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DIPLOMOVÁ PRÁCE

Comparison of the implementation of environmental education in different types of kindergartens

Komparace realizace environmentální výchovy v různých typech mateřských škol

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Upřímně děkuji vedoucí diplomové práce doc. PhDr. Kateřině Jančaříkové, Ph.D. za odborné vedení, svůj čas věnovaný mi v souvislosti s diplomovou prací, za trpělivý přístup a velmi cenné rady a připomínky. Dále děkuji všem, co se účastnili výzkumu za jejich čas a ochotu. Také děkuji své rodině, která mě podporovala během psaní diplomové práce a za její trpělivost.

ABSTRAKT

V diplomové práci se autorka zabývá tématem environmentální výchovy a její realizací v různých typech mateřských škol. V předškolním věku se formují základní postoje a hodnoty, které následně ovlivňují děti po celý život. Proto je důležité, aby jim dospělí předávali takové, které je pozitivně ovlivní do jejich budoucnosti.

Environmentální výchova hraje bezesporu důležitou roli v předškolním vzdělávání, neboť pomáhá formovat pozitivní vztah k přírodě a životnímu prostředí obecně. Rodiče, ale také pedagogové hrají klíčovou roli ve formování budoucích zodpovědných občanů a jsou příkladem při tvorbě jejich odpovědného chování k přírodě a jejím zdrojům.

Teoretická část se zaměřuje na environmentální výchovu v mateřských školách, její význam a vliv na děti předškolního věku. Dále se zabývá mezinárodním programem Ekoškola, jeho fungováním a realizací v České republice. Také pojednává o prostředí mateřských škol jako „třetím učiteli“. Dochází ke zjištění, že začít s environmentální výchovou v raném věku je klíčové pro budování pevných vztahů k přírodě.

Dále se práce věnuje vybraným vědeckým článkům z databáze Web of Science. Zde se orientuje na vliv stávajícího a vytvořeného životního prostředí a na přístupy k environmentální výchově v různých typech mateřských škol. Z výsledků vyplývá, že děti z mateřských škol s environmentálním programem mívají vyšší povědomí o přírodě a životním prostředí než děti z mateřských škol s běžným programem. Také se ukazuje, že prostředí s ekologickými prvky pozitivně ovlivňuje vztah dětí k přírodě.

Za pomoci dotazníkového šetření práce zjišťuje míru realizace environmentální výchovy v mateřských školách dle velikosti sídla (městské a obecní) a zaměření (státní, environmentálně zaměřené, soukromé, církevní, Montessori a speciální). Specifickou skupinou byly zahraniční mateřské školy. Zkoumá vliv množství prostředků environmentální výchovy, vnitřního a vnějšího prostředí mateřské školy a hodnotí očekávané výstupy EVVO. Výzkumná část vyhodnocuje výsledky celkem 263 respondentů. Tato diplomová práce dospěla k závěru, že mateřské školy, které svůj výchovný program zaměřují na ekologické vzdělávání, uskutečňují environmentální výchovu intenzivněji a zároveň mateřské školy, které mají přírodní prostředí dostupnější, provádí environmentální aktivity častěji. Učitelé mateřských škol upřednostňují takové činnosti, které jsou jednoduché na realizaci, jako je třídění odpadu, péče o nenáročné rostliny, zatímco náročnější aktivity, jako je péče o zvířata nebývá v mateřských školách tolik častá.

KLÍČOVÁ SLOVA

předškolní vzdělávání, environmentální vzdělávání, ekoškola, životní prostředí, pedagogické přístupy

ABSTRACT

In this thesis the author deals with the topic of environmental education and its implementation in different types of kindergartens. In preschool age, basic attitudes and values are formed, which subsequently influence children throughout their lives. Therefore, it is important that adults impart to them those that will positively influence them in their future.

Environmental education undoubtedly plays an important role in pre-school education as it helps to form a positive relationship with nature and the environment in general. Parents, as well as educators, play a key role in shaping future responsible citizens and setting an example in shaping their responsible behavior towards nature and its resources.

The theoretical part focuses on environmental education in kindergartens, its importance and influence on preschool children. It also deals with the international Eco-school programme, its functioning and implementation in the Czech Republic. It also discusses the kindergarten environment as a "third teacher". It concludes that starting environmental education at an early age is crucial for building strong relationships with nature.

Furthermore, the paper discusses selected scientific articles from the Web of Science database. Here it focuses on the influence of existing and created environments and approaches to environmental education in different types of kindergartens. The results show that children from kindergartens with an environmental program have a higher awareness of nature and the environment than children from kindergartens with a regular program. It also shows that an environment with environmental elements positively influences children's relationship with nature.

With the help of a questionnaire survey, the thesis investigates the degree of implementation of environmental education in kindergartens according to the size of the settlement (urban and municipal) and the focus (state, environmentally oriented, private, church, Montessori and special). A specific group was foreign kindergartens. It examines the influence of the amount of environmental education resources, the internal and external environment of the kindergarten and assesses the expected outcomes of EVVO. The research part evaluates the results of a total of 263 respondents. This thesis concludes that kindergartens that focus their educational program on environmental education carry out environmental education more

intensively, while kindergartens that have a more accessible natural environment carry out environmental activities more frequently. Kindergarten teachers prefer activities that are simple to implement, such as waste sorting, care of undemanding plants, while more demanding activities such as animal care are not as common in kindergartens.

KEYWORDS

preschool education, environmental education, eco-school, environment, pedagogical approaches

Table of Contents

Introduction

The thesis deals with the topic of environmental education and its current form of implementation in different types of kindergartens. Since the preschool period is a crucial period and influences its future development, the author considers it important to encourage environmentally responsible behavior. Therefore, the aim of this thesis is to map the current state of environmental education in preschools and to point out possible challenges in its implementation.

The author decided to focus on the topic of environmental education in kindergartens for several reasons. She spent her childhood in a natural environment in her family home just a few steps from the forest. Due to her proximity to nature, she developed a loving relationship with nature and all living things.

