

## Ecosystem approach in education

Iskander Nabiullin

Boarding School "Gymnasium-Internat 4", Kazan, Republic of Tatarstan, Russian Federation (iskender.n@gmail.com)

Environmental education is a base for sustainable development. Therefore, in our school we pay great attention to environmental education. Environmental education in our school is based on ecosystem approach. What is an ecosystem approach? Ecosystem is a fundamental concept of ecology. Living organisms and their non-living environments interact with each other as a system, and the biosphere planet functions as a global ecosystem. Therefore, it is necessary for children to understand relationships in ecosystems, and we have to develop systems thinking in our students. Ecosystem approach and systems thinking should help us to solve global environmental problems.

How do we implement the ecosystem approach? Students must understand that our biosphere functions as a single ecosystem and even small changes can lead to environmental disasters. Even the disappearance of one plant or animal species can lead to irreversible consequences. So in the classroom we learn the importance of each living organism for the nature. We pay special attention to endangered species, which are listed in the Red Data List. Kids are doing projects about these organisms, make videos, print brochures and newspapers. Fieldwork also plays an important role for ecosystem approach. Every summer, we go out for expeditions to study species of plants and animals listed in the Red Data List of Tatarstan. In class, students often write essays on behalf of any endangered species of plants or animals, this also helps them to understand the importance of each living organism in nature.

Each spring we organise a festival of environmental projects among students. Groups of 4-5 students work on a solution of environmental problems, such as water, air or soil pollution, waste recycling, the loss of biodiversity, etc. Participants shoot a clip about their project, print brochures. Furthermore, some of the students participate in national and international scientific Olympiads with their projects.

In addition to biological relationships some complicated chemical and physical processes occur in ecosystems, so the ecosystem approach also involves interdisciplinary connection between biology, chemistry, physics, geology, mathematics, and others. Therefore, our schoolteachers of these subjects work together on environmental education of students.

Ecosystem approach allows students to achieve a deeper understanding of how ecosystems work. This may help them to find keys for understanding and solving environmental problems such as climate change, loss of biodiversity, pollution, waste, energy efficiency etc.