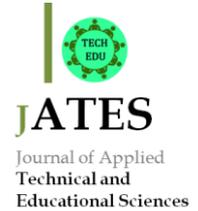




www.jates.org

**Journal of Applied
Technical and Educational Sciences**
Engineering, Vocational and Environmental Aspects

ISSN 2560-5429



doi: 10.24368/jates.v7i4.11
<https://doi.org/10.24368/jates.v7i4.11>

The Comparative Analysis of the Biological Diversity in Schools

Éva Nagy

Doctoral School of Educational Sciences, Eszterhazy Karoly Univerity, H-3300 Eger, Eszterhazy sq. 1., Hungary

Abstract

The living nature is an incomparable treasure, an ever-changing unique world. Its priceless value lies in the appearance of its plant and animal species. Today newer and newer terrestrial and aquatic creatures are born and there is no such human mind that is able to memorise all of them existing in the world. However, what is directly perceptible from them exists only a short distance away. Could we see, or is it possible to show the real face of these remarkable aspects? Do we give or could we give the young generation enough to taste the real life of the actual world, attracting their attention to sustainability? Do we spend or are we able to spend enough time with our students getting acquainted with all animal and plant species, which appear directly around us? In other words, is there or to what extent does preservation of a considerably significant issue, the biodiversity exists factually in today's public education? The study summarizes methods that nowadays serve the teaching of species diversity and attempt to sum up the institutions where they are used.

Keywords: concept of biodiversity; biodiversity in public education; nursery schools; kindergarten; primary schools, biodiversity in secondary education, new methods

1. INTRODUCTION

The presence of the living organisms determines our inner world and affects the smallest resonances of the surrounding environment. The world, so the system of plants and animals is complex. Its structure is comparable to a web that spins over the whole planet. If only one yarn is accidentally touched, its shiver runs through all the other threads (Gerald Durrell). This thread could be the tropical rainforests, or the Earth's lungs, where the rate of oxygen production on Earth is the most intense and yet severely injured. But if we do it all because we do not know its nature, we can easily destroy it, without experiencing its beauty, knowing its practical benefit, allowing it to survive, leaving a deep impact on everything it has ever linked with. People do not only touch the net today, but often break strongly, and in many cases they are not aware of the seriousness of the damage they cause, for example, to the survival of the human race itself. We, Biologists must demonstrate not only the theory of what needs to be cared for what is beautifully

preserved from the beauties of the world (Albert Wass), but to create a unique experience for the youth about what surrounds them, so that it can become internal, and develop really durable information. The presentation of the biological diversity is an integral part of the environmental education. In this study, I want to summarise, how diversified the methodological repertoire, which can be used by the teachers nowadays in various institutions of public education and how closely the curriculum is matched to the current events in the recognition of species. Preserving the natural environment is a basic living condition of the present and the next generation. Biodiversity, also called biological diversity, is the basis of our existence.

It is very disappointing that this diversity is decreasing on an unprecedented scale. According to the latest press release by the European Parliament, 30 species of fish die each day and according to a UN study, there are still 17,000 species remaining at risk. The protection of diversity on Earth has therefore become extremely important. In order to keep pace with the innovative aspirations (such as the National Strategy for the Conservation of Biodiversity for the period 2015-2020), to meet the requirements and meet the goal for the specified time, it is appropriate to examine the student circles, strata, which can positively influence natural processes by their actions and attitudes, and so are able to save, which can be preserved in their original environment. For this purpose, it is worth summing up how biodiversity appears as educational material in different educational institutions, and thus how it can be developed.

Ever since the destruction of almost every subsystem could be seen in our immediate environment, we pay more attention to the protection of it than ever before. Many would like to act, but they do not really know how to do this. But we may only defend when we really know its nature, and if we know it well, maybe we love it, we will be able to take independent steps to keep it alive.

At first in my work, I outline the existing concepts of biodiversity, and the possibilities of the materials that can be used, and the concepts referring to biodiversity, and then I introduce the current status of the teaching of the nursery, kindergarten later education in primary and secondary education and biodiversity in detail. My goals are even to analyze curricula and textbooks in a sense that how profoundly educate the diversity of the living creatures and how up-to-date they are in relation to the current situation. Following the clarification of the conceptual background, each subchapter contains the biodiversity agents of the individual public education institutions.