Another reason is the knowledge that today's younger generation no longer spends as much time outdoors as they used to. Not only do the children themselves prefer to spend their free time in other activities rather than in the fresh air, but their time in the garden or other natural environment is being cut back and restricted in pre-school institutions. The author is aware that preschool age is important for the formation of good habits and attitudes. Therefore, she feels it is important to appeal to education about nature and the environment and to awaken children's loving relationship with nature already in this period. Already in her bachelor's thesis, the author focused on the education of preschool children in forest kindergartens.

Eventually, the author was motivated to choose this topic by her studies in pedagogy, which gave her a deeper insight into the importance of environmental pedagogy and inspired her to pursue this topic.

1 Theoretical part

1.1 Environmental education

Definition of basic terms

Environmental Science

The term environmental science comes from the English word environment and means the environment. Environmental science is the science that deals with the interrelationships between humans and ecosystems. It examines their interactions and the impact of human activities on the environment. This science is related to other disciplines such as ecology, geography, biology, zoology and others (Nečas, 2022).

Environmentalism

The fundamental question for environmental science is what steps to take to protect the environment. (Nečas, 2022). Consequently, especially in recent years, there has been an appeal to environmental education as a key means of creating responsible and aware citizens who are able to protect and maintain the environment for future generations (Daniš & Nechvátalová, 2015).

Environment

The Environment Act defines the environment in § 2 17/1992 Sb. It is everything that creates natural conditions for the existence of organisms and can be further developed in it. This includes air, water, the earth's crust, soil, plants, animals, natural communities and energy (*Zákon č. 17/1992 Sb.* 1992).

The law also refers to the protection of the environment in § 9. The protection of the environment shall be the focus of activities that prevent, reduce or eliminate pollution or damage to the environment. It aims to protect its individual components, species of organisms or specific ecosystems (*17/1992 sb. Zákon o životním prostředí* 1992).

Environmental education, education and awareness

Environmentální vzdělávání, výchova a osvěta in English Environmental Education, Training, and Awareness (hereinafter referred to as EVVO).

In § 16 in the same Act talks about education, and awareness. It states that education, training and awareness shall be carried out in accordance with the essence of sustainable development and with the awareness of the responsibility to preserve the quality of the environment (17/1992 sb. Zákon o životním prostředí 1992).

In the Czech Republic, the objectives of EVVO are set for the following target groups:

1. public administration,

2. children, young people and educators and professionals,

3. for the corporate sector,

4. information, education, and advice for the public

(MŠMT, 2008).

Nature

Under the term nature, each of us can imagine something different. The general definition of nature may be that which is not created by human beings. There are many theories that describe the relationship between nature and the child. The question is whether children are born with the same interest in nature or whether some have a higher interest and some a lower one. However, in kindergarten it can be observed that each child differs in his/her level of interest in it. Unfortunately, thanks to today's society, it is increasingly common for children to turn away from nature. Therefore, kindergartens are trying different ways to counteract children's disinterest in nature. For instance, by building nature gardens or keeping pets (Jančaříková, 2019).

1.1.1 Environmental education

Environmental education (hereafter referred to as EE) aims to influence children and adolescents' attitudes towards the environment in which we live. It is controversial because it encounters differing opinions and values. Around the 1960s, associations emerged in Western Europe and the USA that are becoming interested in the environment and its protection. The term EE does not have such strong roots in our country (Jančaříková, 2022).

EE as a term first appeared at the International Union of Conservationists (IUCN) conference in the 1940s (Činčera, 2007). EE can be seen as an effort that is aimed at strengthening people's responsibility for the state of nature and the environment, promoting creativity and sensitivity to nature, shaping values that support the frugal and spiritual aspects of life, and finding ways to address environmental issues. Today, EE focuses on these three areas:

1) EE - includes factual and experiential dimensions

2) EE - leads to an awareness of the aesthetics of the natural environment

3) EE - includes the aesthetic dimension and education about responsible behavior towards nature (Činčera, 2007).

1.1.2 Environmental education in the Czech Republic

EE on the territory of the Czech Republic contains the features of a so-called good school. This means that it has tradition, teachers, mentors, contacts abroad, history and a future. The earliest environmental activities were introduced into schools from out-of-school settings. From the 1960s to the 1970s, conservation education emerged, building on the tradition of the Scouts and Foglar circles. However, EE at this time tended to focus on older primary school children, grammar schools and secondary schools. Kindergartens were neglected. However, two prominent figures changed the view of EE for preschoolers. They were Emilie Strejčková and Květoslava Burešová (Jančaříková, 2022).

1.2 Reasons for environmental education

EEs include in their curricula those who can acknowledge the presence of environmental problems but also hope that it makes sense to do something about it (Jančaříková, 2019). Preschool children tend to have a great sense of empathy. They are open to whatever we teach them. Currently, they have not yet formed their values and don't know what is more important and what is less important. They can easily get excited about things and are quite receptive, sensitive, and easily get into things that excite them. With their excitement for the thing, they often infect other children or adults around them. It is the preschool age that is determinant to forming a strong relationship with the nature we are part of. As children grow older, they may then adopt the bad habits of society, and it is therefore important that EE is

applied in pre-schools by imparting basic attitudes, values, and goals towards nature conservation. According to Emilie Strejčková, this is the age when the so-called imprinting occurs. The preschool child is characterized by intuitive behavior, whereby he or she perceives nature as a living object and gives it human characteristics (Leblová, 2016).

If we want to build a strong love of nature and create a strong bond with the natural environment in a child, we need to provide space for them to establish a strong bond with nature. Give the child enough time to create experiences in different natural environments (in the woods, by the pond, in the meadow, in the field, etc.). It is almost impossible for a child to form a loving relationship through definitions and lessons about nature that are taught in an educational setting, but it is about real experiences. When EE is included in the kindergarten curriculum, the child acquires basic attitudes, values and goals that will manifest themselves in the child's mindset throughout life (Leblová, 2016).

