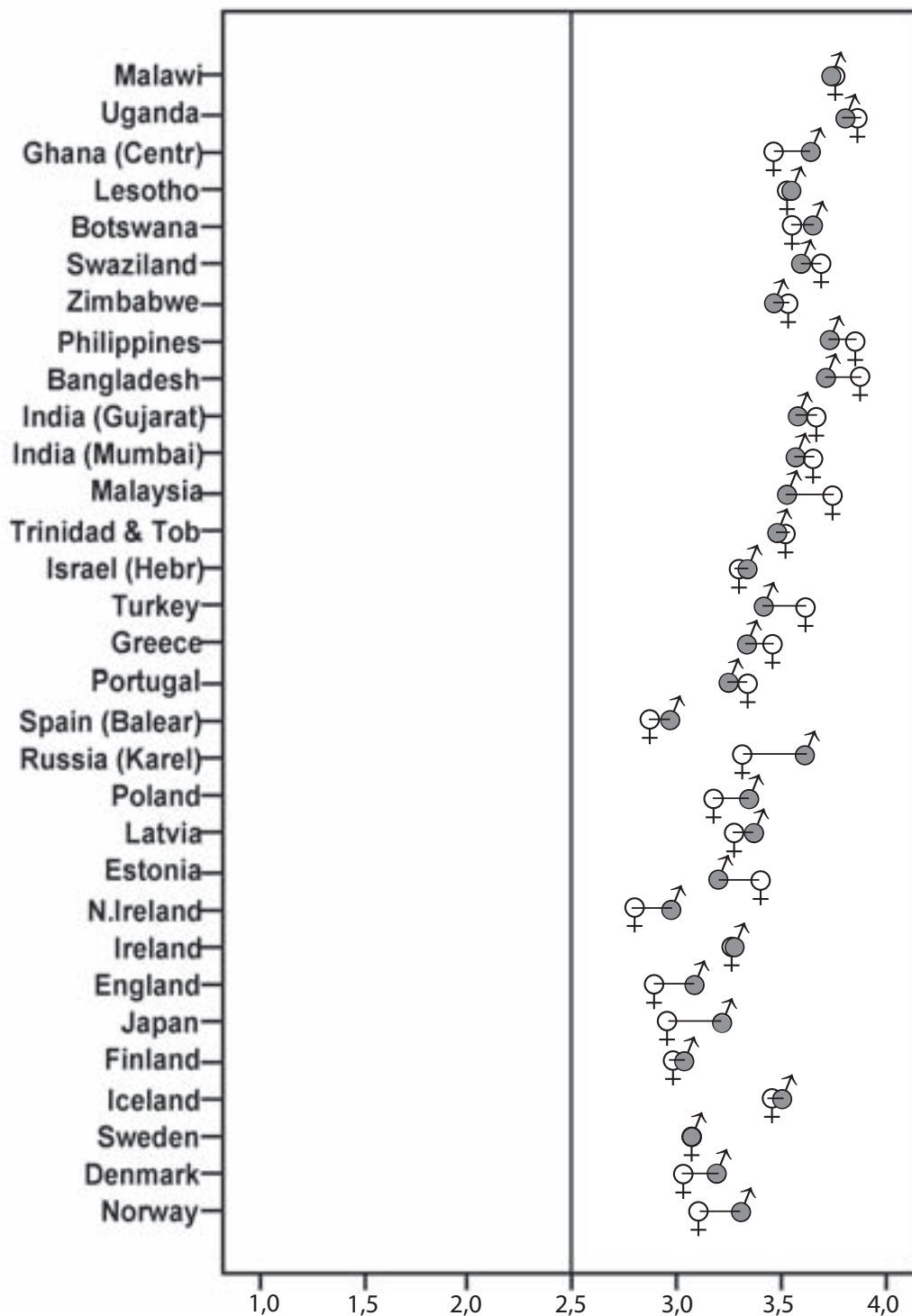
We have several questions that shed light on this. The results indicate that

there is no general hostility against SET among young people, neither in rich nor poor countries. For instance, the responses are in general very positive to questions like:

- Science and technology are important for society
- A country needs science and technology to become developed
- Science and technology will find cures to diseases such as HIV/AIDS, cancer, etc.
- Thanks to science and technology, there will be greater opportunities for future generations
- Science and technology make our lives healthier, easier and more comfortable

- New technologies will make work more interesting
- The benefits of science are greater than the harmful effects it could have
- Science and technology will help to eradicate poverty and famine in the world

Most students (age 14-16) in most countries concur with such statements although there are interesting national and gender differences. In general, boys seem to be more positive (or less sceptical?) than girls towards SET and pupils in developing countries seem to be more positive than those in richer countries. But it is important to note that the general pattern is that all are rather positive as can be seen for example in Figure 1.



**Figure 1: Science and technology are important for society**

ROSE data showing mean values for girls (♀) and boys (♂). The scale goes from 1 (Disagree) to 4 (Agree). Hence, 2.5 is a kind of neutral response, marked with the vertical line in the graph. Most samples are representative for the whole country. For other countries, only certain regions take part: In Ghana, only the Central region; in Spain, only the Balears islands; in Russia only Karelia. India is represented by two separate regions: Gujarat and Mumbai.

As we can see from Figure 1, girls and boys in all countries agree rather strongly with the statement that *Science and technology are important for society*. Children in developing countries are more positive and gender differences are rather small.



Figure 2: I like school science better than most other subjects. Legend and explanations as in Figure 1.

### Problematic attitudes to SET in schools

While students in all types of countries have a positive view of many aspects of the role of SET in society, the attitudes to school SET are more mixed. Figure 2 illustrates the point.

As we can see from Figure 2, there are large differences in students' appreciation of school science in different parts of the world. In general, students in developing countries seem to like school science very much, while those from richer nations are more negative. We also note the large gender differences. In some countries, it seems like girls strongly *dislike* school science. (Another ROSE series of questions on what students have got out of school science is available at the ROSE website: [www.ils.uio.no/forskning/rose/](http://www.ils.uio.no/forskning/rose/)).

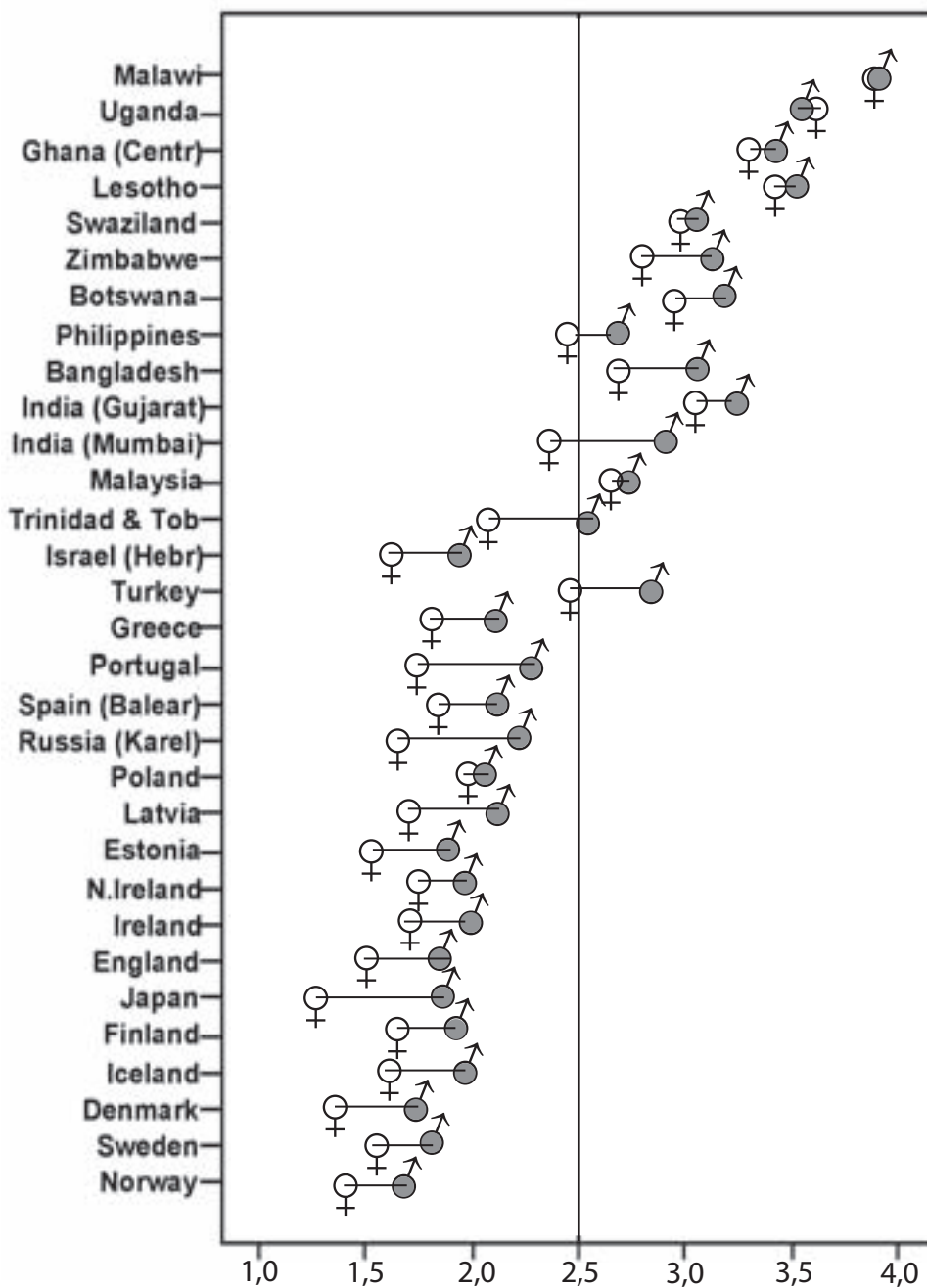


Figure 3: I would like to become a scientist. Legend and explanations as in Figure 1.

**Reluctance towards going into SET careers**

Many ROSE questions concern young peoples' plans for and vision of the future. Here we only give the responses to two simple questions. In one question the students are asked whether they want to become *scientists* (Figure 3).

As we can see from Figure 3, there are dramatic differences between the responses from students in rich and developing countries. In developing countries, students seem to have strong wishes to become scientists, while students in most OECD countries are very reluctant, with average responses of less than 2 on the 4-point scale. We also note the strong gender pattern, in particular in wealthier OECD countries where the average response for girls is around 1,5, indicating a rather strong rejection of the idea of becoming scientists.