1. THE CONCEPT OF BIODIVERSITY

The concept of biodiversity is one of the most prominent concepts in the focus of today's environmental interest. It is very important because it involves all forms of life (either they are levels under the individual), that is, plants, animals (such as humans), as well as mushrooms or microorganisms (those tiny creatures that are often not seen with the naked eye). In other words, it appears at all levels of biological organization, either body, organ system (a combination of definite organs for a given purpose), organ (different cells and tissues for a given purpose), tissue (united identical cells that are the same in shape and function), cell (the smallest independent living entity of organisms) or (they are levels above the individual) population (in other words community), association (a community of plants and animals living together in a given place at the same time), biome (community of living communities), biosphere (the whole biomass of earth life). (*Gál B., 2016*)

Biodiversity makes biologically rich and varied in terms of life forms.

Let's look at the concept through simple everyday examples. If there were no creatures other than us, for example, a dog and only a Komondor, then the appearance forms would be narrowed. We would not know the cattle and we would be deprived ourselves of the taste of the fresh milk it gives us. The same is true for the plants. Imagine a world where we could not see other plants just pine. We would never know what the flavor of the wild strawberry is like or what the chamomile is good for. Fortunately, the species of plants and animals are not just those living creatures, there are millions of them. The living organisms are very varied and there are also subtypes within species. Consider, for example, only the apples, and think about the number of their varieties we know.

There are about 1.8 million species on our planet, but the possible number of species is estimated at another 4-40 million. 11% of the well-known plant species (250,000) were endangered, and were near to the extinction. Out of the bird species, the cranes, parrots, open seabirds (e.g. albatrosses), and the singing birds are mostly endangered while the quarter of the mammal species is threatened with extinction (ungulates, insects, purse, cetaceans, carnivores). (*Dr. Horvath Papp, 2013*)

In the list of current protected species, mainly plants, animals, mushrooms, lichens and antlers are listed with different nature conservation values in terms of money. The protected and highly protected species can be seen numerically in the table below:

Table 1: Database of currently protected and highly protected plants and animals (following the data of www. Greenfo.hu)

| Protected and endangered species | | | | |
|----------------------------------|-----------|---------------------|------|-------|
| | Protected | Specially Protected | EU | Total |
| Plant | 652 | 63 | 577 | 1292 |
| Animal | 828 | 137 | 597 | 1562 |
| Mushroom | | | | |
| Lichen | | | | |
| Total | 1480 | 200 | 1174 | 2854 |

If this diversity decreases or ends, at first we lose species, which will not reborn, and then all of this affects the environment, completely transforms it, therefore it will not be the same. Globally sooner or later this will be equal to the impoverishment of the wildlife.

2. THE IMPORTANCE OF BIODIVERSITY

According to the 2005 UN report on Biodiversity and Well-being, such a reduction in biodiversity is a serious threat to the whole of the wildlife, including humans. For wildlife because in a more varied ecosystem there are more likely to be individuals that can adapt to, or survive external events such as natural disasters, extreme weather or increased pollution. People need biodiversity primarily because of the food they provide (*Jakabffy, 2007*)

But let us not forget the additional benefit that contributes to our physical and mental well-being. The good quality of air results in healthy lungs, or stopping the climate change, eventually reversing it, and reducing CO₂ emissions will restore the ups and downs of seasons and weather. Pure water is the basis of our existence, without it we cannot exist, diseases overflow consumers of unhealthy, even infected water, but the risk of dehydration also threatens the healthy person in the same way as in case of water shortages. Insects help to pollinate plants as well as feed for birds and reptiles. While we are still able to take some care of our natural values, and as long as this is reality and not just history, there is hope for knowledge, treasure in our possession, which can be passed on, in order to preserve the planet's current state of health. (*Erdei-Gulyás, 2008*)

The main consequences of the extinction of species can generally be summarized as follows:

Loss of energy: In developing countries, 50% of energy is derived from wood, e.g. by the destruction of the rainforests, the state of the poor countries will be even worse in Africa or Asia and the poorer populations are much more exposed to the loss of biodiversity, as many of them live in nature; from where they get food or the basic materials and their culture are closely related to nature.

Feedstocks: Approximately 7,000 plants and 100 animal species are used for eating purposes and 50% of the medicines are of plant origin, in addition, living organisms provide genetic resources, too.

Biogeochemical Processes: Water Circulation, Oxygen Circulation, Carbon Circulation, and Soil Processes - Consider how many species allow soil to be fertile, how many living things help water purification and how much wood species contributes to cleaner air.

Climate regulation: forests contribute to the climate, since they breathe in carbon dioxide, which is a greenhouse gas.