According to Jean Piaget, the preschool child is in a period of egocentrism. The child is in a state of now and here. Therefore, it is good to start from the present and convey to children knowledge and experiences that connect all the senses and motivate them to be truly receptive. Instead of virtual information about nature, encourage children to have real experiences directly in the fresh air. In nature, it is then important to provide ample time for discovery, experimentation and effective rotation of activities according to what children are interested in (Jančaříková, 2019).

1.2.1 Environmental education in the city

Every kindergarten is different and differs in many ways, such as the material facilities or the space on which it is located. Unfortunately, many pre-schools are in the very centers of cities, where the natural environment is not as well represented as, for instance, on the urban fringes or in villages. These institutions therefore run into the problem of teachers not being able to take the children for walks in the forest. There is nothing we can do about this problem, but EE offers various other methods and means that we can mediate to suit the conditions of kindergartens. Just the basics such as sorting waste, not wasting food, resources and materials gives children a basis to emulate. If the kindergarten offers the opportunity to participate in activities such as caring for plants (planting, transplanting, watering services)

or animals (turtles, fish, snails, etc.) it is like stepping up a rung of the scale in the ladder of conveying environmental education to the very young (Leblová, 2016).

If the kindergarten has a garden, it can set up a composting area. In the Czech Republic, it is possible to join the "Živá zahrada" (Living Garden) annual competition organized by Czech Union of Nature Conservationists (Český svaz ochránců přírody), which has been running for 22 years. The aim of the project is to create a better environment and prevent the loss of animals living near people, such as lizards, frogs and butterflies. Kindergarteners can join the competition and observe the life in the garden on the prescribed dates (Stýblo, n.d.).

Situations arise in the nursery where children bring topics from outside into the nursery environment and demand answers. The teacher can then respond to these topics and, if the children express interest, can prepare a variety of activities and activities to deepen their knowledge. For instance, if a child has brought an object from the natural environment into the nursery, the teacher should respond appropriately and use the situation to deepen the information (Leblová, 2016).

Referring to gardens, there are many ways in which they can be adapted into a form that motivates children to explore and experiment. For instance, trees can be gently modified to allow children to crawl through them, jump over them, sneak under them, and so on. This then motivates children to be naturally active and move around (Leblová, 2016).

Regular walks will help children to orient themselves in the surroundings and thus create a relationship with the place. For instance, they can find out where the recycling bins are, where the park is and what kind of wildlife lives there. If there is no forest in the area, it is sufficient to explore the different trees that grow in the place and how they change during the seasons. Many wild animals are also found in the gardens of city kindergartens or parks after the rain (Leblová, 2016).

As we walk, we can use opportunities to collect waste materials and natural resources for art making or other activities. The more abstract the natural materials the more children's

imaginations are engaged. For instance, we can collect sticks, fallen pinecones, leaves, stones, etc. From the collected natural materials, we can create pictures, collages and children spontaneously explore the natural materials, observe their size, color, shape, sort them, compare them. The use of natural materials is infinite, in addition to creating works of art, they can be used for various experiments, for instance, when we find out with children what floats and what does not. Sticks, large leaves or chestnuts can be used in exercises and if we collect chestnuts or acorns, we can give them together to hunters to feed the game in the winter months. This encourages the children in their attitudes and behavior towards nature (Leblová, 2016). Ecology allows us to give things a "second wind". In kindergartens we can use things like plastic bottle caps to make various products (musical instruments, exercise cones, etc. (Leblová, 2016).

1.2.2 Building young children's relationship with nature

Children encounter nature to a greater or lesser extent from early childhood. The youngest children, for instance, are attracted to the fluttering of leaves, which can have a calming and pleasant effect on the child. Older children often look for flowers or flying insects. It is essential and crucial for the development and deepening of a child's relationship with nature that adults provide sufficient time for the child to spend in different natural environments such as the forest, meadow, pond, etc., and to observe and experiment, for instance with pebbles or mud (Těthalová, 2010).

Unfortunately, however, today's children have more limited opportunities for contact with nature. Richard Louv, in his book *Last Child in the Woods,* describes this as "nature-deficit disorder" and points out the consequences this can have on a child's development. As families are transformed, lifestyles are also changing, with today's youth spending more time in their rooms than outdoors, family meals becoming more of a rarity and healthy lifestyles taking a back seat. In recent years, several publications have been published demonstrating the benefits of contact with nature (Natural Learning Initiative, 2012).

It happens that a child who is not used to playing and spending time outdoors may be annoyed and cranky at first, especially if they have been used to someone constantly making up the agenda for them, but most of them end up enjoying playing outdoors. Nature is a diverse space and offers many activities and pastimes to keep you entertained, from

observing a variety of animals and plants to exploring. It provides materials to build various structures, such as gnome houses. According to Jančaříková, the ideal natural space for children is a garden that is a little wild. It should be diverse with nooks and crannies. A diverse garden gives children space for all sorts of activities that they can do in groups but also allows for independent exploration and discovery. The advantage of the garden is that it is fenced, so the child has nowhere to get lost, does not run away and is in virtually no danger, which makes it an ideal space (Těthalová, 2010).

Some scholarly articles talk about the so-called Naturalization of Outdoor Learning Environments, which can be explained as an effort to return trees, shrubs, perennials, vines and other natural elements to school gardens for the healthy development of children. The introduction of these natural elements helps to partially offset the current often unhealthy way of life (Natural Learning Initiative, 2012).

There is speculation as to whether we all have the same innate need to connect with nature, but one thing is certain, if a child is interested in nature, they will always find a way to connect with it. If a child is not interested in nature, they probably did not grow up interacting with it, or it's just not their natural need. It is imperative that adults provide the child with at least occasional contact. Therefore, preschools should afford regular and meaningful contact with nature (Těthalová, 2010).

Some preschools that are in large cities or perhaps do not have their own garden may face complications in providing opportunities to spend time in nature. However, there are options such as growing fruits and vegetables in planters, planting plants, etc. (Těthalová, 2010).

