

International Consortium for Interdisciplinary Education about Health and the Environment – Founding Purpose and Philosophy

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ABSTRACT

The day-to-day activities of human beings directly impact the health of the environment, and conversely, the environment plays a major role in human health. The complex interactions of the human organism and the surrounding environment form the basis for teaching and research across disciplines and across national boundaries. The future of the environment is one aspect of the world community that transcends the politics of any one nation. To advance discussion of environmental educational opportunities across disciplines, an international invitational meeting was held under the auspices of the International Office of the University of Cologne, the Institute of Biology and its Didactics, and the Gesellschaft für Umwelt, Gesundheit und Kommunikation, December 12-15, 2007 at the University of Cologne, in Germany. A series of presentations and follow-up discussions ensued. This paper highlights the purpose and philosophy behind the conference as well as some aspects for further discussion emanating from the conference. Finally, it introduces the rebirth of a scholarly journal – Umwelt und Gesundheit Online, formerly published in the 1980s and 1990s as a hard copy journal, Umwelt und Gesundheit.

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Background

The daily existence of human beings directly impacts the health of the environment, and conversely, the environment plays a major role in human health. According to Webster's New WorldTM Medical Dictionary, 3rd edition, the health of the environment is "the sum of the total of the elements, factors and conditions in the surroundings which may have an impact on the development, action, or survival of an organism or group of organisms" (<http://www.medicinenet.com/script/main/art.asp?articlekey=22391>). The complex interaction of the human organism and the surrounding environment is the basis for teaching and research across disciplines and across national boundaries. The future of the environment is one aspect of the world community that transcends the politics of any one nation. Former U.S. Vice President and 2007 Nobel Prize co-recipient, Al Gore, has joined scientists in warning political leaders about the potential destruction on the environment of climate change and global warming, a situation he has called a "planetary emergency" (<http://www.iht.com/articles/2007/03/21/news/gore.php>). Yet, climate change is but one environmental challenge facing future generations.

In an effort to stimulate and advance discussion of environmental educational opportunities across disciplines, an international invitational meeting was held December 12-15, 2007 at the University of

Cologne, in Germany. This conference, including presentations and discussion, was sponsored by the International Office of the University of Cologne, the Institute of Biology and its Didactics at the University of Cologne, and the Gesellschaft für Umwelt, Gesundheit und Kommunikation. Heading the organization of the conference was Klaus Klein, Professor, Institut für Biologie und ihre Didaktik and Direktor, Forschungsstelle für Gesundheitserziehung, Universität zu Köln. Several scholars, representing some of the breadth of the health and environmental science, were invited conference presenters. The theme of the meeting was "Science Teaching in Context – Let's Find the Teachable Moment."

Program for the Meeting

The program for the conference included the following formal presentations:

- *The Teachable Moment: A Pedagogical Journey.* (Stefan Neubert, Institute of Education, Faculty of Humanities, University of Cologne, Germany).
- *Promoting Health Literacy: Integrating Environmental Health into Teacher Training.* (Sandra Vamos, Faculty of Education, Simon Fraser University, Burnaby, British Columbia, Canada).
- *The Choice of a Measure – Determining the Health of the Environment.* (Robert J.

McDermott, College of Public Health, University of South Florida, Tampa, Florida, USA).

- *The Public Understanding of Environment as Human Health for the Twenty-First Century.* (Kirk W. Junker, Duquesne University School of Law, Pittsburgh, Pennsylvania, USA).
- *Particulate Matter Pollution in the Urban Atmosphere: Case Studies in Turkish Cities.* (Orhan Yenigun, Institute of Environmental Sciences, Bogazici University, Istanbul, Turkey).
- *Human Health and the Environment with a Regional Example: Istanbul and its Suburban Areas.* (Baris Mater, Department of Geography, Istanbul University, Istanbul, Turkey).
- *The Environment and Health Aspects of Hazardous Waste Generation.* (Turgut Tüzün Onay, Institute of Environmental Sciences, Istanbul, Turkey).
- *Environment Meets Health: What Can We Do as Science Educators for the Adolescent Brain?* (Dvora Cohen, Davidson Institute of Science Education, Weizmann Institute of Science, Rehovot, Israel).
- *Hearing Conservation and Noise Reduction.* (Dale O. Ritzel, Department of Health Education and Recreation, and the Southern Illinois University Safety Center, Carbondale, Illinois, USA).
- *Burning Facts of Overexposure to the Sun.* (Heike Milz, Institute of Education, Faculty of Humanities, University of Cologne, Germany).
- *Nutrition Ecology – A Topic for Biology Lessons.* (Kirsten Schlüter, Institute of Biology and Didactics, University of Siegen, Germany).
- *Waterborne Diseases.* (Klaus Klein, Institute of Biology and Didactics, University of Cologne, Germany).

Follow-Up Discussion

A dialogue about health and the environment must include methods and strategies for removing the disciplinary “silos” that act as artificial and useless impediments to scholarly discussion across professional fields of endeavor. Moreover, the dialogue cannot be unique to one nation or one continent. The future of the planet and the health of its inhabitants are dependent on international understanding and cooperation. Therefore, the participants of this inaugural meeting must strive to

bring in new colleagues from other countries not represented in this first set of conference attendees.

The dialogue about health and the environment must also be inclusive of how better to translate science into action. This translation is *not* just a matter for the laboratory, but for the day-to-day living of the citizens of every continent. Because countries have different geo-political mechanisms, different organizational structures, and vast differences in environmental and health surveillance systems, laws, regulations, and customs, parallel constructs and comparisons will not always be easy to draw.