Culture and leisure: we all go walking, many of us love hiking. How boring would it be if habitats looked the same everywhere or we saw the same trees everywhere, the same dog barked in every garden? (*Zólyomi, 2009*)

As a result of the over-utilization of renewable resources, the deterioration of the various ecosystem services may lead to economic downturn, and the disruption of ecosystem stability may endanger our basic living conditions. Nowadays, typical species extinction means a more significant burden, which is much more complex than before, because its nature is different from what it was in each geological era, that was a natural phenomenon in its own way. The extinction accelerated by human activity is quite dangerous: the current rate of extinction is about 400 times higher than those from the time of catastrophes ending the great geological eras (e.g. at the end of the Cretaceous age, 65 million years ago) (*Wilson, 1986*).

In my short theoretical approach, my aim was to clarify the concept and also to support the relevance of the problem. In order to begin the concrete process of an attitude change younger and older members of the growing generation should be acquainted with the theoretical background of one of the most serious environmental problems, biodiversity and the destruction of it too, through the means of education and later bring them close to nature.

In order to achieve radical change, it would be worthwhile to influence the thought processes of the smallest. Much depends on the world in which they are placed and where the world is moving them. The sooner we expose the small ones to biodiversity education, the more likely they will be more effective later on in this area. Therefore, for a few words, I will first deal with the aspects of environmental education and biodiversity in early childhood.

3. STAGES AND OPPORTUNITIES FOR BIODIVERSITY EDUCATION

1. Preparing school environmental education, nursery education and biodiversity

Tamás Vekerdy, the head of the Hungarian Waldorf Teacher Training and the sociologist György Simó said this year in November in his 168-hour interview, that there was no effective learning without pleasure and we have to write love formulas for the kid's mind. (*Ónody-Molnár, 2017*) One of the most prominent drivers of these formulas can be the channel of nursery education in the nursery school, where the central topic is often how they get to know the animals and plants and this early socialization is a life-long determinant.

The National Fundamental Pedagogical Nursing Care Act stipulates that nursing care and nursing activities should also be organized and carried out according to the sustainability criteria. This approach has to appear in all areas. Environmentally-behaved staff must also show themselves in a variety of activities, in the use of natural materials, in minimizing energy. Efforts must be made to reduce chemicals (e.g. cleaning), to improve the quality of food, to place fruit and vegetables grown on the spot, taking into account the life cycle of the products.

The same is important when selecting games. From folk songs, their beauty and justice, traditions, folk games, organic food, herbs to the nature touring. The main activities of many environmental NGOs are the environmental attitude shaping. National Parks, Ornithological Associations visit small children groups, so they can directly meet living plants and animals.

The "greening" of the nursery is a reflection of educational practice. The color scheme of the decorative elements, the attachment to the local traditions, the proportion of wood and plastics are all important. With the guidance of parents, many of our educational tasks can be made easier, we may help them in gaming, game making, recalling the traditions of simple, inexpensive, traditional values that are still known even by grandparents.

In addition, there are many possibilities for creating an environmentally friendly, bird-friendly garden. It is important for plants, bushes, trees to be indigenous, and it is ideal to choose aromatic plants, herbs. Traditions are also relevant here. Herbs and herbs are suitable for tea or summer cooling (mint, lemongrass), but also for insect elimination. By developing sensory organs, children can learn to recognize the spice of the traditional gardens (rosemary, peppermint) by differentiating touch and smell. Acceptance of diversity as a basic ecological value can be justified in this way as well. (*Balogh et al., 2012*)

Preparing school environmental education, kindergarten education and biodiversity

Preschool education is also of great importance in the aspect of environmental education, in many institutions, the entire activity system of kindergarten is organized around this educational

area. (*Balogh et al., 2012*) Children between the ages of 3 and 7 are the age group where the principle of environmental education can be practiced the best, reaching the age where observations generate deeper thoughts, giving them a more lasting experience. At this age they are more cooperative and more open to the opportunities offered by the outside world, so they can be more easily involved in targeted environmental programs. Concerning the environmental activities of observed kindergartens, we may say that activities aimed at biodiversity and sustainability are all day-to-day.