According to Jančaříková, it is important for teachers to encourage children to experience nature through all their senses. Nowadays, many children are used to being driven around in cars and it is not uncommon for them to have problems walking. This then makes any outings with the nursery difficult, and it happens that teachers then avoid trips into the countryside. Ecology and EE should not be seen as something extra but should be a normal part of the daily programme. If teachers do ecological activities separately, it does not have the right effect, and they need to be integrated into the regular activities (Těthalová, 2010).

To help form a positive relationship between children and nature, appropriate clothing should also be thought of (Těthalová, 2010). A good choice is to have several thinner layers

for the child, which allows for better adaptation to changing weather, dips and increases in temperature. The child should also have waterproof clothing for rainy weather. The correct size of clothing and footwear is also essential. It happens that younger siblings inherit clothes from their elders, which can be considered eco-friendly, but we should wait until the children have outgrown their clothes. Teachers encounter parents buying bigger shoes to last longer, only to have the child lose them when walking or playing in the mud. It is essential to educate parents on what a child should wear in kindergarten. Spare clothes are essential to have in the nursery. It is a good idea to discuss the topic of proper clothing and footwear with parents at the beginning of the school year and inform them on bulletin boards or websites if necessary (Leblová, 2016).

It is essential for building a strong and deep relationship with nature that children have a positive role model to influence them. That is, in the case of the kindergarten, a teacher who takes an active interest in nature, responds positively to children's science findings, enjoys listening to them, talking to them about their discoveries, and so on. But according to Jančaříková, it is more up to the parents to guide them to explore nature. Today's parents, however, prefer activities from which they can see the "result". For instance, ballet, from early childhood they send them to learn a second language, which can be considered as a trend nowadays (Těthalová, 2010).

1.3 Pedagogical principles in environmental education

There are certain assumptions for a teacher promoting environmental awareness in children that should be followed. Of course, the principles mentioned below do not only apply to EE. The first important principle is to know and respect the learning needs of children of a given age. Know the age group of the children, adapt the time and length of activities, motivate appropriately, rotate activities regularly, express yourself clearly and understandably. Another principle the teacher should follow is that every individual is different and therefore we should respect and accommodate all children. By adapting the educational approach, the teaching style, the assignment policy to the range of children we have in the classroom, we can achieve this. The teacher should also be willing to set aside space to answer children's questions (Jančaříková, 2022).

As far as the principles that are more linked to environmental education are concerned, it is important that the teacher expresses himself correctly. For instance, if he or she does not know or has forgotten the name of a bird, it is much better to say that he or she does not know the name of the species and offer to find out together. If we tell children the wrong name, there is a risk that they will remember it and use the wrong name (Jančaříková, 2022).

A child is naturally inquisitive and interested in the world around them. It is the role of teachers to encourage and develop this curiosity through appropriate practices. Although some children may be interested in things that we ourselves are not so interested in, or even avoid, such as fear of spiders in EE, we should still reward children for their interest and show joy in their interest (Jančaříková, 2022).

It is important for preschool children to explore the world and discover things around them. Therefore, it is essential to give them enough time to explore and experiment, preferably with all senses connected (Jančaříková, 2022). It is appropriate to incorporate experiential learning into the curriculum. Children should not be passive listeners but need direct experience of the natural environment and active involvement in hands-on activities (Ozturk, 2021). It is advised to include field learning, multi-day stays, ecological projects, external ecologically oriented learning programmes organized by ecological centers, zoos etc. (MŠMT, 2008).

For successful environmental education and learning, it is essential that all activities and activities build on each other naturally. Regularity and repetition is also important, with activities and activities being repeated regularly within daily, monthly and yearly cycles. For instance, in the spring we can organize activities such as welcoming spring or celebrating Earth Day on a regular basis. Educators should be aware of when to organize different activities so as not to burden nature. To illustrate, Jančaříková states that if we want to go downhill, we should only do it when it does not bother nature, ideally in summer or winter. In spring, this activity is not suitable because it could damage young plants and growing vegetation. Programmes that are carried out indoors have the advantage of not being dependent on the weather and the season. We can therefore organize activities without restrictions. These advantages are then often reflected in the decision whether to spend time indoors or outdoors. For children, however, being outdoors and in the fresh air is essential (Jančaříková, 2022).

Another principle is the promotion and development of children's imagination. The objects that develop the imagination most are, for instance, tree trunks, as they can remind children of a pet house, a boat or a bridge. Modern toys, such as a dragon figure, will still be seen as a dragon, but less concrete things that can be found in nature, such as the aforementioned tree trunk, develop children's imagination more because they can see more meaning in these things. This is something to keep in mind when setting up a garden in the nursery. It is advisable to include elements that can be used widely rather than specific play elements that are only designed for certain activities (Jančaříková, 2022).

EE promotes interpersonal reciprocity and cooperation between individuals, but if we look at our society, we see that many things are based on competition, with either individuals or groups competing with each other. However, competition and rivalry can have a negative effect on people (children) and cause significant problems. Frequent competition can disrupt friendly relationships between children, contribute to a negative classroom climate and cause problems related to over- or under-confidence. Competition can certainly cause poor physical development, as in order to compete an individual must complete tasks as quickly as possible at the expense of correct execution, which can have health consequences. In fact, teachers are often unaware of the negatives of competitions, yet they use them extensively in their programmes. However, activities that are based on competition can be designed to prevent inequalities as far as possible in advance. What a teacher can do, then, is to create equally strong teams of players or also to create a wider range of tasks that allow everyone's talents to be exercised. But many educators today believe that a much better way is to recognize the unique value of each child (Jančaříková, 2022).

As already mentioned, children need to be appropriately motivated and encouraged to awaken their interest in things, their own activity and curiosity. It is essential that we enrich theoretical information with opportunities to touch, try, experience and discuss things. So, we work on the principle of demonstration (Jančaříková, 2022). By choosing the right methods and forms of education, we are able to activate and interest the children (MŠMT, 2008).