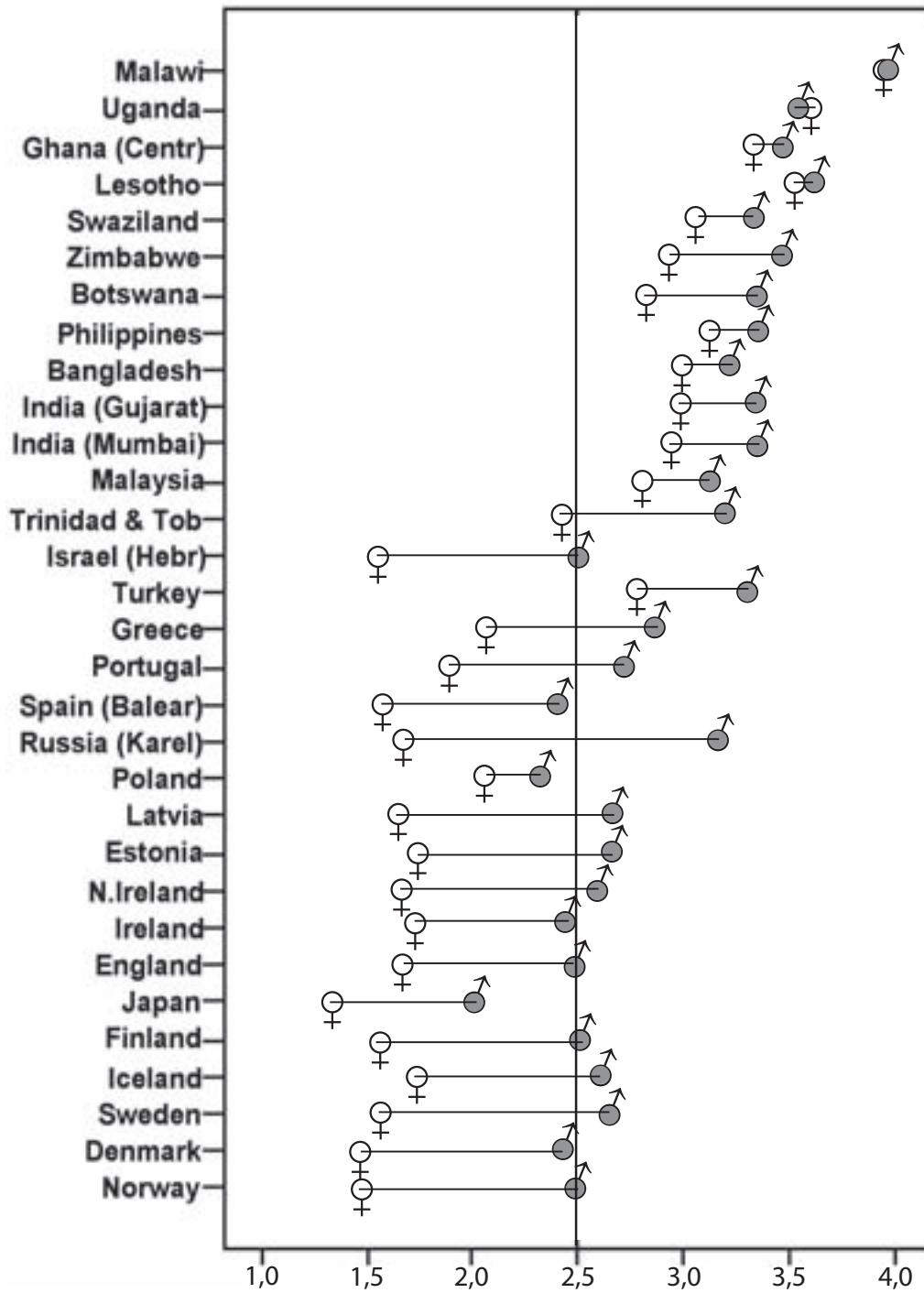


Figure 4: I would like to get a job in technology. Legend and explanations as in Figure 1.

The second question is whether they want to work in *technology* (Figure 4). From Figure 4 we can see a similar, but even more marked pattern. Working in technology seems to have a much stronger appeal in developing countries than in rich ones. In many wealthy countries, the average response from boys is close to the neutral line 2.5, but the responses from girls are strongly negative. We also note that overall, Japanese girls and boys seem to be the most negatively inclined to working with technology.

## Conclusion

This article is only meant to be an indication of the data and perspectives that emerge from the ROSE study. We have only presented summary statistics on the single variable level from four of the 250 items. More advanced analysis will be published in the near future, also as part of the many doctoral theses that are using ROSE data.

Through ROSE, we hope to stimulate an informed discussion of important aspects on SET and its role in society and in education. Researchers from all types of cultures take part in research and discussions on issues of common concern. International cooperation, networking and capacity building is also important in itself. Our vision is that SET

education will be an instrument not only to promote material development and well-being but also to address basic human values.

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# Education and Awareness Raising on Sustainable Development

## A UNESCO supported French case study\*

In many ways, awareness-raising on sustainable development (SD) is a complex matter. This complexity makes it difficult to understand as well as to be favourably inclined to the measures taken - whether individually or collectively.

As it is fundamental to comprehend the issue in order to understand the stakes involved and to accept the required attitudinal changes for different actors of society operating at different levels, the importance of the various components of awareness-raising becomes vital.

### Obstacles to change

There are 3 major obstacles to change: perception of the situation, internal factors of lack of engagement and perception of behavioural alternatives. Persons interviewed for this study were more or less aware of the gravity and degradation of the situation but were discouraged by various factors such as:

- a feeling of helplessness arising from the complexity and global scale of the problems as well as the difficulty of dealing with them at the operational level
- pessimism resulting from a feeling of diluted responsibility within the mass and the pointlessness of acting – i.e. whether they take action or no.

The resulting feeling of resignation leads them to opt for an attitude of “adapting rather than changing”.

The justification for their unwillingness to act or commit themselves is based on various factors such as lack of time or information, daily life concerns, catastrophic and ‘angst’-producing information, noted or perceived inertia of authorities added to lack of political will and concrete measures (thus putting the responsibility on governing and entrepreneurial bodies), belief in futuristic scientific solutions, weight of tradition and customary consumer habits, possibility of loss of comfort and

well-being, existing social norms (of the consumer society) as opposed to principles of eco-citizenship (perceived as being reserved for marginal populations such as hippies, ecologists or ‘another world’ followers) and non consideration and non appreciation of behavioural change. As concerns citizen participation, the reasons invoked are timidity and refusal to integrate systems.

The perception of alternative behaviours is influenced by lack of behavioural opportunities and marked by the fastidiousness of such behaviours together with the high price of responsible consumer products, perceived uselessness or inefficiency of behavioural change and the lack of transparency concerning the consequences and effects of behaviour changes. As for citizen participation, people are often put off by the militant side of associations as well as the fact that political decisions do not seem to take public opinion into consideration.

\* This study, supported by UNESCO/ED/PEQ/ESD, was prepared as part of the preparatory work on the DESD. Based on the theories of attitudes and social representation, it optimises awareness raising actions through the understanding of SD and corresponding attitudes. 65 persons from two French regions were interviewed to obtain data for this study. They were chosen from as heterogeneous groups as possible out of two categories: professionals/actors of SD and the general public. The interviews were based on manuals on behavioural theories and the link between representation, attitudes and values that the individual attaches to nature and social dimension which are capable of orienting the individual in a stable manner. A test, consisting of associating words with SD, was conducted at the end of each interview.





However, several factors favouring change could be identified, such as: the state of knowledge and social representation, motivations, catalytic agents (for awareness or adoption of new behaviours), vectors of awareness and expectations regarding other actors. People were found to have real, although lopsided, knowledge of current problems - but they are often incapable of placing them in a more global context and unaware of interdependences. As concerns change of attitudes and behaviours, motivations could be traced to environmental egoism and financial concern on the one hand and to personal satisfaction and the need for coherence on the other. "Common sense" was often mentioned.

Catalytic agents capable of creating awareness include real catastrophes like the mad cow crisis, global warming, behavioural opportunities (waste recycling) or constraints (road safety measures).

As for vectors of awareness, people feel that the media should give more information, particularly "on what can be done on a daily basis". Scientists inspire greatest confidence - although they need to improve their communication skills, re-position their specialities in a more global context and take care that research leads to SD (and not private interests). Associations, it is felt, should relay information and guide citizens on adoption of good practices (even though at times, their "militancy" arouses mistrust).

Perceived or noted shortcomings are deplored and seem to considerably bolster resistance to change. Despite a drop in confidence and credibility concerning politicians, people seem to have great trust in the role of the legislative and executive authority of the State as regards education, awareness raising and responsibility of institutions in creating a favourable environment for SD (through laws, decrees, concrete measures, etc.). Firms/enterprises are seen as possible places for awareness-raising, although training, it is felt, should be entrusted to consumer and citizen organisations. Finally, it is necessary to insist upon the strong expectations voiced concerning other societal actors, and more particularly, the State.

Based on these data, a certain number of recommendations can be made con-

cerning the contents, form and vectors of communication as well as the types of training that need to be set up or promoted.

#### ○ **Explaining the meaning, valorizing actions and documenting results**

It is important to explain the content and the meaning of the concept of SD, of which people only have a vague idea, even when they happen to be familiar with the term. SD and its stakes must be placed in a global context - whatever the subject taken up - with due emphasis on transversality and the relationships between the different "pillars" of SD (environment, society, economy, culture, citizen participation). A better balance should be sought between the components of the subject, e.g. by making use of social themes to explain the importance and transversality of participative democracy; of the precautionary principle in the case of the environment; of fair business practices and industrial ecology in that of the economy. In giving examples of measures taken in favour of SD, use should be made of credible sources of information (such as scientists), local issues (to link up local and global as well as individual and collective issues) and real catastrophes (but avoiding "catastrophism"). Indeed, it is important to base the discourse on concrete facts, giving examples of positive applications demonstrating their practicality, listing negative consequences of conventional actions (in order to avoid an optimistic bias) and based on existing practices to convey other messages and reinforce commitment (behavioural strategies). In order to promote attitudinal changes, context is important, notably the existence of behavioural opportunities (which facilitate the passage from principle to action). Motivation should be emphasised and valorised, whether "environmental egoism", financial concern/personal satisfaction or need for coherence. A case should be made out for the utility of action by valorising actions at the collective level, through encouragement or constraints as needs be. This could lead to changing the existing

social norm around these issues. In the same way, in order to circumvent weight of habit it would be useful to speak out more on responsible consumer products in order to increase their attractiveness. In general, it is important to develop transparency as regards impacts of actions, e.g. a follow-up of indicators and wide scale dissemination of collectively obtained results.

#### ○ **Giving easily understandable information**

Concerning the form of the message, it is helpful to use easily understandable vocabulary with illustrations and schematic approaches.

#### ○ **Optimising dissemination of information**

Despite the existence of numerous works and brochures, people lack information. Dissemination of information can be optimised by making it available in public places, where citizens most need it, through the most accessible forms such as T.V., radio, magazines, popular newspapers, meetings with scientists (relayed through the press, demonstrations, debates, etc.) and by diversifying different sources of public information. Experts should also be employed as agents for explaining good practices (e.g. sorting for waste recycling).

#### ○ **Promoting training**

Training is vital for transmission of stakes and as keys for action. Training modules, seminars or information sessions tailored for journalists would help them to better understand these issues. As for the general public, due to lack of time, training and awareness courses could be organised during working hours or even at the place of work, e.g. as training 'perks' or 'individual right to training', but without any commercial deals attached. The training should aim at concrete applications and actions.

#### ○ **Responding to the expectations of transparency and coherence**

As concerns expectations of the other societal actors, they should announce what they have accomplished, how it was done and its

effects, notably the effective measures taken by politicians and the account taken of public opinion in the process of participative democracy through governance and transparency. Associations could also stand to gain better recognition through greater transparency in their actions.

## Conclusion

One can thus understand the obstacles that the public – whether as professionals or individuals – faces in understand-

ing concepts and transposing attitudes into corresponding behaviour patterns, certain current aspects of social representations associated with SD as well as the need to develop instruments to raise an awareness better adapted to the realities and constraints that are inherent to current life styles.