We can have habits and behaviors practiced that will remain in their minds forever and become internal necessities. The susceptibility of the nature and man-friendly nature, as well as the harmony of nature is important both for the family and the child. Since parenting is the most important thing for a child, parents need to be educated, too. However, the views of families can be shaped through children as well. Close co-operation, everyday contact provides a distinctive opportunity for a kindergarten teacher. There is a great need for this at the present level of environmental awareness. By modifying consumer habits by modestly influencing wasting lifestyles and shaping attitude, a change in sustainability and quality of life could be noticeable in a relatively short period of time. As families cover the whole society (parents, grandparents, siblings, relatives), the effect may be multiplied. (*Balogh et al., 2012*)

Kindergartens in Eger, for example, are characterized by constant observations in terms of changes in nature, they are constantly experimenting, planting sprouts of plants, participating in targeted exhibitions, for example On Forest Open Days, Earth Day, each year competing in competitions, they are visited by local members such as the Birds Association, regularly organizing excursions to nearby wildlife parks e.g. The Nyíregyháza Wildlife Park and they make local bird houses, then jointly set up them and refill them continuously, following the seasonal events from time to time.

As an additional proposal, quoting from the suggestions of the National Environmental Education Strategy can be summarized as follows:

1. When entering kindergarten, let the child achieve favorable emotional effects as this helps the development of his social sensitivity and the development of his self-consciousness; From the point of view of socialization – from the goal and task of environmental education - it is of particularly important to practice common activities based on common experiences.

2. Strive for co-operation between kindergarten and family; Strive for the children to "nurture" their parents, to bring home ecologic habits learnt in kindergarten.

3. Implementation of environmental education in kindergartens is a multifaceted activity with special regard to (non-substitutable) play.

4. It is desirable to organize such kindergarten life that promotes the development of the moral qualities of the child (sympathy, helpfulness, altruism, attention, etc.) and the will (self-discipline, endurance, sense of duty, rule of law, etc.) suggesting a nature-friendly, environmentally friendly approach.

5. When designing learning and environmental education, nursery schools strive to create and organize the following common activities:

(A) placement and care of plants and animals in kindergartens;

(B) establish or transform the nursery garden (e.g. floral, herbal, vegetable and orchard), to ensure the realization of the tasks of environmental education, carry out the corresponding age-appropriate activities;

(C) organization of walks, excursions to sites and habitats where observations of changes in nature, interactions between living and inanimate environmental factors can easily be seen;

(D) the content-methodological design and organization of museum visits; in the environmental education of children, and in shaping their ecological views museums can be important venues, too;

(E) organizing kindergartens' programs. They are recommended to arrange in a place other than kindergarten, away from local specialties. The experiences of the 5-6 days will help to know the values, love and protection of the homeland and the people living there, the local landscape, the local folk traditions, customs and tangible culture.

6. In order to make these things realistic, the Local Programs for kindergartens must show these goals and tasks. Help nursery schools to develop environmental programs.

7. The condition of the realization of kindergarten teacher education is the continuous participation in further environmental training. These intentions should therefore be supported." (Vásárhelyi, 2010)

In this list, a special venue was also mentioned for toddlers who are particularly interested in direct insight into forest life. The forest kindergarten has become accepted in practice with the emergence of forest schools. Everything is organized according to all the age-specific features.

They do not start familiarization with nature in the nature kindergarten. Formerly they have been teaching a one-day study trail on a zoo program, practicing behavioral ways. In the forest kindergarten, there are plenty of fun for children. Traces of the presence of animals, the effects of weather on the soil, plants, and animals have already been experienced many times in the past. Nature has been accepted in many ways. Children living in the city have little experience especially in fungi and soil. A forest puddle might be a treasure for exploration or sensitization. Observing birds, watching birds and nests also stimulate their fantasy or imagination. The

richness of plants, leaves, flowers, fruits, helps experience biological diversity. Painting with herbal milk fluids, making tables from natural materials, naming things as an artist develop their mother tongue competence. The observation of the built environment, the characteristics of the harmony of houses and buildings in the landscape, help them to attach to the past, to experience the culture of the earlier era. (*Vásárhelyi, 2010*)

3. Primary School Environmental Education and Biodiversity

The knowledge required for evolutionary survival has been lost by some earlier generations. Children who grow up in artificial, comfortable, urban dwellings with constant temperature are not only aware of nature, but also of its changes. Because they often do not even meet their immediate surroundings, they travel by car. They consume the same foods and fruits all year round, buying the same goods with their parents, often spending their freetime in front of computers, TVs or even the smallest ones with their mobile phone regardless of the seasons. Observing the surrounding world, and adapting to it, the role of community education became decisive. (*Bennet 1993*)

All elementary school subjects offer opportunities for environmental education. However, with its curricular material, the environmental knowledge stands out. Walk as much as possible with our students in the place of residence, to see the major buildings, the names of the streets in the neighborhood. Take them to events of different institutions, museums, cultural homes, etc. Get to know their parents, grandparents' childhood and their surroundings. Introducing the ornamental elements of older dwellings and their equipment also helps to experience emotionally the links between generations. Children should often be brought to nature to know nature. The memory of phenomena observed in the city, in the woods, in the meadow develops their memory. The exploratory, cognitive abilities allow for orientation in other new environments. A lot of experience leads to the recognition of the order, logic, change and beauty of nature. Individual, even, small, or class-level games maintain curiosity and develop collaborative capabilities.

