Summary of the EU ISE workshop at the 14th Annual Polish Association of Science Teachers conference Toruń, 7 - 9 September 2007

Methods of ICT in the environmental education

"We have to derive wisdom
from the heaven, earth, oaks and beeches ...
but not only from books"

Jan Amos Komeński

In our time there is difficult to find such discipline of science, which doesn't have any relation to the environmental issues. Ecology, scientific discipline, originated from biology is an interdisciplinary science now. It has close relations to physics, chemistry, geology, geography, physiology, medical engineering, environmental technology, medicine, agronomy, economy, law and also to humanistic sciences, including philosophy and education. We have to remember, that on our environmental awareness and undertaken activities will depend, whether frustrating changes and endangers noticed in the "global oikos" will intensify or global *sustainable development* will take place. So, because the environmental awareness of our society is rather low, inclusion of the ecology elements to science education has a great importance. The most important in this task are school physics and chemistry.
During this workshop we will show examples of environmental problems, aided by ICT methods and tools, which can be implemented to the school curricula. Let's present some of them:

- global request for energy - traditional and non-conventional sources of energy, ecological aspects of energetics, including nuclear energy (computer aided Science Across the World project topics),
- environmental noise; monitoring of noise in the environment with the use of data-loggers,
- the interaction of electromagnetic and ionising radiation on alive organisms (including project RADONET with the use of Internet), computer aided investigation of ionising radiation around us,
- air, soil and water pollution (necessity of water saving, acid rain problem, thermal pollution),
- global warming, climate changes,
- ozone hole problem in the stratosphere (programme GLOBE),
- satellite images in the environmental investigations – global change observations, the use of telecommunication – GPS technology,

Among different methods of ICT suitable for education "on", "in" and "for" environment we will show examples of: data logging in the environment – monitoring, computer modelling, the use of spreadsheets, educational projects, electronic conferences, discussion lists and the use of computer network – Internet (WWW).

Taking this into account the workshop's participants (more then 30) were acknowledged with the following examples of the use of ICT in environmental education:

1. Oscillations and waves in the environment
2. Effectiveness of cooling of eco-refrigerator

3. Investigation of air humidity and thermal phenomena
4. Investigation of infrared and UV radiations in the environment
5. How process of milk fermentation undergo?
6. Monitoring of photosynthesis and respiration processes of plants

Furthermore the science teachers taking a part in this workshop have experienced rhe following presentations:

1. Educational use of GPS in school science laboratory
2. Investigation of ionising radiation in the envinroment (with the use of computer aided GM sensor and WINDOWS software)
3. Noise and infrasound investigations in the environment
4. Whether "field hopper" respire ?
5. Whether water keeps us healthy?
6. Modelling software- Mars- the planet of mysteries.