However, it should be noted that both the results and the recommendations are intrinsic to the French context. Replication of this study in other contexts – preferably for awareness raising tools – would give a clearer picture of the obstacles to understanding and acting

in favour of SD. In this way, not only would the tools be better adapted to the targeted populations, but it would also enable one to determine which contexts are more or less favourable to the understanding of SD and to the corresponding attitudinal changes.

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# UNESCO STEE Activities

## Asia-Pacific Region

The following notable activities were carried out by UNESCO/Bangkok in Science, Technology and Environmental Education (STEE) in the Asia-Pacific Region.

### 1. *STL for All Training of Trainers Manual (Revised)*

Initially published in 2001 as *The Training of Trainers Manual for Promoting Scientific and Technological Literacy (STL) for All (v. Connect, vol. XXVI, no.1-2, 2001)*, this manual had been developed within the framework of "Project 2000+: Scientific and Technological Literacy for All" and followed the recommendations of the World Conference on Education for All (Jomtien 1990). However, after utilization in many training activities in the region, the feedback received indicated a need to make it more adaptable and user friendly.

The current revision is in tune with the outcomes from the World Conference on Science (Budapest 1999) and the Global Forum on Education For All (Dakar 2000). The revised Manual emphasizes that science educators and teacher trainers should not see STL teaching-learning materials as replacements nor extensions of textbooks, but as supplementary resources for teachers. Science educators and teacher trainers need to fully appreciate the fact that materials are meant to be used by teachers as and when appropriate.

This version is the fruit of a collaborative work of three organizations, UNESCO, SEAMEO-RECSAM and ICASE (International Council of Associations for Science Education). Institutions, organisations, associations, and other interest groups may adapt and translate the Manual, considering the policies on professional development of science educators, science teachers and other educators, the availability of resources, the socio-economic and political environment, culture and traditions and partnerships within the teaching profession.

A revised generic *Training of Trainers Manual in promoting Scientific and Technology Literacy for All* will be ready in June 2005.

### 2. *National Seminar-Workshop on Gender Differences in Scientific, Technological and Environmental Literacy Among Elementary and High School Filipino Students, Philippines, 17 – 21 November 2004.*

Countries of the Asian region have been promoting science and technology literacy for all, as a follow-up of the recommendations of the Jomtien Education for All Conference, the Budapest Conference on Science and other world forums where science education was given prominence. The Dakar Forum, however, has posed

the challenge of achieving Goal V, *Eliminating disparities in primary and secondary education by 2005*. The challenge is particularly relevant to STE where generally girls' participation and achievement levels are lower than boys in many countries. Some Asian countries have shown good examples of high participation and achievement of girls in STE.

It is in this context that this national workshop was organised by the Foundation for the Promotion of Science Education in the Philippines, in cooperation with UNESCO Bangkok and in collaboration with ICASE and the National Institute for Science and Mathematics Education Development, University of the Philippines (UP NISMED).

The Workshop was attended by 60 participants from selected schools in Metro Manila, and three educational regions (I, III, and IV) of the Philippines – those of the researchers participating in the study on Gender Preference in STE. The UNESCO Regional Specialist in Science and Technology Education, and the President of ICASE served as resource persons in this workshop.

For further information about the results of the study "Gender Preference in STE" contact: *Dr. Merle C. Tan, Director, National Institute for Science and Mathematics Education Development, University of the Philippines, Diliman, Quezon City, Philippines.*



### 3. Mobile Training Team in Science Education on: *Enhancing Quality Education through Training and Research in Science and Technology Education in Nepal.*

Nepal faces many challenges in educational development including the development of STE. About 46% of the +6 year old population is illiterate and primary school dropout rate is about 35% - with a steep increase at secondary and higher secondary levels. As a result, achieving good STE is rather a big challenge.

However, the country is intent on improving education - STE included, and has been running various national programmes and planning new comprehensive ones. Basic foundations such as legal provisions and regulations have been laid, participation of stakeholders expanded and international help utilized. But the challenges persist: continuing lack of resources as well as of schools. Past experience shows that it is hard to bring about substantial changes in the quality of STE provided by schools. For this, there is a need for more effective and persistent efforts: to develop effective programmes, human capacities together with opportunity infrastructure and most of all, teacher training and research in STE.

Thus, the challenges in improving STE in Nepal concern :

- (1) The inability to bring substantial changes in the quality of STE provided by schools; and
- (2) The lack of resource materials and infrastructures to expand and sustain STE development activities to reach significant number of schools.

Moreover, many science teachers are still untrained, particularly in rural areas, and they lack opportunities to get STE training or even in handling scientific equipment/materials.

It is in this context that three science teacher trainers from the Center for Educational Research and Innovation for Development (CERID), Tribhuvan University, Kathmandu, Nepal, were integrated in a Mobile Training Team (funded by the Japanese Funds-in-Trust) for capacity building and knowledge update. For this purpose the team visited the following Associated Centers of UNESCO/APEID:

- National Institute for Science and Mathematics Education Develop-

ment (NISMED), University of Philippines;

- Institute for the Promotion of Teaching of Science and Technology (IPST) Thailand, and
- National Research Institute for Educational Sciences, Ministry of Education Lao PDR.

The activities included observation of science classes with best practices in STE and discussion with science and technology educators. Lessons learned from these visits will be shared with a core of researchers and trainers in STE and will be used to advocate the strengthening of STE through research and teacher training in Nepal.

A national workshop has been scheduled for the second quarter of 2005.

For further information contact *Dr. Hridaya Bhattacharya, Executive Director, Research Center for Educational Innovation and Development (CERID), Tribhuvan University, Kathmandu, Nepal.*

### 4. UNESCO Asia-Pacific Forum on Regional Collaboration for Human Development in Basic Science and Technology for the International Basic Science Program, Bangkok, 8 -10 March 2005.

The 32<sup>nd</sup> session of UNESCO's General Conference (2003) invited the Director-General "to take measures to reinforce intergovernmental co-operation in strengthening national capacities in the basic sciences and science education through establishing **International Basic Science Program (IBSP)** focused on major region specific actions involving a network of national, regional and international centers of excellence or benchmark centers in the basic science".

In this context, the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) and Japanese National Commission for UNESCO launched a "UNESCO-JAPAN Program for Development of Human Resources and the Research Network in Natural Science and Technology" in 2004. In the framework of this programme, Osaka University inaugurated "UNESCO Inter-University Post-Graduate Course in Biotechnology" in which 15 young scientists from Asian countries will be invited to participate in a one-year training programme in Japan and Thailand to be conducted under the auspices of

a Japanese and Thai university consortium. For its part the Tokyo Institute of Technology started another programme entitled "Tokyo Tech UNESCO International Research Course for the Environment", in which 12 young researchers will be invited from the Asia-Pacific region for a year's training in Japan.

Related to the above activities, MEXT and the Japanese National Commission for UNESCO will hold a UNESCO Asia-Pacific Forum on *Regional Collaboration for Human Development in Basic Science and Technology for the International Basic Science Program* (Bangkok, 8 -10 March 2005) focusing on regional collaboration in Asian members countries.

The Forum is organized by UNESCO Paris, UNESCO Jakarta, UNESCO Bangkok, MEXT, Japan, Japanese National Commission for UNESCO, Ministry of Education of Thailand, Thailand National Commission for UNESCO, Osaka University, Tokyo Institute of Technology, and Mahidol University. Funding is provided by MEXT, Japan.

The forum aims to provide a platform to discuss various issues of importance concerning future measures and policies with mutual collaboration among academic experts, scientists and members of National Commissions from Asia-Pacific countries. In addition will be introduced the programmes undertaken at present by the MEXT and Japanese National Commission of UNESCO, such as the one mentioned above, as a typical example of the IBSP. To promote IBSP, representatives from National Commissions of member countries as well as prominent academic experts of each country will be invited to introduce programmes proposed by them for the IBSP and to construct a common basis for future mutual collaboration at national, regional and international levels.

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## National Workshop Science and Technology Education (STE) in Viet Nam: Situation and Perspective

A National Workshop entitled 'Science and Technology Education (STE) in Viet Nam: Situation and Perspective' was organized on 14-15 October 2004 in Hanoi by the Viet Nam National Commission for UNESCO. This workshop was part of a project of the Science & Technology Education Section, UNESCO Hq, consisting of helping Member States to assess the state of secondary level STE at the national level.

Besides the Vietnamese Vice Minister of Education and Training, the workshop was attended by 40 participants consisting notably of representatives from the Ministry of Education & Training (MOET) and that of Science and Technology; the National Institute of Education Strategy & Curriculum and that of Science & Technology, Strategy & Curriculum; the Centre for Information & Communications Technology as well as that of Natural Resources & Environmental Studies; two universities, specialized institutes and UNESCO/Hanoi.

The workshop aimed to review existing national policies on STE, evaluate national programmes, training programmes and curricula on STE and

make concrete recommendations for effective improvement and follow-up actions.

This being the first workshop specifically focusing on STE, it was an occasion for all the participants to engage in an extraordinarily active discussion throughout the two days, more in the style of an information/experience-sharing and brain-storming session. However, various issues were also addressed and from the discussions some key issues emerged. During the discussion, the Director of Science and Technology Education Dept in MOET singled out ICTs & education and environmental education as priorities.

Several recommendations were made, notably the following:

- STE should be strengthened within the framework of the two on-going national strategies:
  1. National Strategy for Technology and Development
  2. National strategy for ICT
- An inter-disciplinary and inter-sectoral approach should be adopted
- Capacity building of human resources including researchers and academia should be reinforced

- STE should be brought to people's daily life
- Gender perspective in STE should be enhanced
- STE in Technical and Vocational Education (TVE) should be reinforced
- Teacher/researchers' status and working environment should be improved
- Better facilities and equipments should be procured

A questionnaire was distributed to the participants, which is in the process of being assessed by the Viet Nam National Commission for UNESCO.

Finally, as mentioned above, as this was the first workshop on STE in Viet Nam, it attracted much media attention. More than 30 representatives from the media, including national TV stations, attended the opening and Mr Chu of UNESCO/Hanoi was also interviewed by the key radio station, 'Voice of Viet Nam' with respect to the STE perspective in Viet Nam.

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## Latin America and the Caribbean

STEE activities carried out by UNESCO/Santiago in Latin America and the Caribbean focused primarily on the following :

### **Promotion of new curricular approaches, materials and innovative practices in the context of quality education for all**

- In October 2004, UNESCO/Santiago organised in Santiago de Chile:
  1. an international meeting to strengthen linkages among American science academies. The meeting allowed participating

academies to present their activities and set up a work schedule in order to maximize linkages with one another.

2. a Science Education Day of Training and Exchange of Experiences. The objective was to strengthen relations and establish common lines of action among teachers and local authorities. It was also intended to demonstrate the value of such meetings for stimulating similar type of activities
- In November 2004, UNESCO/Santiago and UNESCO/Brasilia in cooperation with the Ministries of Education

(MEC) and Science and Technology (MCT) organised an international seminar on Quality Science for All in Brasilia, Brazil. The seminar targeted government officials, academia, experts and research workers in public policies related to formal and non-formal science education, information and popularisation. Its objective was to facilitate exchange of ideas and reflection on the need to find adequate platforms to develop public policies in Brazil in order to initiate a long-term, innovative process in the matter of quality science education for all. The seminar



clearly demonstrated the impact of science education on development, strengthening the commitment of all concerned actors in defining and setting up integrated public policies in education, science and technology.