Exploring with all the senses has already been mentioned several times. In environmental education for preschool children, we can apply a variety of activities on this basis. We can use tactile boxes in which we place an object, and the child has the task of finding out by

touch what object is hidden in the box. For the development of taste, we can use a tasting activity or for the development of smell we can create an odor box. The teacher should also ensure that the children's senses develop properly and teach them about the effects of certain behaviors, such as listening to loud music (Jančaříková, 2022).

It is also advised to lead children to think critically. If we are trying to teach this to children, it is essential that we accept and allow the individual to make decisions for himself and to take account of his decisions. In terms of EE, we develop critical thinking in the sense that, for instance, every plant needs different care - some need to be watered every day and others, such as cacti, do not. Some plants need to be outside, and others would freeze outside (Jančaříková, 2022).

Cooperation with university staff, especially from faculties that train future teachers, with representatives of ministries, EVVO coordinators and others is highly recommended. Likewise, cooperation with parents is also important in the implementation of environmental education (MŠMT, 2008).

1.4 Objectives of environmental education

Generally, the objective of EVVO is to develop in children the essential skills and knowledge needed to behave in an environmentally friendly manner. This means that the child learns the basics of respecting nature in all areas of life (Broukalová & Novák, 2012).

The first international conference on EE was held in 1975. Here also the following objectives were formulated:

1. To strengthen awareness and understanding of the interconnectedness of economic, social and environmental aspects in the environment.
2. To enable each individual to acquire knowledge, values, attitudes, responsibilities and skills that lead to the protection and improvement of the environment.
3. To develop patterns of behavior that will lead to a more environmentally friendly approach to the environment.

It is often written in the literature that the fundamental goal of EE is environmental literacy or also called ecological literacy or eco-literacy. This includes:

Knowledge of the environment in which we live and the interrelationship between human society and the environment:

- Knowing how to deal with potential environmental problems
- Demonstrate emotional dispositions in relation to the environment
- Demonstrate the necessary behavior to care and look after the environment responsibly

Most experts agree on responsible behavior as a key goal of EE. Environmental behaviors can be categorized, namely ecomanagement, instances of which include waste sorting conscious use of electricity or planting trees. Furthermore, consumer behavior, in which we can include the preference for buying eco-friendly products, and conversely also the rejection of a specific type of products. Another category is persuasion, which involves trying to convince a group of people about environmental issues, for instance through written publications, articles, etc. The category of political and legal action, where processes and tools are used to solve problems. Instances here include writing a letter, criminal complaint and so on (Činčera, 2007).

Other objectives may include the following:

1) Interdependence - This is about understanding the meaning of 'coexistence' and understanding the dimensions of interdependence, for instance at the level of ecological laws, temporal interdependence of society and nature, and so on. They will learn to apply the most important rules of the systems approach.

2) Beauty and enjoyment of the world - It is about seeing the beauty in nature and one's place of residence.

3) Active compassion – Children can become aware of the negative aspects and try to mitigate them through their behavior.

4) Respect for life – It is about mutual respect and understanding that everyone has value and should be treated with respect.

5) Ecological footprint - It is about being aware that we leave what we call an "ecological footprint" through our consumption behavior and trying to reduce it as much as possible.

6) Active citizenship - It is about understanding the democratic tools available to promote sustainable living. It is also about understanding volunteering and so on.

7) Critical Thinking - This is about the ability to think critically about the views of others.

The goal of EE is not only to get people to behave a certain way, but also to get them to do so voluntarily and to know why they should behave differently in a sustainable (pro-environment) way (Jančaříková, 2010).

1.5 Implementation of Environmental Education

Environmental education has a major impact on children's relationship with nature and sustainable living. It aims to build a positive relationship with nature in people, in this case children, to enable them to perceive and experience the beauty of nature, to explain the relationships in nature and how humans influence nature. Through environmental education, we teach children the values, attitudes and competences that are necessary to preserve and improve the natural environment. Nevertheless, when trying to introduce it into the educational process, various obstacles may arise, which may be related, for instance, to the environment in which the kindergarten is located, mistakes in its implementation, teachers' beliefs about its importance, inappropriate choice of materials for implementation, and others (Jančaříková, 2022).

Environment

When working with children, it is essential to think about their safety and therefore to choose environments that are suitable. There may be dangerous plants (snowdrops, ivy, etc.) or fungi in the kindergarten environment. Teachers should be familiar with the kindergarten environment and any plants and fungi unsuitable for children should be monitored and minimized (Jančaříková, 2022).

Children should spend at least one hour a day outdoors while in the preschool. Often, however, the time spent outdoors is curtailed and activities are limited. Preschools still cling

to traditional activities such as sandcastle building and there is a lack of effort on the part of teachers to offer new activities or at least to enrich them (Jančaříková, 2022).

Obviously, environmental education is better implemented in the fresh air than in the classroom. In the context of outdoor education, it is recommended to start lightly and gradually add more. This means that short, lighter activities should be implemented first and repeated regularly. It is important that the children first get used to the fact that there are activities in the fresh air. Only then can we afford to make the time spent outdoors longer and more difficult. Outdoor learning does not require special equipment. Many tools can be made with the children. Combining the outdoor environment with what is worked on in the classroom is good practice. Outdoor learning can also be enriched by involving parents or professionals in the learning process (Daniš, 2018).

A space to explore nature

Children naturally love to discover and explore. Children need to have real experiences; they need to experience play and activities directly in nature. Playing on environmental education topics is not enough and activities need to be experienced directly in the field (Jančaříková, 2022).

However, it happens that they are limited in exploring nature due to adult concerns. They may consider certain activities dangerous and therefore prefer to forbid them to children. They should not run on wet grass because they might slip and fall, they should not reach into the river because the water is cold and they might catch cold, etc. (Jančaříková, 2022). But children need space and opportunities to fully explore nature. Above all, they should enjoy it and feel it. And this is best done through all their senses (Kříž, n.d.). It is right to make sure that nothing happens to the child, but we should not control and restrict them too much (Jančaříková, 2022).