General tasks:

- Monitoring of natural phenomena and processes.
- Detecting the beauty and diversity of nature.
- Healthy environment.
- Recognizing environmental values

The knowledge of the material is the sensory knowledge of the living and lifeless materials of the environment. It is possible to group different materials according to a given criteria. Some pollutants (smoke, soot) are also known. They need to recognize the most common sources of household casualties. It is advisable to learn which foods maintain health. It is time to get acquainted with knowing the periodicity of nature (regular repetition of certain times) as well as showing that the living beings change over time as well. It helps to find space if they can experience the presence of other creatures in different places of the space. They should be familiar with the locality and its surroundings, to know the characteristics of the landscape and the wildlife. It is about getting acquainted with scientific knowledge if they realize that the stage of knowledge is the reading of nature and of nature-related descriptions. Among scientists exploring nature, we also need to introduce the work of the locals and locals. (*Horvath Papp, I., 2001*)

Color illustrations of the textbooks used today are complemented with animated short films trying to illustrate the structure and living conditions of all major plants and animals, but there are special stages that emphasize the importance of preserving biodiversity by specific methods. Let's look at some of these:

Understanding the school and non-school environment is essential for sustainability education. This can now happen with the help of the Internet. Two projects, BEAGLE and Carbon Dioxide Investigators are designed to activate children's emotions, responses, and system approaches through the science approach and cognition of reality. The two projects consist of similar elements: the collected data can be processed on a web interface and deduced conclusions. On international project websites, Hungarian (and foreign language) teaching materials are also available. (*Halácsy, 2011*)

There is a particular primary schooling method, the KIP method, to emphasize environmental education and biodiversity emphasis and public understanding. Recently, as a member of a professional methodology group, we have participated in a primary school environment classroom, where the so-called Constructive Instruction Programme was introduced with 6th grade students. The uniqueness of the educational method elaborated by the American Stanford University in 2001 and adapted by the Emese Kovácsné Nagy is that there is nothing special about it, but it is very effective for those students who, because of their disadvantaged position, need personalized education. We have witnessed a particular form of environmental education, the introduction of which can bring a lot of results in the future. The typical features of the KIP method are presented through the specific tasks organized around the topic of water and water

fauna. Each KIP hour, also the environment classroom can be characterized by the following aspects:

- Children work in multicultural and ethnically diverse groups
- There are roles within each group (the most important are the Teacher Assistant, the Writer, the Reporter, the Tool Correspondent, Silence and Ordering Correspondent and Time Correspondent) that change in KIP lessons, highlighting the role of the participants starting the lessons
- Heterogeneity is not a problem, it is an advantage
- It is the Teacher Assistant's duty to ask him or her and not the Teacher
- The Teacher's role is only to praise the students in the hearing of the others ("he searches for what he may praise for)", coordinates, motivates, gives a sense of accomplishment, strengthen self-confidence
- Time limit can be developed individually (2 tasks per lesson)
- There are open-ended tasks
- Enables more capabilities - 24 people 24 different tasks (differentiation) - everyone is good at something
- Every 6. lesson (Source 1-5) - Nat
- No hierarchy - no "status" problem – there is equality
- Group members are cooperate with each other - at the end of the lessons there is always an individual report
- Every lesson consists of a group task and an individual one and at the end they always report what they have achieved - the material is illuminated from several sides, it attaches more.
- Activates all students - thus providing a positive experience
- Involves existing skills and knowledge
- Harmonization of social and knowledge differences
- You can not differ from the syllabus, but you can save lessons
- Applicable to all subjects

A product has to be presented at the end of the lesson and the students are always asked questions like "Do you think you're doing it yourself?" Or "Did Teacher Assistant help understanding?" (My own observations)

This is somewhat different, but from the point of view of biodiversity, Waldorf pedagogy is also a valuable pedagogical method, one of which we might visit last year and we have had the following experiences:

The curriculum of the Waldorf schools is deeply ecological. The method of teaching from the whole to the parts itself reinforces this and encourages the children to keep the widest view of their studies during their development.