### Promoting equitable scientific and technological literacy (STL) in the region

Under this head UNESCO/Santiago, in collaboration with the Centro de Estudios Multidisciplinarios (CEM-Argentina), undertook research on the development of capacities to reinforce life skills through STL as well as starting on the preparation of a conceptual document on STL.

It organised the following workshops:

1. *Scientific and Technological Literacy*, in July 2004 in Buenos Aires, Argentina, in cooperation with the Argentine Ministry of Education. The workshop resulted in the adoption of a work plan for a solid, permanent and systematic gender inclusive and socio-economically relevant STL in the context of Education for All. Priority was given to the collection and dissemination of existing practices in the region with a view to improving them. The importance of data collection and exchange of experiences was highlighted as well as that of training methods based on "good practices". Finally, it was considered necessary to define indicators to be used in the conceptualisation of what constitutes – as opposed to what does not – scientific literacy.
2. *Experiences in STL* in November 2004, in Buenos Aires, Argentina, in collaboration with the Red Nacional de Investigadores en Enseñanza de la Ciencias Naturales (Argentina) and the Universities of Buenos Aires and General San Martín. The main objective of this workshop was to analyse and promote discussion on the methodology to ensure a non-discriminatory, quality STL for all. The meeting facilitated exchange and dissemination of STL experiences,

focussing the discussion on new models of formal as well as non-formal science education.

### Promoting changes in pre- and in-service training for science teachers

Under this heading UNESCO/Santiago organised two seminars:

- *What are we doing in post-primary education to attract boys and girls to science and mathematics?* was the title of the first seminar organised in cooperation with the Universidad Católica Cardenal Raúl Silva Henríquez in October 2004 in Santiago, Chile. The objectives of the seminar were:
  - a) to link up classroom science with that of training centres
  - b) to seek models of innovative teaching practices to improve science education
  - c) propose equitable science education together with an interchange of pedagogical know how in order to foster exchange of experiences and set up networks for developing joint projects

The participants of the seminar, coming from Argentina and Chile, included nursery school and basic education teachers, directors of educational centres and teacher support institutions together with students and teachers from various training institutions.

- *Science teachers: visionaries of a new culture* was the title of the second seminar organised in cooperation with the Pontificia Universidad Católica de Chile in Santiago, Chile in December 2004. This seminar focused on the evaluation of international trends in science education faced with globalisation and on the relation between theory and practice in science education from its contribution to didactic research. The participants included officials of technical pedagogical units, directors of educational and teacher support institutions, teacher trainees and trainers from various training institutes, basic education and nursery school teachers, as well as teachers of middle school biology, chemistry, physics and mathematics.

### Strengthening networking

The following 16 countries of the region are actively involved in the Science Education Network for national, sub-regional and regional activities: Argentina, Bolivia, Brazil, Chile, Cuba, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela. In this context:

- 10 research groups from different countries are working on the production of instruments to support changes in science classroom practices
- Nineteen institutions have been integrated in the university network
- A network of innovative education centres as well as schools doing sciences have been associated with networks in various countries of the region.

### Developing resource materials for educators

The following publications were produced by UNESCO/Santiago:

- *Biología, vida y sociedad* (Biology, life and society)
- *Actividades para evaluar ciencias en Secundaria* (Activities for evaluating secondary level science)
- *Cultura científica: un derecho de todos* (Science culture: a universal right)
- *Cómo promover el interés por la cultura científica?* (Promoting interest in science culture) (*v. Publications*)

Additionally, 10 online publications were finalised including meeting reports in Cuba and Argentina as well various experiences in science education. They are available on the UNESCO/Santiago website: <http://www.unesco.cl/ing/>

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## Arab States

# Capacity Building in Gender Inclusive Scientific and Technological Literacy (STL) for Enhancing Life Skills

### Egypt

With the growing need to update and modernize education - particularly in the field of science, technology and mathematics (STM) - in order to cope with local societal needs and challenges in a highly competitive era of globalization, in the 1980s education was decreed a "National Project" in Egypt. The idea was to give impetus to educational reform by making education a national concern and by encouraging the greatest possible participation from all sectors and concerned civil organizations. In this context, the Ministry of Education (MOE) also encouraged cooperation with international institutions to share experiences through exchange of ideas and expertise, joint workshops, and research studies.

This resulted in intense calls for more educational reform in all dimensions from all political parties, think tanks and the public at large. Close attention is being given to gender equality and poor and limited-income children are encouraged to enroll and continue their education. Great efforts on the part of the government are being made to train young people in computer technology and foreign languages in order to help them find jobs in the contemporary work market.

The UNESCO project "Capacity Building in Gender Inclusive Scientific and Technological Literacy for Enhancing Life Skills" (*v. Connect, vol.xxix, no. 1-2, 2004*) falls within UNESCO initiatives for international cooperation to enhance participatory action in the area of educational development that takes into account current trends and needs in science and technology (S&T). In view of the great advances made by the latter, notably in the past century, S&T has a fundamental role to play in the lives of men and women who wish to improve their quality of life both on the personal and professional level.

The goal of this project is to support the Egyptian MOE in its developmental vision to revise and improve national policies and strategies in STM and support its mission to reinforce gender equality and contribute to poverty reduction by achieving education for all (EFA). Its objectives are as follows:

- a) Examine the current state of the art of STE at pre-university levels of education specially as concerns gender equity.
- b) Present a clear, up-to-date picture of the state of STE to concerned officials of the MOE and based on it encourage revision and improvement of national EFA policies and strategies.
- c) Promote awareness of curriculum developers and teachers to gender equity so that it is reflected in programmes and practices.
- d) Support coordination and integration of STM and orient their teaching-learning practices toward generating generic skills which help boys and girls to be equipped with or acquire the aptitudes and attitudes to attain, through self-learning and/or higher education, work skills and basic life habits.
- e) Provide a background and administer tools to assess the need for a 2005-and-beyond follow-up project for training curriculum developers, textbook writers, software designers, and concerned teachers to enhance their capacities in coping with current and future needs for STE, with special attention to the needs of remote and poor regions.

The project outcome could be divided into three main areas: Training workshop, National Survey and Monitoring and Assessment.

- 1) The **workshop** on Capacity building in gender inclusive scientific and technological literacy (STL) for enhancing life skill took place in Cairo, from

30/8-2/9/2004. It included 48 participants, 23 specialising in mathematics (11 male, 12 female) and 25 in science (13 male and 12 female). It consisted of lectures by STL experts and working groups.

The workshop results included the following:

- Increased level of awareness of instructors and directors about the role of STM in enhancing life skills.
- Awareness on the part of the participants of the teacher's role in achieving gender equality in performance.
- Acquisition of greater skill in cooperative as well as in demonstration, presentation and discussion work in addition to the ability to use multimedia products.
- Production of some model educational units for integrated work in STM.

The following major recommendations were made by the participants of the workshop:

- New curricula in mathematics and science based on the latest technological developments and tools should be developed.
- Curricula contents should enhance life skills which are linked with society and market needs.
- The importance of training teachers on using strategies for problem solving and gender equality should be taken into consideration.
- All lessons and units should contain activities promoting creative thinking.
- Mass media should promote the spread of a new culture of gender equality in STE.

- 2) A **national survey** was conducted for a representative sample of Egyptian Governorates. The study took place in two steps. Step one aimed



at crystallizing the state-of-the-art of STE in pre-university education, while step two was the survey itself which was conducted using a stratified representative and random sample of teachers, students and parents from all governorates. A questionnaire was used to measure the gender gap concerning STE, effect of local community and environment on the choice of learning, extent of success achieved concerning gender equity, role of extracurricular activities and informal education in STE and finally the effect of poverty on choice and continuation.

The findings showed that in spite of extensive efforts in STM teaching-learning and the use of technology, there is still a dire need to:

- Increase training of science and mathematics teachers as concerns use of technology in teaching
- Revise and re-design the STE curriculum to focus on real life skills, indigenous generic skills and employability skills
- Extend programmes for girls to remote areas
- Encourage more enrollment in science and mathematics courses by the end of the secondary stage where these subjects are elective.

3) The work of monitoring and assessment was conducted subsequent to each of the phases. The assessment report aimed at measuring the extent to which the workshop conclusions and recommendations correspond to the needs and possibilities of the country and the extent to which the Ministry of Education is willing to incorporate them in reforming the national STE plans.

### Scenario for STE reform in Egypt

Following the work accomplished in the context of this project, the following suggestions were made to help improve teaching/learning of science and technology in Egypt.

- 1- More surveys, field studies, and workshops are needed for:
  - Training teachers at all levels on the use of technology and training science teachers on the use of green chemistry and low-cost raw

materials in practical/laboratory work

- Training students to learn cooperatively and be constructive learners
  - Production of modules, software, and teaching aids
  - Spreading awareness of ethics across STE courses and activities
- 2- Egyptian national standards (MOE, 2003) should be translated into procedural curricula and educable/teachable solid/hard and soft learning materials for the students. Content should emphasize life skills and generic skills all leading to productivity.
  - 3- A new classroom culture should prevail in which:
    - STE instruction can transcend the traditional behavioral taxonomies and shift to outcome-based philosophy and holistic and systemic learning theories.
    - Hands-on activities replace “talk-and-chalk” and “pick-and-click” procedures on the part of students.
    - STE courses and activities are viewed as more than something to pass tests or get high grades
  - 4- Ethics across STE should be emphasized, encompassing self-discipline, equity, tolerance, democratic dialogue, objectivity, cooperation, clemency, etc. The role of women as equal partners in scientific activities and the workforce can appear in examples and developments in science and mathematics
  - 5- Remedial sessions in mathematics and physics should be organised in schools or outside under the supervision of the school, to combat illegal, paid private lessons. This must be accompanied by combating truan- cies and unnecessary absence of students and teachers especially during examination seasons.
  - 6- Friendly supervision visits to schools by STE supervisors, specialists and experts should be encouraged to help solve professional and technical problems.
  - 7- Students should be encouraged to choose scientific studies by means of:
    - incentives
    - Giving more weight to STE to be added to the total scores in GSC

(as in the case of distinguished sportsmen/women).

- Increasing the dose of compulsory science studies.
- Going back to branching into scientific and arts sections in the twelfth grade.
- Employing guidance and counseling starting from the tenth grade to discover aptitudes and potentials for scientific excellence.
- Inviting specialists to provide career awareness in the scientific and technological work market locally and abroad as well as in public and private sectors, and to clarify the role of scientific knowledge, thinking and methods in the general life context.

In conclusion, it is hoped that this project in all its dimensions concerning capacity building in STE will serve as a provider of food for thought to all concerned persons from teachers to senior decision makers. It can help STE departments and related centers to draw an agenda gaining impetus from the data and research outputs together with other studies to upgrade and effect actual rhetoric-free reform in these important subjects.

Finally, this project has shown that sincere efforts are being made to move towards *STE for All*. A follow up is sorely needed to ensure *All for STE*.

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## QRIO Science Program: A hands-on science and technology class Japan

Starting from September 2004, the National Federation of UNESCO Associations in Japan (NFUAJ) and Sony Corporation have started with the QRIO Science Program, a hands-on science and technology class, in various parts of the world.

QRIO is the name of a bipedal robot developed by Sony Corporation and has served as the company's corporate goodwill ambassador to communicate Sony's technology and curiosity about science on various occasions.