Certain demands are placed on environmental education teachers:

- Believe in the benefits of EE
- Know and apply EE methods reliably
- Carefully select materials and publications for teaching

- Match environmental teaching to the specific group of children
- Proper selection of topics

Cooperation of nursery staff

In addition to the teacher, other staff, such as cooks, cleaners, etc., should be familiar with the programme and mindset of the nursery. All staff should be made aware of how the nursery operates and what values are important to it. If the staff is not united, it can lead to a poor climate in the nursery. All those involved in the running of the nursery must set a good instance for the children and follow agreed rules that are environmentally friendly (Jančaříková, 2022).

The kindergarten should also establish cooperation with other professionals in the implementation of environmental education. These are eco-centers, but partnerships should also be established with parents or the wider family. Some kindergartens have arranged with parents to help with the care of the kindergarten garden or organize joint barbecues (Jančaříková, 2022).

A fairly common problem tends to be numerous classes, i.e. classes with large numbers of children in them. The number of children per teacher is constantly changing. In some kindergartens there are as many as 28 children per teacher. Such a large number can hinder the implementation of activities that are fun and useful for the children and often restricts their freedom of movement around the environment (Jančaříková, 2022).

School education programmes

There is also a problem when the educational document is not tailored to the kindergarten. The whole teaching team should be involved in its development and then follow the agreed implementation. Activities, not only environmental, should be evaluated retrospectively. Tools for evaluation (evaluation or self-evaluation) are provided by the institution's educational programme. If these tools are not provided or are insufficient, the problem of non-evaluation arises. Evaluation is very important. Through it, the teacher receives feedback and can improve from any mistakes (Jančaříková, 2022).

Learning outdoors in nature

Learning outdoors in nature means that we carry out activities (teaching) with children in an outdoor environment, both within the premises of the educational institution and in its immediate surroundings, or as part of a trip or event (Daniš, 2018).

In earlier times, people spent time outdoors on a daily basis. However, everything changes, and what was true before may not be true today, such as just contact with nature (Učíme se venku, n.d.).

Several studies have shown that being outdoors generally has many positive effects on people, both physically and mentally. On the health side, these include:

- lower mortality rates

- strengthening of the immune system

- reduced morbidity

- faster recovery after surgery

- lower likelihood of cardiovascular disease

- lower likelihood of being overweight or obese

Finally, being outdoors has been shown to improve mood, reduce stress and increase overall human satisfaction (Daniš, 2018).

In addition to health benefits, learning outdoors includes other positive impacts. Daniš mentions the following:

1.6 Results of an educational moment

Learning in a natural environment helps children understand nature better. Children have been shown to achieve better educational outcomes in general as a result of learning in the fresh air.

Focus

Not only does being in nature reduce stress levels, but studies show that it also helps children with attention deficit disorder to concentrate better. Even the fact that an educational institution is surrounded by greenery is enough to affect children's ability to concentrate and their performance. Just looking out the window at trees, bushes and other greenery has a positive impact (Daniš, 2018).

Children's interest

Learning outdoors is simply fun for children. But the outdoor environment also encourages children to be more interested in learning new information. Nature can make children feel that learning is meaningful and brings satisfaction (Kříž, n.d.).

Influence on behavior

The fact that being outdoors in nature, in the garden, changes children's behavior for the better may at first seem like a fabrication to some. However, many studies that have investigated this have confirmed that this is indeed the case. Already a study in 1998 found that by taking lessons outdoors in the school surroundings, pupils showed fewer disciplinary problems, were less absent from school, and contributed to stronger and deeper friendships with each other and with teachers compared to traditionally run schools. That is, schools that did not allow learning outside. Some studies even show rapid changes after the introduction of outdoor learning. One, for instance, shows that children were constantly fighting with each other during indoor lessons. After the introduction of outdoor learning in the garden, there were no arguments, and the children were observed for 700 hours.

Although some research has noted that being outdoors can encourage children to run wild and run around, after a few days they are able to calm down and concentrate on their teachers and their work. The fact that this happens is due to their natural need for free play, which may have been prevented for a long time. They therefore see being outdoors as an opportunity. When they are sufficiently fulfilled in their need, they are then able to engage fully with what is asked of them. The teacher in this case must be patient because it is only a matter of time and not giving up. On the contrary, regularly go out with the children during the teaching time, morning circle and wait out this period of theirs (Daniš, 2018).

Skills

If we are sure of anything, it is that being and learning outdoors leads to the development of personal and social skills. However, a prerequisite for this is a quality curriculum and prepared activities. Well-prepared programmes, methods and strategies can lead, for instance, to an increase in children's self-confidence, cooperation, self-discipline, sense of responsibility, competence and social-emotional skills. It can also have an impact on children's language and motor skills. There is also a learning about one's own body, its surroundings and a better understanding of risks (Daniš, 2018).

Success

The benefits of learning outdoors are innumerable, both for children with no problems and those with disadvantages, for instance. Learning outdoors promotes educational achievement for all. In fact, outdoor learning tends to be more visual and offers the use of educational methods that flatter everyone. Outdoor learning has a great advantage for children who are not very good at learning indoors. It allows movement, experience of the here and now, perception with all the senses, etc. (Daniš, 2018).

Perception of the environment

It is probably no secret that by regularly being in the natural environment we can strengthen and deepen children's relationship with nature. However, this depends on the programme we have opted for. Not all programmes that take place outdoors necessarily increase environmental awareness. Positive impacts can clearly be drawn from programmes that involve children being active in improving the school environment or the surrounding area. Thus, it is necessary to think about the quality of the program if we want to raise responsible citizens towards the environment in which we live (Daniš, 2018).

Influence on teachers

It is clear that being outdoors often improves the health of children and teachers. However, beyond health, some studies have found that being outdoors improves mood, motivation and energy. It also has positive effects on personal activity. Teachers have been found to grow in their professional competence and learn from others when teaching outdoors. They

become leaders and their confidence and trust in children and colleagues is enhanced (Kiviranta et al., 2023).

Despite the obvious benefits, outdoor learning has some barriers for teachers. One of these is the fact that conducting outdoor education with children can sometimes be quite challenging, and preparing such lessons tends to be more difficult because it requires specific skills. Despite this, outdoor learning still brings more benefits than obstacles (Daniš, 2018).