The topics in Biology fit organically into the whole school curriculum, underlying the sense of united inner feeling.

Classes 1, 2 and 3 penetrate all the topics of Biology. The stories selected during these stages of children's development reflect the ever-changing relationship between young children and wildlife.

In classes 1 and 2, the stories are about the subject of change, the frog changes to prince, the reindeer is made of reed. These stories allow children to understand the language of animals and get to know other beings - elves, fairies - who keep secrets and protect lives. Such fantasy elements are not from whimsical fad, they are based on the complexity of relationships between animals and plants, and by the maze of healthy emotional relationships. Moreover, the hidden features of the biosphere, which are later studied in the upper classes, with the help of clear thinking, are brought closer.

In class 3, the stories of creation portray the origins of Earth, plants, animals and humans in their entirety. Other stories are about a particular relationship with the animal world (Saint Francis) to certain persons, religious people or saints. In the agricultural epoch (Greek word, it means era or period) children learn how the peasant works with the forces of nature. In addition to plowing, sowing and harvesting, there is still a lot of work to be done: installing live hedges, setting up fences, lambing, landing out water and weeding the crop. All of these are an introduction to the more conscious study of the living world in the coming years and to the subconscious confirmation that the ethical basis of ecology is the moral development of people.

In the 5th year, the life-like description, painting and the related poems of the plant with unique features and characteristics lead to the children's own experiences to the accuracy of the observation.

In class 6, mineralogy, in the 7th health and nutrition, in the 8th the human body increasingly needs students' own observations. The focus is rather on the phenomenon they are experiencing, rather than on the latest theories of contemporary science.

In the upper classes, starting with class 6, horticulture must introduce the flora directly and practically to the children. Up to the upper level, regular sessions are needed to cultivate the

garden properly. The emphasis is on tillage, on the care of flowers and vegetables and on the harvesting of crops. The primary need is to maintain and improve the relationship between children and the flora. Over the years, they meet with the annual cycle of harvesting, composting, insecticide and winter storage and long-term tasks such as planting seedlings, where seedlings are grown from seeds and they might be planted in the upper section.

Each plant should be examined in the context of the landscape, the soil and the climate. A plant in pots, or, worse, a cut and microscopic plant under investigation reveals isolation and tear-off, such tests are performed only in the upper section. At this age, children should pay attention to many forms of vegetation covering the Earth, the specificities of each plant species, their relationship with insects and soil, and their growth and yield from the seeds to their flowers. While observing and identifying the plants is an important element, any systematic definition of the species will cut through the warm friendships that have come from the knowledge of the surrounding trees and flowers. They also teach the names of parts of the plants.

Horticulture is an activity that exits the general care of plants in the class: they cultivate a small piece of land where flowers and vegetable plants can be raised, compost can be made, and responsibility for land can be practiced practically. For all Biology epochs, weekly training classes can be linked up to 8th grade.

The Waldorf School Biology Curriculum also teaches specific species and teaches young people in a clear understanding of contemporary scientific theories, assessing the human and environmental issues and the consequences of technological progress, a vibrant, open mind-to-life development gives them a sense of preference. (Waldorf Framework Concept, 2004)

4. High school environmental education and biodiversity

Today, research into the field of textbooks and curriculum content, modernity and durability is not particularly the focus of research. The rapidly changing technical environment makes the emergence of new knowledge and information faster, and moreover, the acquisition of education, which is almost impossible to follow with textbooks.

István Lükő's research suggests that not all methodological possibilities are used by students and teachers when using textbooks at school and at home. Working with textbooks offers a huge range of methodological opportunities for students and teachers. Most of the textbooks are used to draw the attention of teachers to the use of various methods, but only a small proportion of them are used regularly by the colleagues in the teaching process. Usually, they ignore the tasks of dramatization, operation work, regular investigations, and usually those drills that need a lot of preparation or followed by "work noise". Teachers use the textbook mainly for illustration and

motivation or for raising awareness. The explanation and the method of verbal communication are the third in textbook use. Summary and practice are slightly fall behind. (Lükő, 2007)

Biology textbooks applied today can be used to demonstrate the flora and fauna of the Earth without exception, mainly through viewing the video material provided with the courses. It is much easier to teach young people concepts and figures through this channel, through which they are exposed to every day. Multidimensional footage and the associated tasks raise their interest, but often the question arises that is this really a good solution?