QRIO is being appointed the Science Messenger of the National Federation of UNESCO Associations in Japan for this program.

The QRIO Science Program is an educational activity for youths that aims to stimulate curiosity about science and nurture a questing spirit to develop creative thinking.

The program will be offered to children in Japan and other countries where NFUAJ's education support program called the World Terakoya Movement is active. The objective is to promote understanding and exchange in the fields of education, science, culture and communication in the spirit of the UNESCO philosophy of creating a society of peaceful coexistence.

In the QRIO Science Program, Sony technical staff members will give children an easy-to-follow description of QRIO, a robot that incorporates cutting-edge science and technology concepts and hands-on experiences showing how science and technology are useful in daily life. Sony staff members will also relate their early experiences and talk about how they became interested in science.

QRIO's participation in this Science Pro-

gram as a science messenger will help children experience the potential and the enjoyment of science and technology and act as an intermediary between children and technology.

NFUAJ and Sony hope that through the QRIO Science Program, children in Japan and abroad who have participated will develop friendships and grow to be peace-loving people through sharing the joy of learning.

The current timetable of the QRIO Science Program is as follows: September 2004 : Sendai City (Japan); October 2004 : New Delhi & Gokak (India); December 2004 : Gunma Prefecture (Japan); January 2005 : Ha Noi & Tua Chua (Viet Nam)

Further information from:

QRIO Science Program Home Page:  
[www.QRIOscienceprogram.net](http://www.QRIOscienceprogram.net)

## International Conference on Education for a Sustainable Future

Ahmedabad, India, 18-20 January 2005

The first international gathering of the United Nations Decade of Education for Sustainable Development (DESD), this international conference was organized by the Centre for Environmental Education (CEE), Ahmedabad, India, and attracted around 800 environmental practitioners from 40 countries.

It was meant to be a forum to showcase the rich experience in the matter of environmental education in Asia and to build upon the experiences from the world over.

With concurrent sessions on different thematic areas, the conference helped focus much needed attention on the integral role of Education and Communication (E&C) in the success of any strategy towards attaining a sustainable future and in working towards making the DESD truly effective in leveraging support for E&C and its strate-

gic use, taking stock of the experiences in this area.

The Decade is an opportunity not only for those closely associated with environmental issues to discuss these concerns and initiatives, but also to reach out and bring the concept of sustainable development to the consciousness of society at large.

The Conference concluded on 20 January 2005 with the Ahmedabad Declaration drafted and adopted by the Conference participants – i.e. more than 800 learners, thinkers and practitioners from over 40 countries, engaged in education for sustainable development

Apart from the firm commitment of the participants to contribute to the DESD process, it highlighted notably :

- The growing grassroots efforts worldwide that are taking on the

enormous task of changing the current trend away from sustainability

- The need to move quickly toward a sustainable future if the world's peoples are to enjoy a high quality of life
- The need for commitment to the ideal of education that is participatory and lifelong as well as for wide participation through networks, partnerships and institutions.
- The firm belief that a key to sustainable development is the empowerment of all people, according to the principles of equity and social justice, and that a key to such empowerment is action-oriented education.
- The fact that ESD implies a shift from viewing education as a delivery mechanism, to the recognition that we are all learners as well as teachers and that ESD must happen





in villages and cities, schools and universities, corporate offices and assembly lines, and in the offices of ministers and civil servants.

- That all must struggle with how to live and work in a way that protects the environment, advances social

justice, and promotes economic fairness for present and future generations. We must learn how to resolve conflicts, create a caring society, and live in peace.

- That ESD must start with examining our own lifestyles and our willing-

ness to model and advance sustainability in our communities.

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## Brain Drain, Brain Gain: New Challenges

Paris, France, 30 June 2004.

This international conference was organised by the Cité des sciences et de l'industrie, Paris, France, with the support of the German and Italian Embassies in France, the British Council, the European Commission and in partnership with the French daily *Le Monde*.

It was held in Paris on 30 June 2004 on the premises of the Cité des sciences et de l'industrie and attracted scientists, researchers, government officials, media, students from all over Europe.

The one-day conference focused on:

- brain drain
- mobility of researchers
- the European research sector.

It was also the occasion for the official launch of the European Mobility Centres Network - consisting of 200 centres - by the European Commissioner for Research.

The conference comprised keynote presentations, round tables and discussions. The two keynote presentations were on:

- *The flow of people and ideas in the Renaissance*, which showed notably that contrary to what is erroneously thought by a number of people across the world, 'brain drain' was by no means a new or recent phenomenon - as is illustrated particularly well by the period of the European Renaissance. More importantly, it showed that contrary to another popular belief, it was not necessarily a source of impoverishment for the nations that 'exported the brains'.
- *International mobility in scientific careers: constraints, choices, importance*, sketched a picture of the

current situation in the matter of scientific careers with, as indicated by the title, an overview of the various difficulties faced by those opting for sciences as concerns work prospects as well as the importance of the factor of mobility in career development.

The first round table dealt with the following two themes:

1. *Brain drain or circulation: facts, figures, testimonies and prospects* highlighted the concern behind the brain drain from Europe to the United States, from developing to developed nations and from new members of the European Union to other countries. This led to the following questions:

→ Was this brain drain to be considered as flight or mobility?

→ What were the available data and what criteria should be used to interpret them?

→ What are the factors that determine a researcher's decision to return to his/her country of origin?

2. *What concrete initiatives can be used to promote the attractiveness of research at the national and European levels?* To stem the brain drain or continue to attract the best researchers, countries respond with steps aimed at encouraging researcher mobility. Initiatives have recently been developed in European countries and the United States: young researcher initiatives, mobility programmes, European scholarships, scientific visas, etc. But the questions that need to be answered are:

→ Are these measures sufficient?

- Are they sufficiently well known?
- Are they relevant?

The second round table had a single theme:

- *What kinds of mobility for researchers?* The basis of this theme was that there are various forms of mobility other than geographical ones, e.g. career mobility between research and industry, the public sector and the private sector, basic research and applied research, teaching and research. Although such forms of mobility are seen as beneficial for researchers and research, what are the issues involved?

A notable aspect of this conference, apart from helping to correct certain traditional ideas on the much decried phenomenon of the brain drain, was that a number of young researchers from a number of European countries were given the opportunity to express their views, their hopes and frustrations concerning their professional conditions and outlook. The conference thus allowed the participants, in a very limited space of time, to get an overview of the subject from various angles: that of the scientists, officials, educators, researchers, media specialists etc.

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## Beyond Research: Students spearhead science activities

### Friedrich Miescher Institute (FMI)

Basel, Switzerland

The Friedrich Miescher Institute (FMI) located in Basel, Switzerland, is an internationally recognised research centre devoted to fundamental research in molecular biology with special focus on: epigenetics, neurobiology and growth control. FMI is part of and mainly funded by Novartis Research Foundation. However, FMI has strong academic links to the University of Basel and students at FMI graduate from this university. FMI has a staff of more than 280 of which about 100 are students.

The student representatives of FMI play a leading role in student welfare. Since January 2004, with the organization of a special seminar series (Student Science Colloquia), where illustrious scientists are invited by the students to come to the FMI, deliver a lecture and interact socially with the students, activities took on a new impetus. The participation of scientific luminaries including four Nobel Laureates in 2005 has made this series one of the most popular scientific events in Basel. The goodwill earned from this event has helped gain further support for other

activities. This includes launching a new student website, the development of an alumni database, conducting German language courses for international students and organising many social events.

Although academia continues to be the major employer of life science graduates, the number of graduates choosing non-traditional careers is on the increase. This is partly due to the limited job prospects in the academic sector, but also to the increased awareness that skills acquired during doctoral studies such as analytical thinking, scientific outlook, problem solving and project management are valuable assets in other careers. As innovation is the key to the sustainability of modern businesses, a PhD holder with proper education and training has an immense advantage in today's employment market. To that end, it is important to give breadth and flexibility to PhD training. We have thus teamed up with other institutions in Basel to organize a conference intended to give career guidance to young scientists in the region. Leaders from various fields such as the

pharmaceutical industry, management consultancy, intellectual property rights, scientific journalism, and venture funds for exploiting scientific innovation have been invited to give their perspectives on different career paths.

What did we learn from our organisational experience? With the right mix of commitment, enthusiasm and preparedness, students will receive enthusiastic support for their activities. Many invitees for our colloquia accepted the invitation to visit our institute only because it was the students who invited them. Students should take a leading role in activities that shape their futures and our experience suggests that such initiatives will eventually find support and appreciation.

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## Mediterranean Education Initiative for Environment & Sustainability

(MEDIES)

MEDIES, launched during the WSSD (Johannesburg, 2002) is a joint initiative involving Ministries, IGOs, NGOs, educators and students from the collaborating countries.

This initiative/partnership on Education for Environment and Sustainability (EfES), encourages educators and students to contribute in a systematic and concrete way to the implementation of *Agenda 21* and the Millennium Development Goals in countries around the Mediterranean basin through inno-

vative educational programmes based on a cross-cutting approach, within the existing school curricula. In the initial stages, the focus will be on freshwater in all its dimensions: as touching sanitation, health, floods, agriculture, etc., followed by waste.

The core of the initiative is a network of educators and schools implementing the integrated educational programmes as a vehicle for sustainable development. Special emphasis is also given to the role of students as "messengers for

sustainability" within their families and local communities. The exchange and close collaboration of countries of the Northern and Southern Mediterranean is expected to lead to the development of a methodological framework which, after evaluation, will be implemented in other regions.

The overall goals of MEDIES include notably, the following:

- To ensure that girls and boys alike have equal access to secondary education



- To involve NGOs and international organisations in national mechanisms or procedures established to carry out *Agenda 21*, especially in the fields of education, poverty alleviation and environmental protection and rehabilitation
- To review government education systems to identify ways to include and expand the involvement of international organizations and NGOs in the fields of formal and informal education and public awareness
- To improve education and technical training (particularly for women and girls) through the use of interdisciplinary approaches
- To promote integration of environment and development concepts, including freshwater, energy, solid wastes, human health, demographics, oceans and seas, land resources, etc., in all educational programmes
- To promote public awareness at large of the importance of consider-

ing environment and development in an integrated manner

- To introduce public participatory techniques, including enhancement of the role of women, youth, indigenous people and local communities
- To improve or restructure the decision making process so that consideration of socio-economic and environmental issues is fully integrated and a broader range of public participation assured, especially of youths

The main objectives and activities of the MEDIES compatible with the principles of sustainable development are:

- Wise management of freshwater resources and waste
- Facilitation of educator networks and promoting collaboration (information and "know how" exchange) of all involved partners at all levels to strengthen links between formal, non formal and informal educators and institutions

- Exploitation of the existing knowledge and experience in educational matters as well as of national needs, policies, methodologies and evaluations
- Training of trainers through capacity building programmes in teaching, designing and producing innovative educational materials
- Supporting schools of the region with relevant high quality educational material on crucial issues for the region.

All relevant information in the field of ESD in your country, region or town will be welcomed on the web-page of MEDIES, so please feel free to update us with your activities.

For more information please contact:  
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## Centres, Associations, Networks...

### Vigyan Prasar (VP)

[www.vigyanprasar.com](http://www.vigyanprasar.com)

Vigyan Prasar (Spreading Knowledge) (VP) is an autonomous organisation set up as a registered society by the Government of India's Department of Science and Technology in 1989, to undertake large scale science popularisation tasks in the country.