For outdoor learning, in many cases the most suitable environment is the school garden. It is therefore advisable that it contains spaces suitable for educational activities, such as experimental areas, workspaces, demonstration habitats, and so on. Many studies have shown a preference for children to play on grassy areas rather than on tarmac and other artificial materials. It is also advisable to focus your attention on natural rather than conventional playgrounds, which have been shown to have more benefits for children (Daniš, 2018). To give an instance, the kindergarten in Chotětov uses a gazebo for outdoor learning. Their garden is designed in the form of traditional brickmaking and inspires children to invent their own games. It may seem that the eventual revitalization of gardens and adapting it to outdoor learning can be a costly affair, but this kindergarten, for instance, can be an illustration that even a small budget is enough to create a garden that children will enjoy and inspire them to play and learn outdoors every day (Land05 et al., 2024).

For the vast majority of history, children were taught outdoors. It was natural. Now we learn that up to 41% of Czech children spend less than an hour a day in the fresh air. Staying indoors clearly prevails (*Proč učit venku,* n.d.).

From this we can conclude that educational institutions in the Czech Republic do not give much weight to nature and educational activities in natural environments as would be desirable. However, this is not so much the case in schools and kindergartens that are actively engaged in environmental education and are part of the Eco-school programme, for instance, where the results are much better. In addition, programmes and services are offered in our territory by EE support organisations such as environmental education centers, zoological and botanical gardens, sports centers and so on. From the findings, almost 92 % of schools attend EE programmes, but these are mostly short-term programmes. It is also a fact that many programmes are conducted under roof. Residential programmes are less trendy.

Several organizations such as "Learning Outdoors" help and promote the idea of outdoor learning and offer support materials, events and much more to get more teachers to spend time with children outdoors (Daniš, 2018).

If we are interested in the situation abroad, even there the state of outdoor learning is not optimal. Not surprisingly, in Scandinavia, outdoor learning is quite widespread.

There is a movement that is referred to as "udeskole", meaning outdoor learning outside of school. The concept most often targets children aged 7-16 (Bentsen, 2013).

Udeskole works by teachers setting aside one day a week, most often all of which is spent outdoors with the children. Usually, this day is spent in a nearby forest, park, farms, galleries, etc. The day then proceeds in the same way as if they were spending it in an educational institution, except that it is outdoors. Thus, they are given opportunities to engage all their senses in learning. So primary school children are taught, for instance, in mathematics to measure the height of trees and so on. There is project-based learning, where different areas of learning are linked. There is a linking of theory and practice (Bentsen, 2013).

In addition, these days are enriched, for instance, by preparing food on the fire, free play and chatting among themselves (Daniš, 2018). To give an illustration, a Danish geography teacher takes photographs of various places in the city with the children, such as parks, the castle, etc., and then they work with the photographs to show each other the local history (Bentsen, 2013).

In Scotland, outdoor learning in nursery, primary and secondary schools is flourishing. Outdoor learning here is supported by the government and embedded in the curriculum. Outdoor learning has become popular here and there are several programmes and organizations that support this style of learning and help its spread (Daniš, 2018).

A 2021 study of a total of 1,004 parents of children aged 0-17 across Scotland asked how often their child plays outside on average found that over half (57 %) of them said their child plays outside every day or most days (*Scottish parents' survey 2021 - children and young people's play: Results* 2022). Older research from 2014 claims that children in Scottish nurseries spend an average of 36 % of their time outdoors and only 30 minutes a day outside (Daniš, 2018).

In the US, so-called environment-based education has been introduced, which aims to use nature, the environment and the society around it to improve education. The SEER organization is one of the biggest promoters of this approach and has also created a programme for schools on how to use the environment around us. It is based on seven strategies, including the importance of collaboration between teachers, dealing with real-life situations, the interaction between individual and cooperative learning, the use of authenticity in assessing the child, and more. The program was also later recognized by the U.S. Education Commission. In California, this approach has been transferred to the environmental curriculum (Daniš, 2018).

1.7 The current form of environmental education in the Czech Republic

The pre-school period is a very important time for the child at this age is acquiring the basics of attitudes, values and relationship to the world around them, including nature. It is here that we need to encourage the child to take an active interest in the environment and give him or her the foundations of environmental literacy (Jančaříková, 2022).

Environmental education in the Czech Republic is the result of cooperation between schools, extracurricular organizations, environmental education centers and public administration. The state and public authorities play an important role, especially financially, in the mediation of environmental education. The Ministry of the Environment has been a major supporter of environmental efforts and has paid attention to environmental education for a long time (Činčera, 2017).

According to former Minister of the Environment Richard Brabec, the Czech nation in general has a rather deep relationship with nature. We are not indifferent to environmental issues, but our personal involvement in its protection could be much more. And that is why the emphasis is on the education of young children, who can be shaped and given a foundation that will make them responsible people and citizens of the state towards nature and the environment (*Nové dotační výzvy míří na environmentální výchovu školáků i vzdělávání pedagogů,* 2018).

In response to the need to develop environmental literacy from early childhood, the "Státní program environmentálního vzdělávání, výchovy a osvěty a environmentálního poradenství na léta 2016 - 2025" (the State Programme for Environmental Education, Education and

Awareness and Environmental Counselling for 2016-2025) was approved on 20 July 2016. This is a key document that promotes EE at all levels of education. It has clearly stated visions, objectives and measures. It is a government-approved programme that addresses a range of topics divided into sections:

- Nature
- Place
- Settlement and Landscape
- Sustainable Consumption
- Climate

In addition to state administration (regions, municipalities, schools), non-profit organizations, environmental education centers, educational and research institutions, botanical gardens, etc. are also involved in its implementation. The program is updated continuously. The program responds to current ecological challenges, such as climate change. It also deals with strengthening contact with nature, because nowadays there is a decrease in space and time for spending time in nature and contact with the real world in general. Preferences are changing and in recent years people have preferred to spend time indoors, for instance at home, rather than outdoors in the fresh air. Therefore, this program also strives to support teaching in a natural environment and therefore creates tasks, suitable conditions and recommendations that will allow teachers to safely implement teaching outdoors with the whole class. Last but not least, it is also dedicated to promoting environmentally friendly and local food consumption, and to supporting the construction of eco-centers, natural playgrounds and community gardens, which help strengthen the direct relationship between humans and nature (*Vláda schválila „Státní program environmentálního vzdělávání, výchovy a osvěty a environmentálního poradenství na léta 2016 - 2025“* 2016).