A follow-up discussion to the meeting following conclusion of the formal presentations yielded the following key points pertinent to putting science education and environmental education into context across national boundaries and among academic disciplines. Moreover, these points or principles have implications for teaching at all levels – elementary, secondary, and post-secondary – and for the professional preparation of individuals in diverse fields that will serve as multipliers of environmental and health messages. Concepts emerging from the presentations included:

- An environmental philosophy should be developed.
- Environmental learning should be experiential and be contextual.
- Learners should conduct experiments and communicate their experiences.
- Learners should build models demonstrating how different environmental factors are interconnected.
- Learners should see the effects of their positive and negative environmental actions.
- Learners should take on the responsibility of advocacy for health and the environment.
- Health literacy is an essential component for understanding the impact of humans on the health of the environment and the influence of the environment on the health of humans.
- Actions taken must be sustainable.
- Teacher preparation must be continuous.
- Expert teams must be developed across disciplines.
- The breadth of environmental topics must evolve continuously.
- Teachers’ attitudes hold a key to transforming environmental ethics.
- A skills-based curriculum is a desired mechanism for teaching about the environment.
- Competencies must be established.
- Initiatives must be coordinated.

- We must ask the “right” questions.
- Different views of “environmental need” – discrepancy, democratic, diagnostic, analytic, and political – must be discussed.
- We need better indicators to determine the health of the environment.
- There must be negotiation and compromise among pro-environmentalists and those persons for whom the environment is taken for granted.
- The “distance” between scientists and laypeople, where the environment is concerned, must be reduced.
- The public must come to have a better understanding of science.
- Our understanding of “enabling” knowledge must be advanced.
- We need more contextual examples of environmental issues from urban and rural venues.
- We need more examples of environmental issues from developing (and developed) countries.
- We need improved understanding of the impact of particles on health and the sources of particulate pollution.
- These dynamics require further exploration: thresholds for pollution, effects of pollution on eutrophication, the pace of acidification of oceans and other bodies of water, landscapes, and forests, speed of climate change, and household sources of pollution.
- What are the unique problems of mega-cities?
- What are the barriers to interdisciplinary work?
- Waste materials may become increasingly more numerous and hazardous.
- Diverse mechanisms recycling need development.
- Global thinking must result in local actions.
- Risk assessment and measurement requires greater sophistication.
- Teaching about the environment, while taking into account the developmental stages or aspects of the child’s brain, may be opportunistic.
- Environmental learning must begin early – kindergarten or pre-school settings.
- Environmental education is a function of teachers and schools, families, and governments.
- How youth understand and calculate “risk” is germane to any discussion of the environment.
- Noise is a real and an insidious (painless but progressive) form of natural and manmade environmental pollution that impacts human health.
- Noise-induced hearing loss is preventable.
- Personal hearing protection devices work and should be used.
- UV-radiation exposure is an unavoidable environmental health hazard but it can be controlled through clothing protection and generous application of protective sunscreen products.
- UV hazards have been increased, in part, due to the depletion of the ozone layer in the atmosphere.
- Specific at-risk audiences need to be informed and empowered.
- Protective practices need to be begun and reinforced at an early age.
- Nutritional practices have an ecological, economical and societal basis.
- There are discrepancies between available nutrition knowledge and nutrition practices – the “distance” between these two constructs requires reduction.
- Future access to water that is safe for drinking may spark a larger crisis in the world than the demand for oil and petroleum products currently does.
- Elimination of pathogenic water and water harbouring disease vectors is a challenge across environmental science disciplines.
- Specific case studies related to teaching about and preserving safe drinking water supplies are needed.
- Investment in effective wastewater treatment by developing countries, aided by developed countries, is a matter for scientific and political advocacy.

Decisions Emanating from this Inaugural Meeting

- The working group shall be called the *International Consortium for Interdisciplinary Education about Health and the Environment*
- The spirit of a previously published print journal sponsored by the Gesellschaft für Umwelt, Gesundheit und Kommunikation, *Umwelt und Gesundheit*, will be resurrected as an electronic journal in 2008 and called *Umwelt und Gesundheit Online*.
- The members of the working group attending the inaugural meeting in December 2007 will comprise the founding editorial board of the new journal.

- Papers based on the presentation titles cited above will be invited as the initial set of articles for the new electronic journal.

Topics and Schedule for the 2008 Meeting of the International Consortium for Interdisciplinary Education about Health and the Environment

The theme of the 2008 meeting will be “Hands-on Strategies for Translating Environmental Principles to the Public.” The meeting is tentatively scheduled for December 18-21, 2008 at the University of Cologne. A possible resource for people to read in preparation for this meeting is one by Gregory and Miller (2000). Possible considerations for papers include, but are not limited to:

- The gap between science and practice versus public understanding – what can one do to narrow this gap?
- What motivates people’s trust (or lack of trust) in science? How much do they trust scientists? What do they like to know from scientists?
- How can one market the environment, so that people will care for it?
- How can one motivate elementary, secondary, and post-secondary students to understand more fully the role that science plays in their lives?
- Because households are the biggest consumers of energy, what incentives could be provided to motivate responsible use?
- Using alternative sources of energy – pros and cons.

References

Gregory, J., & Miller, S. (2000). *Science in Public – Communication, Culture, and Credibility*. Cambridge, MA: Basic Books.

International Herald Tribune. (2007). Gore pleads for the environment before U.S. Congress. Available at: <http://www.iht.com/articles/2007/03/21/news/gore.php>. Accessed December 4, 2007.

Webster’s New World Medical Dictionary, Second Edition. (2003). Available at: (<http://www.medicinenet.com/script/main/art.asp?articlekey=22391>). Accessed December 3, 2007.

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