The organisation carries out a number of activities, among which VIPRIS (Vigyan Prasar Information System) which includes a website specially meant for science communicators. The aim of the website is to get more and more people, especially young people, interested in science. For this reason information on scientific and technological developments taking place in India are put up on its home page on a regular basis with as frequent updates as possible. A variety of other matters are also included which encourage people to think and act scientifically by fomenting inquisitiveness, curiosity and the habit of asking

questions whenever one doesn't know or understand something.

Its broad objectives could be summarised as follows:

- To act as a resource-cum-facility centre for S&T communication
- To undertake, aid, promote, guide and coordinate efforts in popularisation of science and inculcation of the scientific temper among the people as well as to increase the knowledge, awareness and interest about S&T among all segments of the society
- To undertake development of software for various media - audio, visual and print - and develop different modes of communication to enable the masses to understand, appreciate and comprehend scientific principles and practices.

Vigyan Prasar has also established a network of 5,000 science clubs in the country, called the VIPNET science

clubs. It regularly produces radio and television programmes on S&T matters in different languages and publishes *Dream 2047*, the organisation's monthly newsletter-cum-popular science magazine which counts 30,000 subscribers.

Vigyan Prasar regularly organizes workshops, seminars, symposia, training programmes, fairs, exhibitions, film shows, street plays, quizzes etc. on a variety of scientific topics and issues in an attempt to communicate science to the various sections of the society. Information on VP publications, Science clubs, Ham Radio, Kits and Toys is also provided in the form of panels.

For further information contact:

*Vigyan Prasar, C-24,*

*Qutab Institutional Area,*

*New Delhi - 110016, INDIA.*

*Fax : +91-11-6965986*

*[www.vigyanprasar.com](http://www.vigyanprasar.com)*

## Windows to the Universe (W2U)

### USA

Windows to the Universe ([www.windows.ucar.edu](http://www.windows.ucar.edu)) is a popular, widely used and well-established web site for science education developed and maintained by the Education and Outreach Program at the National Center for Atmospheric Research (NCAR) in Boulder, USA.

The central focus of the site is on Earth and space science education, with strong ties to related topics from the humanities (such as mythology, constellations, the history of science, scientists and philosophers, art, literature and film).

Windows to the Universe (W2U) covers a very broad range of science topics, including over 6,000 pages of content covering science and associated aspects of the humanities. W2U is an effective educational outreach tool for scientists as well as for agencies, companies, and non-profits interested in enhanced public science literacy.

The W2U program also includes teacher professional development activi-

ties, including numerous workshops and demonstrations at National and regional science teachers' conferences as well as workshops at NCAR.

#### **The site is available at no charge to any user with an Internet connection.**

Currently, the entire W2U site is being translated into Spanish. A grant from the National Science Foundation (NSF) is supporting the first phase of the translation. Over 3,000 pages are already online in Spanish and visitors to the Spanish language pages account for ~20% of site traffic.

The availability of this comprehensive science education resource in both English and Spanish will be a boon to bilingual educators and will promote science education in the context of language learning. Since 36% of the U.S. Hispanic population is under 18 years of age, this is clearly a group that can be helped by the availability of quality educational materials geared towards its needs.

The W2U program has been the fortunate recipient of substantial government support in the form of grants from NASA, NSF, and other federal agencies over the past decade (~\$3 million to date). However, in view of NASA and NSF's desire to initiate new projects (rather than to continue support for existing projects – even highly successful ones) as well as likely significant reductions in federal discretionary funding in the coming year, we are actively seeking partners in the non-federal sector to help us maintain the service that we have provided our users over the past decade. Forward-looking companies recognizing a responsibility for corporate leadership in supporting educational initiatives that have proven track-records of success can look to W2U to provide reach into the local, national, and global communities.

For further information contact:

*Marina LaGrave*  
[[mlagrave@ucar.edu](mailto:mlagrave@ucar.edu)]

## ESSENCE: network of environmental sciences Europe

ESSENCE is a thematic network of environmental sciences, counting more than 150 European partners within the educational, public and private sector. ESSENCE stands for Environmental Sciences Strengthened in Europe by Networking, Conferences and Education.

The ESSENCE Network is one of the Thematic Network Projects running within the SOCRATES/ERASMUS programme, and is financed by the European Commission, DG Education and Culture.

The overall aim of ESSENCE is to create a well-developed European framework for environmental teaching in higher education. In order to develop this framework, network partners strive to reach a consensus on quality criteria for curricula in environmental sciences and on key transferable skills of (post) graduates in the European Union. Furthermore, ESSENCE aims to stimulate innovation in teaching methodologies and an efficient use of resources on best practical higher education methods through exchange

of information among partners. It also aims to create a framework for regular feedback from professionals, from the public and private sectors about environmental courses and programmes at the European level.

ESSENCE partners are higher education institutions and public and private organisations in the European Union member states and in several eligible associated countries.

In each participating country one contact functions as country co-ordinator. The country co-ordinators co-ordinate ESSENCE activities at a national level. In the first and second year of the ESSENCE project the country co-ordinators were responsible, *inter alia*, for writing a national report on the current state of affairs in tertiary level environmental education and the labour market for environmental professionals in their countries.

ESSENCE partners can expect to get in contact with environmental scientists,

teachers and students at higher education institutes and with environmental professionals in both the public and private sector throughout Europe.

ESSENCE partners are regularly informed about developments within tertiary level environmental education and the labour market for environmental professionals in Europe. Furthermore, they have the possibility to send topical information on environmental education and science programmes or other relevant activities within their institute or organisation to all other ESSENCE partners. They can also get more actively involved by participating in one of the ESSENCE workgroups and closely work together with other partners on a specific theme or sub-project.

For more information contact:

*essence@vsnu.nl*  
tel: +31 30 2363888  
fax: +31 30 2333540



## Rural Community Science Centre India

The Rural Community Science Centre is a registered NGO established in 1988, recognised by the Department of Education of the State government of Karnataka in southern India. Its staff consists of 8 full time workers and 25 part time volunteers. It also disposes of 5 doctors, 10 engineers, 8 lecturers as resource persons for its activities.

The main objectives of the Centre are to:

- promote rural development
- build scientific temperament in rural populations
- transfer of technology
- disseminate information to rural areas

Its activities include mainly:

- conducting science & technical exhibitions and seminars, training camps

on low-cost teaching aids and science writing workshops

- providing training on developmental journalism, mathematics through origami
- organising environmental awareness programmes, health camps, programmes on scientific agriculture & consumer awareness
- improvement of sanitation in rural areas

The Centre has published a number of books and regularly publishes two magazines: *Granthalaya Mathukathe* [Library dialogue] *Jana Vijnan* [People's Science] in Kannada with wide circulation in Karnataka state.

The Centre also has a branch in the town Sagara where it provides computer training for rural women, youths,

government employees, college students and unemployed persons. Regular courses are also run on self employment, screen printing, tailoring, carpentry, rainwater harvesting, etc.

The Centre has been distinguished several times with awards, prizes and certificates for its work in science & technology popularisation, book publishing, environment activities and rural development.

Further information from:

*Rural Community Science Centre, Post: Varadamoola, Sagar Tq., Shimoga Dt.,*

*Karnataka 577417, India,*

*Fax: 08183 – 327442*

*E-mail: vijnan@sancharnet.in*

## Comité d'Appui aux Organisations Paysannes Pauvres (CAOPP)

### Central African Republic

The Comité d'Appui aux Organisations Paysannes Pauvres (Committee for Support to Poor Peasant Organisations) (CAOPP) is a non-political, secular and voluntary NGO composed of a multidisciplinary team of specialists in phytotechnology, forestry, zootechnology, rural engineering and community health. It was created in August 2000 and put up on the internet in December 2003.

It targets marginalised populations, illiterates, school drop-outs, degree holding unemployed youths, widows, handicapped persons as well as street children and aims to improve their living conditions by providing them information, education and technical and vocational training.

Its objectives are the following:

- Capacity building of target groups in knowledge, know-how and self confidence
- Structuring and organising them in groups, sustainable cooperatives and federations
- Fighting hunger, poverty, lack of hygiene, HIV/AIDS and sexually

transmittable diseases, illiteracy, desertification and violence

- Income diversification
- Improving agro-alimentary production and transformation
- Preserving and improving the socio-economic, cultural, ecological and tourist environment
- Conducting research on and developing sustainable biodiversity activities
- Identification and valorisation of local capacities
- Informing socially marginalised populations about innovations in sustainable development

Its work consists of providing support and/or training notably:

to agro-forestry groups, cooperatives, and associations of marginalised peasants in agroforestry production to voluntary marginalised peasants as well as, on request, to national and international NGOs, governmental organisations and accredited embassies of Central African Republic devoted to sustainable development of the Central African Republic

1. on the environment in general and more particularly on :
  - a. Biodiversity
  - b. Community health
  - c. Economic environment
  - d. School environment
2. in agro-forestry, rural engineering, agricultural and rural economy
3. sustainable development of actions concerning women, handicapped persons, artisans and street children
4. setting up socio-economic and cultural projects

The executive committee would welcome partners from all over the world to help support its humanitarian and community work in favour of marginalised and pauperised populations.

Further information from:

*Mr. Martin KOPALET,*

*Comité d'Appui aux Organisations Paysannes Pauvres (CAOPP),*

*ONG de Développement Rural- BP:*

*729 Bangui*

*(République Centrafricaine)*

*Tél. : (236) 50 70 13*

*E-Mail : ong\_caoppkm@yahoo.fr*

# Doing it & Telling it

## Inculcating Environmental Awareness through Solid Waste Management in Schools

### India

**Place:** Four municipal schools located in four different segments of Nagpur city in Central India.

**Target group/s:** Fifty school children (grades 7-9) from 25 sections of the 4 schools together with 8 teachers (2 from each school, one male and one female) participated in the programme.

**Introduction:** As a response to the growing preoccupation about the environment in India, municipal corporation authorities of Nagpur decided to focus on the improvement of the solid waste management system with the involvement of various groups, organisations and communities. This decision was based on the excellent innovative ideas that were presented which, when implemented, would radically improve the city's environment.

**Objectives:**

1. To create awareness in students and teachers, through active participation in solid waste management, of the importance of the environment
2. To involve teachers and students in devising a system of storage of waste and segregation of recyclable waste at source
3. To provide schools with a clean and healthy environment

**Resources:** Financial resources were partly provided by the Nagpur Municipal Corporation. Two local NGOs, the Institute of Integrated Development Nagpur and the Indian Institute of Youth Welfare Nagpur provided assistance for the workshop held at Nagpur and for deputing students and teachers to attend training workshops for capacity building in solid waste management in schools in the cities of Pune and New Delhi.

**Methodology:** Student selection was based on qualities of leadership and taste for extra-curricular work. The teachers' role was to provide guidance to students and supervise the project through the school year. The first training workshop for students and teachers focused on practical issues such as:

- Mother nature: how life around works
- Key words in waste management
- Solid waste management system and its components
- Health hazards of current waste disposal methods

In the workshop, which provided the basis for work throughout the year, specialists addressed participants on the subject, following up with discussions and explanations. Each school was then provided with garbage containers of distinct colours for specific type of waste: green for compostible waste to be used for the garden; yellow for recyclable waste which could be sold and money recuperated for the Nature club and red for toxic waste to be delivered to the municipal sanitation authorities. Six students and two teachers were then selected to attend workshops on environmental issues in well known environmental organisations in Pune and New Delhi for further capacity building. Finally, a formal pledge to support and participate in environment conservation activities and spread the message around was devised for the signature of all participants.