The beauty of a landscape, its characteristic nature, the plant and zoological values of a habitat can be said, but the essential content of the words becomes convinced only if there is personal experience. It is a moral duty of teachers teaching natural sciences in grammar schools to help their students to develop an integrated approach to their environment and to become convinced of environmentally conscious behavior, but to develop the environmentally conscious behavior in order to maintain the quality of human life, quoting Gábor Vida's academic thinking: „We should place more emphasis on nature's love and protection in education". It is understandable to the aspects of high school education, as despite the fact that the National Core Curriculum envisages environmental education as a top priority development and despite the fact that science teacher training is in the biggest crisis, most students do not have enough positive, inspirational science experiences during their high school years. (Kárász, 1996)

However, they would like to have it because the grammar school is able to see the beauty in nature, in the movement and in the arts, so it is extremely important to get acquainted with their narrower environment, natural and cultural history during their grammar school years. It would be worth noting that maintaining and protecting a habitat is only possible if we know and understand the history of its development. (Matthias, 1996)

As a natural science teacher, those work only as an enthusiastic instructor and educator who can give persuasive and persistent knowledge to his or her disciples in the light of the unity of theory and practice. (Berki, 2011) However, in most grammar schools, the use of field work is hardly or not apparent in practice. (Horváth, 2011) There is no time available for field surveys, cenological (association) and vegetation dynamic studies (that is, a specific place for all changes in plant cover time). Apart from the description of the associations, it is also necessary to investigate the factors behind them. To what extent the acquisition of knowledge in the new learning environment by using activity-oriented methods is more effective than within the classroom walls. (Kerber and Ranschburg, 2004)

As far as the part of the Biology curriculum with animal knowledge of some grammar schools is concerned, it is also incomplete as the so-called " Zootaxonomy, which subject should be the

phenomenon of the diversity of animals (at the level of individuals, at the level of populations), and which is similarly not related to the natural environment. Only the combination of theory and practice could be the only effective tool of attitude shaping. (Kováts, 2010)

One option is the faculty organization, which is given in the 11th and 12th years, three hours a week. From this, animal-taxonomy - depending on teacher - is five to twenty hours. In most places there is a definitive practice organized in the framework of practical training, museum visits, forest school (one or two days to one week). During this time, there is a good opportunity to develop, expand and deepen the species knowledge. (Dózsa-Farkas K. and 2007), but much more would be needed.

Alternative schools such as the Waldorf School are somewhat different. In classes 9 and 10, when the emphasis is placed on the human body and its processes within Biology, knowledge gaining at the same time covers field work and practical work with plants and animals, which gives the Biology curriculum a direct environmental and ecological focus.

During class 11 and 12, the adolescent's ability to think is strengthened and mature to accommodate ideas more deeply. The Biology curriculum supports this by studying botany and zoology, where the main role is the generally accepted cell theory, genetics and Darwinism. The historical approach of scientific theories and the technology can lead to the point of view where they can see: an important feature of healthy science is that new theories may emerge when discovering new phenomena and this can also lead to the disappearance of old ones. (*Waldorf Framework Concept, 2004*)

Knowledge is actively created by the learner, not only passively accepting it. (*Nahalka 2002*) Students create new scientific knowledge reflecting and integrating knowledge that they already possess. (*Nahalka 2009*) The prerequisite for creating an environmentally conscious thinking and approach is to provide students with new ecological, natural and environmental knowledge in their existing conceptual network and become persistent knowledge and conviction. To do this, you must activate the new conceptual structure and explore the relationships between the concepts already known and the new concept. If this does not happen, new knowledge will not be integrated into the conceptual system, it will remain isolated. Thus, students who are close not to natural sciences are familiar with only facts about their local environment and it is difficult to base on this.

But if we involve students in a specific project that we can test out on extracurricular (i.e. extra-curricular) occasions, we've done something to preserve biodiversity. There is a guide that can effectively activate the student through easy-to-understand tasks and illustrations:

We can all contribute to the preservation of biodiversity, and there is a need for everyone's help. Everyone can change their daily habits, without significantly affecting their lifestyle. The combined effect of such small changes can already be helpful. The Guide to Biodiversity with 52 Ideas (Janez P, 2011) can be an excellent tool for such things.

