

The 'compulsory hydrogen education' club in the state comprehensive educational establishment Lyceum 179 of St-Petersburg

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The UN General Assembly has declared the year of 2005 to be the beginning of the International Decade of education in the interest of stable society development.

The following ideas are the basis of education in the interest of stable development:

- education must support the society in its transfer from consumer society to the society of spiritual perfection and new technological solutions in all the fields of its activity;
- new noosphere outlook and productive thinking must be formed, a new type of a citizen must be brought up – the intelligent, active, broad-minded creator of life;
- the humankind has realized the problems of its existence and its need forco-evolution of nature and society;
- the stable development of society is closely connected with the formation of ecological outlook and culture.

The necessity to form ecological competence with schoolchildren has been proved by the history of civilizations, by the consequences of the burst in hydrocarbon energy sector (ozone holes, greenhouse effect, acid rains).

The importance of teaching ecology, the fact that such school subject was introduced in many educational establishments help students to realize the harm of burningcoal, oil and gas. The chemical composition of car exhaust (carbon, sulphur, nitric oxides, dioxins, carbohydrates, benzopirene, heavy metals, trichloromethane – all in all, 280 components, 170 of which are harmful), the horrifying numbers of toxic substances in the atmosphere air, make children think of alternative energy sector, stimulate the educational and self-educational process.

In the course of biology and ecology studies students familiarize themselves with V. I. Vernadsky's doctrine of biosphere and noosphere, which help them to realise the danger of irreversible global phenomena connected with the burning of carbohydrate fuel.

The material of ecology course and such elective courses as 'Human Health and Environment', 'Man and Universe' convinces schoolchildren that the health of the inhabitants of the Earth depends on the planet's 'health'.

All the above mentioned and a number of topics in school physics and chemistry make:

- students think about the reasons of the ecological crisis and the possible ways of recovery;
- teachers seek for innovations, new technologies bringing up ecological competence and ecological culture in the students.

The compulsory hydrogen education is a most important component of ecological education, it is an essential condition of Russia's transfer to stable development and the most important factor making the all-nation idea of Russia's renewal popular.

The role of an educational establishment in a person's advance can scarcely be overestimated. It's important to bring up an educated, civilized personality, able to understand the dependence of the country's future on the development of the 'hydrogen energy sector | hydrogen economy' system.

In the state comprehensive educational establishment lyceum 179 of St Petersburg there is a club called 'Compulsory Hydrogen Education' which is a branch of the international 'MIREA' club.

Goal

Realisation of the way of promoting ideas of transition to hydrogen energy sector; development of personality who understands the necessity and importance of such transition.

Problems:

- *To create conditions of forming pupils' ecological world-conception and culture.*

Conditions helping solve the problem:

The component of the school plan includes the course of General Ecology and Human Ecology. Moreover, some subjects include questions on ecology which helps to intergrate skills.

Students do scientific research work. For example, they study ecological condition the rivers Neva, Ohta, smaller rivers and lakes of St. Petersburg and its suburbs; they also study the quality of atmosphere and soil.

The lyceum is an associated UNESCO school, collective member of MANEB; for 14 years it has been taking part in international projects such as "Baltic Sea Project", "Universal Nature and Culture Heritage", "Coast Watch".

- *To draw students' attention to vitally important problems: hydrogen fuel; alternative i.e. hydrogen and hydrogen energy sector economies.*

Conditions helping solve the problem:

Courses "Energy – basis of life on the Earth", "Energy Saving".

Experimental work of students with sun – hydrogen complex and laboratory complex "Hydrogen energy sector". These complexes were presented to lyceum by Physics Technical Institute named after A. F. Ioffe.

Demonstration of an experimental model of a car on hydrogen fuel (the gift of International hydrogen club of MIREA).

- *To propagandize hydrogen energy sector as ecologically clean, corresponding positive development of technical progress. The motto is: "Hydrogen energy sector — the source of ecologically clean and resource unlimited energy".*

Conditions helping solve the problem:

Role games, conferences, festivals organized by the teachers and students of the

lyceum for schoolchildren of St. Petersburg.

Meetings at which students tell their parents about their experimental work.

Information about the work of Hydrogen Club in mass-media of St. Petersburg.

- *Expand information field of Hydrogen studies.*

Conditions helping solve the problem:

The Use of information technologies to discuss the problems of ecological and energy security (safety) between the students of different countries. For example, internet conference with Finnish and Swedish students.

Invitation of students of school № 58 and students of Technical College № 35 of Moscow to the Lyceum for the participation in the Ecological Festivals of 2006 and 2007.

- *Develop social partnership.*

Conditions helping solve the problem:

Cooperation with Physics Technical Institute named after A. F. Ioffe, with St. Petersburg State Medical Academy named after I. I. Mechnikov; with Moscow State Radio technological Institute and with International club "MIREA".

- *Stimulate public attestation and presentation of the work of the club.*

Conditions helping solve the problem:

Participation of the students of the lyceum in International, all-Russia contests and conferences.

Issue of leaflets, work of school radio, magazine articles.

Organization of festivals, conferences, seminars.

Thus, the club activity

helps:

- propaganda of the National programmer of hydrogen energy sector;
- to create the conditions for students to understand how important it is solve the problem of ecologically pure energy sector for the future of the Earth;
- To achieve such level of education which could give the students an opportunity to work in the system "hydrogen energy sector — hydrogen economics".

assists:

- motivation of students education;
- formation of the subject clue competence;

- ecological responsibility, outlook and culture;
- formation of mass hydrogen – ecological consciousness.

Resources

1. Evdokimov A. A. Social sources on the way to hydrogen economy. Selection Hydrogen vseobuch (studies), 2006, № 1, p.47–50.
2. Sigov A. S., Shinkarenko V. V. About information hydrogen energy and hydrogen studies. Selection Hydrogen studies, 2006, № 1, p. 41–46.