**Evaluation:** No systematic evaluation was made but the following indicators served in its stead:

- There was a marked change of attitude of the local administration towards the environment and solid waste management
- Both schools and the community provided a very positive feedback
- Two local organisations, Marathi Vidnyan Parishad and UNESCO Club Nagpur - the latter engaged in science propagation – joined in the project to disseminate it to other schools.

**Results:** The project is now launched each year by the Education officer of the Nagpur Municipal Corporation, underlining its importance in the eyes of students, teachers and the community. Many other schools now participate in this project and students, their families and community consider it an asset to the schools and the community.

**Sent by:** Dr Ashok Dhabekar, Medical Officer, Nagpur Municipal Corporation, 394, New Subhedar Layout, Nagpur 440 024, India.



Readers are invited to send us their **FIELD experiences in Science, Technology, Environmental Education activities** involving the teaching/learning process - but not necessarily limited to students and teachers. They should be as brief as possible and set under the following headings:

**Place:** Locality where the activity was carried out

**Target Groups:** For whom the activity was intended

**Introduction:** Background information - reasons for initiating the activity

**Objectives:** What was the activity expected to achieve?

**Resources:** Materials/funds needed for the activity

**Methodology:** The way in which the activity was carried out

**Evaluation:** How was the activity judged? By whom?

**Results:** Did the activity produce any concrete changes in the target group(s)?

*Selected experiences will be published with the name and address of the author. Please address your contributions to:*

**Doing it and Telling it** (address on last page)

## News & Publications

In his opening address at the *Conference on Future Environmental Trends: Education, Environment and Health*, held at the Institut Pasteur, Paris, 17-18 June 2004, UNESCO Director-General, Koïchiro Matsuura, examined three themes – education, environment and health – in regard to the inter-relations between them and in the context of how the international community, especially through the UN system in general and UNESCO in particular, is approaching these matters. Mr Matsuura outlined the framework of strategy and action provided by the Millennium Development Goals (MDGs), the six Dakar goals for Education for All (EFA) and three important United Nations Decades proclaimed by the UN General Assembly, in which UNESCO is playing or will play a key role: the UN Literacy Decade (2003-2012); the UN Decade of Education for Sustainable Development (2005-2014); and the UN International Decade for Action 'Water for Life' (2005-2015).

He highlighted three key challenges important to debates on education, environment and health in an international context:

- the challenge of communication between different disciplines and specialisms today, calling for “a dialogue among disciplines” vital for devising “viable solutions to complex and multi-faceted problems”
- the need to improve the level of public discussion about education, environment and health so that “democratic debate is grounded upon cogent argumentation and reliable evidence as much as possible”
- the need to ensure that dialogue among disciplines and informed democratic debate rests on strong foundations provided by quality education for all.

He maintained that this education must be life-long and should address “not only the changing knowledge base but also the key social and ethical issues associated with environmental protection, sustainable development and health. In other words, it must be relevant to the world as it is and as it is becoming.”

He concluded by suggesting the possibility of a fourth challenge, namely, to develop effective forms of partnership that can bring significant leverage to bear upon the many inter-connected issues and problems that exist.

## DESD NEWS

### Just published and available online - new ESD Information Briefs



As part of UNESCO's efforts to clarify and communicate the key concepts and messages of Education for Sustainable Development, additional ESD information briefs have been created, including:

– *Human rights; (in French only, for the moment)*

– *Education and the development of cities; (in French only, for the moment)*

– *Higher Education*

We hope you will find this collection useful in your activities supporting quality ESD. Please note that additional briefs will be added to the series in the coming months.

New elements put online under the following topics:

*Home page - Key action themes - Events - Publications & materials - Selected websites.*

More on the Education for Sustainable Development web-site ([www.unesco.org/education/desd](http://www.unesco.org/education/desd)) under the Key messages topic.

The **Istituto Veneto di Scienze, Lettere ed Arti** based in Venice, Italy, is an Academy whose aim is "to increase, promulgate and safeguard the sciences, literature and arts".

The Institute is developing an Environmental Data Base in order to promote and diffuse scientific knowledge about Venice and its lagoon. In the data bank, which is freely accessible, there is also a section dedicated to dissemination where teachers can obtain information and tools for supporting didactics. The aim is to stimulate teachers, by supplying them interesting and validated materials, to organize and conduct environmental education activities. The data base is accessible at the web address:

<[http://www.istitutoveneto.it/venezia/home\\_bda.htm](http://www.istitutoveneto.it/venezia/home_bda.htm)>

Further information from: *Silvia Fant, Istituto Veneto di Scienze, Lettere ed Arti, Campo S. Stefano, 2945, 30124 Venezia, Italy. Fax +39 041 5210598 e-mail [silvia.fant@istitutoveneto.it](mailto:silvia.fant@istitutoveneto.it), <http://www.istitutoveneto.it>*

**Population Connection's Education Program** has a newly designed website where school teachers can find free hands-on activities that address population dynamics, environmental issues, global inequities and community well-being. Population education being a multi-disciplinary field, the materials are suited for science, social studies and mathematics classes. The site also offers a range of products such as teaching kits, CD-ROMS, videos, DVDs, wall charts, posters and newsletters, as well as information on Population Connection's teacher education workshops available for professional development programmes and pre-service courses. Website address: <[www.population-education.org](http://www.population-education.org)>

## Forthcoming Conferences, Workshops, Seminars...

The National Center for Scientific Research (Cuba) will organise the **14th International Scientific Congress CNIC 2005: 40 Years at the Service of Science and Technology**, in Havana, Cuba, **27-30 June 2005** (with simultaneous translation Spanish – English). For further information contact: *Mrs. Violeta Rodriguez Oramas, Havana International Conference Center, Apartado Postal 16046, Havana, Cuba. Fax: (537) 202 8382 E-mail: [violeta@palco.cu](mailto:violeta@palco.cu) <http://www.cnic.edu.cu/14Congreso/Bienvenida.htm> or <http://www.loseventos.cu/seminariocnic2005>*

In order to highlight research achievements dealing with the declining interest of European students for science and technology studies, the European Science Education Research Association (ESERA) will organise a conference on **Contributions of Research to Enhancing Students' Interest in Learning Science**, in Barcelona, Spain, from **28 August – 1 September 2005**. Further details from: *Dr Roser Pinto, CRECIM, Campus de la UAB-Edifici G5, E-08193 Bellaterra, Barcelona, Spain. Fax: +34-93-5811169 E-mail: [roser.pinto@uab.es](mailto:roser.pinto@uab.es)*

7<sup>th</sup> Global Conference on Environmental Education "**Environmental Education for Sustainable Development**" organised by the Indian Environmental Society, will take place in Agra, India, **19-23 September 2005**. Further information from: *Indian Environmental Society, U-112, Vudhata House (3<sup>rd</sup> floor), Vikas Marg, Shakarpur, Delhi 110 092, India. Fax(91-11)22523311 E-mail: [iesenro@vsnl.com](mailto:iesenro@vsnl.com) <http://www.iesglobal.org>*

### World Science Forum

#### To Strengthen the Ethical Aspects of Knowledge in Society

Budapest, Hungary, **10-12 November 2005**.

The Hungarian Academy of Sciences, in partnership with UNESCO and ICSU, will organize the next World Science Forum at the Hungarian Academy of Sciences and the Hungarian Parliament. The Forum will focus on **Knowledge, Ethics and Responsibility** and will tackle the ethical aspects of knowledge and the responsibility of scientists and decision makers in the global society of the 21st century.

The sessions & themes will view *Knowledge, Ethics and Responsibility* in relation to:

- *The scientists' approach*
- *The political decision makers' approach*
- *The approach of the business world*
- *The developing world*
- *The future of the environment*
- *Educating the future generations*

Further information from: *World Science Forum Budapest Secretariat: [budapest@sciforum.hu](mailto:budapest@sciforum.hu)*





**XXVII<sup>es</sup> Journées Internationales sur la Communication, l'Éducation et la Culture Scientifiques et Industrielles** (International Meeting on Education, Communication and Culture related to Science and Industry) Chamonix, France, **22-26 November 2005**. Deadline for presentations: **15 September 2005**. Further information from: *D. Raichvarg, STEF – Bâtiment Cournot, 61 Ave President Wilson, 94235 Cachan Cedex, France. E-mail: daniel.raichvarg@u-bourgogne.fr*

SEAMEO RECSAM Conference on Science and Mathematics Education (CoSMEd) 2005: ***Bridging the Theory-Practice Gap in Science and Mathematics Education: The Challenge to Change***, to be held in Penang, Malaysia, **6 – 8 December 2005**. Deadline for early registration: **1 October 2005**. Further information from: [cosmed@recsam.edu.my](mailto:cosmed@recsam.edu.my) <http://www.recsam.edu.my/cosmed>

## Publications



Following the success of the first series of 6 STEE teaching/learning posters (v. **Connect**, vol. xxvii, No.3-4,2002), UNESCO's Section for Science and Technology Education has produced a second set of 3 teaching/learning posters in collaboration with the Punjab State Council for Science & Technology (PSCST), India, entitled: ***Science for Tomorrow; Science & Technology: key to Sustainable Development and Science & Technology and Poverty***.

The posters are meant to provide teachers from developing countries with basic information on the 3 topics for classroom teaching.

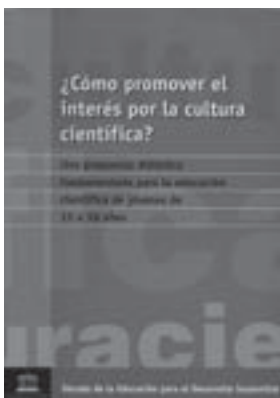
They will be disseminated to schools from developing countries to assess their impact on teachers and learners. Based on the feedback, an integrated set of the 9 posters will be printed for general dissemination.

All nine posters can be downloaded free of charge from: [http://portal.unesco.org/education/en/ev.php-URL\\_ID=15463&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.htm](http://portal.unesco.org/education/en/ev.php-URL_ID=15463&URL_DO=DO_TOPIC&URL_SECTION=201.htm)



**¿Cómo promover el interés por la cultura científica?** (*Promoting interest in scientific literacy*) (2004, 476 p.). Ed. D. Gil Perez, B. Macedo, J. Martinez Torregrosa, C. Sifredo, P. Valdés, A. Vilches. A joint publication of UNESCO/Santiago, research groups of the Valencia and Alicante Universities (Spain) and the Instituto Pedagógico Latinoamericano y Caribeño (IPLA), this publication aims to set within the framework of the DESD the pedagogical ways and means to combat the lack of interest for science studies of Latin American and Caribbean high school level students. The publication consists of research papers grouped in 5 parts focusing on: 1) importance of Science Education (SE) in present-day society; 2) development of

new models for the entire science teaching/learning process; 3) examples illustrating the new models; 4) viewpoints of researchers other than those of the publishing group; 5) references and indices. **Spanish only**. For copies contact: *OREALC UNESCO/Santiago, Enrique Del Piano 2058, Providencia, Santiago de Chile. http://www.unesco.cl*



**Enseignement scientifique, technique et professionnelle** (Science, technical and vocational education) is a CD-ROM produced by the Human Info NGO for UNESCO's Section for Technical and Vocational Education in the framework of the project entitled Education BAD IV: Amelioration de la qualite de l'enseignement secondaire au Tchad (ADB Educational Project IV: Improving the Quality of Secondary Education in Tchad) in collaboration with the Tchadian Ministry of Education and the African Development Bank (ADB).