References

- Balogh L., Barbainé Bérci K., Kovácsné Bárány I. Nyitrai Á., Dr. Rózsa J. Tolnayné Falusi M., Vokony É. (2012): The Professional Rules of Nursery care - education - Methodological Letter. National Development Agency, Budapest p. 18-25.
- Benett, St and Benett, R (1993): Let's go to the Nature - 365 outdoor games, Alexandra Publisher, Pécs
- Berki I. (2011): The need and education of the essential of nature. In: Together for the Environment. (szerk. Kovács Németh Mária). Győr, Palatia Nyomda Publisher and Ltd, p. 277-281
- Dózsa-Farkas K. and Hornung, E. (2007): A Zootaxonomy in the Hungarian Higher Education. Magyar Tudomány, 168 (11). pp. 1394-1400.
- Dr. Horvath Papp I. (2013): A curriculum for the ethics and practice of sustainability. Pécs
- Gál B. (2016): Biology 10, The variety of organisms. Mozaik Publisher, Szeged, p 14.
- Halácsy Á. (2011): Educating Sustainability through the Internet. New pedagogical Review - 61. vol. 1-5.
- Horváthné Papp I. (2001): About the environmental education, In: The natural and cultural environmental values of Szekszárd, Szekszárd, IGYFK, 2001, p 183-233
- Horváth K., (2011): Kovács- Németh Mária: From forest pedagogy to environmental pedagogy. Szombathely, Vasi Review LXV. vol. 3. p. 370- 371.
- Janez P. (2011): 52 ideas for saving biological diversity. Luxembourg: The Publications Office of the European Union, p1.
- Kárász I. (1996): Ecology and Environment Analysis. Fieldwork Practice. Budapest, Pont Publisher, p. 7-32.
- Kerber Z. and Ranschburg Á. (2004): Teaching and learning in secondary education. New Pedagogical Review, Budapest, 54th vol. 7-8.
- Kovács-Németh M. (2010): From forest pedagogy to environmental pedagogy. Pécs, Comenius Ltd. p. 97-115, p. 193-202.
- Lükő I., (2007): Details of a textbook study report. Impact assessment of textbooks in environmental education. School Culture 2007/8, p 85.
- Mátyás Cs. (1996): Forest ecology. Budapest, Mezőgazda Publisher, p. 260- 264.
- Nahalka I. (2002): How does knowledge develop in children? Constructivism and pedagogy. Budapest, National Book publisher
- Nahalka I. (2009): The science of learning. In: Teacher Training. 7th year. 2-3. s. p. 37-59.
- Vásárhelyi J. (2010): National Environmental Education Strategy Fundament, Hungarian Environmental Education Association, Budapest, p 31-32.
- Wilson, E. O. (1986): Biodiversity. National Academy Press, Washington DC

Internet Resources

National Strategy for the Conservation of Biodiversity 2015-2020. 2015. Download date: December 14, 2016

http://www.biodiv.hu/convention/cbd_national/nemzeti-biodiverzitas-strategia/biologiai-sokfelesseg-megorzesenek-2015-2020-kozotti-idoszakra-szolo-nemzeti

The Framework Curriculum of the Waldorf Schools in Hungary, Appendix 2 of Annex No. 17/2004. (V.20.) Of the OM Regulation. Download date: January 2, 2017

https://www.google.hu/webhp?sourceid=chrome-instant&rlz=1C1CHYZ_huHU566HU566&ion=1&espv=2&ie=UTF-8#q=Waldorf+iskol+k%C3%B6rnyezetismeret

Erdélyi-Gulyás, G., 2008. Biodiversity - the future of the future. Download date: January 2, 2017
http://www.okomuzeum.hu/magyar/informaciok/okomuzeum_biodiverzitas/6/6/6/1/1

É. Jakabffy, 2007. Sustainable Development. Download date: January 20, 2017
<http://www.fenntarthatofejloves.net/2007/05/24/a-biodiverzitas-napja-alkalmabol-utolag-nehany-szo-a-fajpusztulasrol/>

Ónody-Molnár D, 2017. Love formulas should be written in the child's brain: György Simó and Tamás Vekerdy about democratization of creativity, tin soldiers and Minecraft. Download date: January 8, 2017

<http://168ora.hu/szeretetkepleteket-kell-irni-gyerekagyba-simo-gyorgy-es-vekerdy-tamas-kreativitas-demokratizalodasarol-az-olomkatonakrol-es-minecraftrol/>

Zólyomi Á and Králik O, 2009. For the sake of variation. Download date: November 20, 2016
<http://www.messelato.hu/valtozatossag>