It comprises the three training courses developed and imparted in 2000-2001 in Tchad: Secondary level science education (Physics and mathematics); Technical education (commerce and industry); Training of school administrative personnel. The CD-ROM aims to help update administrative and teaching staff in French-speaking Africa, specially in the life-long learning context. **French only**. For copies contact: *Section for Technical and Vocational Education, UNESCO, 7 Place de Fontenoy, 75352 Paris 07, France. Fax: +33-1-45 68 55 45 e-mail: tve.section@unesco.org http://www.unesco.org/education/tve*



**Partnerships for relevant science and technology education** (2004, 75 p.). This publication is the outcome of a UNESCO sub-regional workshop on private sector partnerships in STE in southern Africa held in Windhoek, Namibia, in July 2003. The workshop was part of a series of UNESCO workshops meant to identify regional trends

and priorities, facilitate regional partnerships and networking in STE as well as to develop proposals for UNESCO action in the region. This publication analyses the state of STE as well as regional initiatives in the sub-region with regard to private-public partnerships in STE. For copies contact: Ms J. Heiss, UNESCO/ED/STV/ISTE, 7 Place de Fontenoy, 75352 Paris 07 SP, France. E-mail: [j.heiss@unesco.org](mailto:j.heiss@unesco.org)



**State of the World 2005: Redefining Global Security** (2005, 237+27p.). With a foreword by Mikhail Gorbachev, Chairman, Green Cross International and former President of the Soviet Union, this new annual report by the Worldwatch Institute insists that the global war on terror is diverting

the world's attention from the central causes of instability – notably, the interplay of poverty, youth unemployment, infectious diseases, environmental degradation and rising competition over essential resources like water, food and oil. In this context it is essential to strengthen and broaden international cooperation, fund and support the Millennium Development Goals and WSSD targets and bolster environmental peacemaking. Price US\$18.95 (+s&h). For copies: Fax: +570.320.2079 E-mail: [wwpub@worldwatch.org](mailto:wwpub@worldwatch.org); <http://www.worldwatch.org/pubs/sow/2005/>

**European Environmental Toolkit for Citizens.** The aim of this CD-ROM is to help European citizens (although it can be used to advantage by others as well...) find out what they can do on a day-to-day basis to help improve the state of our planet.



The rationale of this toolkit is that current environmental problems are not just caused by commerce, industry, farming, transport, etc. – our daily life behaviour also has a role to play in changing our environment. It is presented in the form of a quiz to test your knowledge and get practical advice on how to improve the environmental impact of your day-to-day actions. The kit also presents the biggest European database of environmental toolkits, i.e. more than 140 Web sites providing guides, games and tests or giving advice so that we can make our behaviour more environment-friendly. Further information from: Directorate General of Environment-Communication Unit Office, BU-9 0/11, B-1049 Brussels, Belgium. Fax: +32-2-2969560 E-mail: [envinfo@cec.eu.int](mailto:envinfo@cec.eu.int) [Http://europa.eu.int/comm/environment/toolkits/index\\_en.htm](http://europa.eu.int/comm/environment/toolkits/index_en.htm)

**Young Reporters for the Environment Book 2004** (2004, 24 p.) is a compilation of the best articles and photos of 2004 sent in by Young Reporters for the Environment in 2004 on six topics: agriculture, cities, coastline, energy, waste and water. The articles are in the original language of the contributors. For more information on the activities of YRE and copies of the two documents, contact: *Young Reporters for the Environment, FEEE, 6 avenue du Maine, 75015 Paris, France. Fax: (33-1)45.49.27.69. <http://www.youngreporters.org>*



**15 enjeux environnementaux pour demain** (2005, 32 p.) (15 environmental issues for the future) is a booklet produced by the Young Reporters for the Environment (YRE) in collaboration with the Groupement régional d'animation et d'initiation à la nature et à l'environnement (GRAINE). It presents briefly 15 burning issues for the future including water, biodiversity, climate change, energy, population, sustainable development, etc. with boxes on *What you can do*; *Key facts*; *Questions for a local project for each issue*. **French only.** Contact: (see below)



**People and the Planet: Lessons for a Sustainable Future** is a CD-ROM addressing the middle school level curriculum. As an interdisciplinary, environmental education and global studies guide in one, the CD-ROM covers concepts and objectives central to science, social studies and math. It contains activities for ten different subject areas; sorts them by thematic unit, subject and topic, and includes a thorough teacher's guide with instructional readings, helpful graphs and an inclusive list of sources for further research. The 33 hands-on (and minds-on) activities and four readings are organized around four themes: *Understanding Population Dynamics*; *People, Resources and the Environment*; *Issues for the Global Family and You* and *Your Community*. Through them, students explore the interconnections of human population growth, natural resource use, solid waste management, biodiversity, social justice and community well-being. All the activities inspire students to be problem-solvers and think critically, while employing a variety of teaching strategies. More than 200 printable pages. Price \$13.00 (+s&h). Order from: [www.populationeducation.org](http://www.populationeducation.org); or call 1-800-767-1956.



The Centre for Science and Environment (CSE) has made a set of 21 films based on Climate Change. *Climate change* affects all aspects of human life - water resources, agriculture, food security, human health and more. To understand the potential impact and dangers of climate change, CSE has prepared this set of films that give viewers a panoramic perspective on all major issues. Some of the topics treated are: *The Greenhouse Effect; The Ozone Layer: Every Action Counts; Oceans and Climate Change; Changing Climates : The Future; Emission Impossible*. The complete list can be viewed at :[http://csestore.cse.org.in/store\\_popups/water\\_pac.pdf](http://csestore.cse.org.in/store_popups/water_pac.pdf). For further information please contact: *Society for Environmental Communications, 41, Tuglakabad Institutional Area, New Delhi 110062, India. Email: sales@cseindia.org or goutam@cseindia.org*. A new section on the CSE website explores the complex linkages between *environment and poverty*. Read news articles, exclusive reports, download dossiers. <http://www.cseindia.org/programme/pov-env/pov-env.htm>

#### **Human rights and the Environment** (2002, 400 p.)

This book brings together, for the first time, international texts which stress the importance of the "human right to environment". These instruments have established the existence of procedural rights such as access to information, public participation in decision-making and access to justice in environmental matters. They also show the emergence of a substantive human right to a quality environment. They are all evaluated and the need to open a debate about human duties towards the environment is considered. The book demonstrates, in a comprehensive manner, how important it is to have a high standard of environmental protection as a fundamental human right; it makes an important contribution to the search for suitable instruments for protecting environmental quality, for the benefit of present and future generations. Price: 35 Euros /53 US\$ (+ 10 % postage costs). Available from: *Council of Europe Publishing - 67075 Strasbourg Cedex, France Fax : +33 (0)3 88 41 27 80 . E-mail: publishing@coe.int http://book.coe.int (This book is also available in French: http://book.coe.int/FR/CAT/LIV/HTM/11880.htm )*

#### **Higher Education and the Challenge of Sustainability Problematics, Promise, and Practice** (2004, 382 p.) ed.

P. B. Corcoran, A. E.J. Wals. This book provides a variety of theoretical and practical resources for students, teachers, researchers and administrators seeking to integrate sustainability in higher education. Sustainability is explored not only as an outcome and a process of learning, but also as a catalyst for educational change and institutional innovation. The book raises the various problematics related to this field and provides an intellectual history and critical assessment of the prospects for institutionalising sustainability in higher education. Price €145/ US\$160 (hb); €50/US\$55 (pb). Order from: *Kluwer Academic Publishers, Dordrecht, Netherlands. http://www.wkap.nl/prod/b/1-4020-2026-0*

**Encyclopedia of World Environmental History** (2004, 1600p.). This three volume set, written by a team of international experts, contains over 500 articles providing broad historical coverage on how human beliefs and actions have altered the natural world and covering the latest developments in the field. An analysis of natural phenomena and events and their impact on human societies is also included. Entries include notably, acid rain; air pollution; alternative energy; biodiversity; debt for nature; law of the sea; environmental law; environmental crime; famine; deforestation; global warming; social ecology; etc. US\$595. Order from: *Asia Pacific Infoserv, GPO Box 2987, Sydney 2001, Australia. Fax: 61 2 4934.3692 E-mail: aapi@aapi.com.au*

#### **Environmental Education in Developing Countries:**

*Case Study* (2003, 252p.) by Qasem Alnewashi. The book advances a view that links teachers' commitments to their beliefs and attitudes about teaching EE, as well as to significant life experiences. It also presents a great body of evidence that nonformal EE has the potential to enhance the work of formal education. In addition, the author proposes an instructional model which is relevant to the situation of schools in developing countries. It sets up cooperation between the formal education sector on one side and community organizations on the other. The proposed model relies on the effectiveness of first-hand experience, learning by doing, and involvement in local environmental issues. Price: €28. Order from: *Jordan Environment Society, ATT: Dr. Qasem Alnewashi, PO Box: 962996,11196 Amman, Jordan. Fax: +962 6 56 95 857 www.environment.gov.jo/jes.html*

**Ecologia Mediterranea: International Journal of Mediterranean Ecology** is published by the Institut Méditerranéen d'écologie et de paléocécologie of the Université d'Aix-Marseille III. It includes original research reports and syntheses in the fields of fundamental and applied ecology of the Mediterranean region. For submission of articles: *Ecologia mediterranea, Europôle méditerranéen de l'Arbois, Bâtiment Villemin, BP 80, F-13545 Aix en Provence, France.*

**Symbiosis** no.65, Winter 2004/2005, the quarterly journal of the IDEE Network, focuses on Energy with articles highlighting the role played by science and environmental education. A number of pedagogical resources are proposed for teachers as well as pupils together with addresses and websites. **French only**. For information on price/subscription contact: *Réseau IDée, 266 rue Royale, 1210 Bruxelles, Belgique. Fax :+02-286 95 79 E-mail :info@reseau-idee.be http://www.reseau-idee.be*

## 12<sup>th</sup> IOSTE International Symposium

### Science and Technology Education in the Service of Humankind

Penang, Malaysia, 30 July – 4 August 2006

The International Organization for Science and Technology Education (IOSTE) will organise its 12th International Symposium in Penang, Malaysia (venue: Beachfront Resort Hotel) from 30 July – 4 August 2006.

The theme of the Symposium is **Science and Technology Education in the Service of Humankind** with the following sub-themes:

- Promoting peaceful and ethical use of Science and Technology through STE
- STE for Development, Empowerment and International Understanding (with special emphasis on developing nations' perspectives)
- STE from different cultural and humanistic perspectives: promoting international collaboration and understanding through cultural diversity
- Making relevance effective teaching-learning in STE

Further information: <http://ppip.usm.my/~ioste12>

Contact person: *Yoong Suan, School of Educational Studies, University of Science Malaysia, 11800 Penang, Malaysia. E-mail: [yoongsuan@yahoo.com](mailto:yoongsuan@yahoo.com) or <[syoong@usm.my](mailto:syoong@usm.my)>*

**CONNECT** is also available on the Science and Technology Education homepage:  
<http://www.unesco.org/education/educprog/ste/index.html>

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