The program and its implementation are monitored and evaluated annually by the Ministry of the Environment. This year (i.e. in 2025) a final evaluation for the entire period is to take place and a draft State Program for the next period is to be created (*Vláda schválila „Státní program environmentálního vzdělávání, výchovy a osvěty a environmentálního poradenství na léta 2016 - 2025“* 2016).

When it comes to ecological centers, they play an important role and are considered key partners of schools. Educational institutions prefer mainly short programs and are based mainly on good experiences and reviews. An important criterion when choosing is also the price and, of course, the distance. Including environmental programs in education certainly has many benefits, but you need to choose the right program for the given group. The most famous are the Eco-School educational programs. They stand out for their quality (Činčera, 2017).

Several studies have been conducted regarding the situation of EE in schools, for instance by the organization "Pavučina, síť středisek ekologické výchovy" (Pavučina, a network of ecological education centers) (Činčera, 2017). This organization was founded in 1996 and deals with environmental education in the Czech Republic. It is the largest network in this category. For instance, the Mrkvička program falls under Pavučina network, which implements programs for kindergartens (Pavučina, n.d.). Research has found that environmental education is often integrated into science subjects in schools. It can be said that it is relatively supported in schools and students often get fresh air as part of their education. Equipment and tools for implementing EE are not a problem. However, there are steps to improve, such as involving children in independent research and solutions. Rather than focusing on the global situation, the priority is to inform them about the local situation. Cooperation with the community is still rather exceptional. It is also necessary to change the approach from a directive to a more partnership approach, which would allow children to be more involved, for instance, in decisions regarding the greening of the school (Činčera, 2017).

It can be said that environmental education in the Czech Republic is relatively well on its way. A large part of the current positive situation is due to the environmental education centers, the distribution of knowledge and well-developed programmes, the growing interest in the subject, some educational institutions and so on. Nevertheless, more innovations and updates are needed, for instance in the form of updating the curriculum to reflect EE more widely and in general better facilities for promoting EE (Činčera, 2017).

2 International Eco-School Programme

2.1 What is an eco-school?

An eco-school, i.e. an ecologically oriented kindergarten, can usually be imagined as a large garden with natural elements such as vegetable and fruit beds, a pond and an indoor space made of natural materials, wooden toys and a menu of organic food. Today, any kindergarten can become an eco-school and no certification is required. In general, however, an organic nursery should meet the following objectives:

1) daily time in nature or in the garden

2) a healthy lifestyle for the children is a priority for the nursery

3) education in the principles of a healthy lifestyle

3) offer incentives directly proportional to the age of the children

4) learning the basics of responsible behavior towards the natural environment

5) reducing the ecological burden of its operation

6) all participants (including parents) contribute to the maintenance of the local environment

7) promoting the sustainable development of the kindergarten community

However, the most important point for an environmentally friendly kindergarten is the daily practice that is shaped by children, teachers and parents (Vošahlíková, 2010).

2.2 The Eco-School Programme

In order to become a certified eco-school, kindergartens can join the international Eco-School programme. This is a programme available to educational institutions - kindergartens, primary and secondary schools. It was established in the 1990s in Denmark with the aim of making children and young people aware of the environment and more involved in its protection. After some time, the programme began to spread to neighboring countries and then around the world. The programme has been running in the Czech

Republic since 2005. Currently, 93 countries and more than 16 million children and 1 million teachers are involved in the programme. In the Czech Republic, 410 kindergartens and schools are involved in the programme, and it is facilitated by the TEREZA education center (Ekoškola, n.d.). The Eco-School programme is the largest education programme in the world that focuses on environmentally friendly behavior and teaches children and teachers how they can be more environmentally friendly and improve the environment. It motivates participants to take an active interest in the world around us and help make it a beautiful place to live, i.e. to become active protectors of it (*Jsem Učitel*, n.d.).

The Eco-School programme has been running in the Czech Republic since 2005. Its aim is to help create a pleasant and democratic environment close to nature. In EcoSchool, teachers and parents become partners with the children. As a program, EcoSchool works with a methodology of seven steps and four themes that every kindergarten that wants to participate in the program must meet. These steps are as follows:

1) Creating an Eco-Team - Each applicant must create an Eco-Team consisting of children and adults, and this team must demonstrate that its members can communicate and work together.
2) Explore the strengths and weaknesses of the kindergarten - The kindergarten will analyze its status in the selected topics, i.e. compile a list of positives and negatives. The kindergarten staff, parents and children will be involved in the analysis.
3) Drawing up a plan and sub-goals - Based on the analysis, the kindergarten will choose what it would like to change. It determines how, with whom and by when it would like to make the changes and implements them.
4) Monitoring and evaluating changes - The kindergarten reflects on the changes made. If it finds any shortcomings, it is its task to correct them.
5) EE in the curriculum - In this step, environmental topics need to be planned and incorporated into the kindergarten curriculum. It is important to familiarize the children with the chosen topics.
6) Collaboration and awareness - It is important that a kindergarten applying for the Eco-School title makes it clear to the public what it is doing and what it is trying to

achieve. For instance, it must also provide information about the EcoSchool programme, including.

7) Establishing rules and common values - It is necessary for the pre-school to think about what their values are, what they stand for and draw up a so-called Eco-Code. According to it, they then need to behave and set an appropriate example for the children.

The topics covered in the methodology are:

- School environment
- Water
- Waste
- Food

(Sůrová et al., 2015)

Children involved in the Eco-School programme acquire and enhance their skills to solve situations and problems. The program gives children a sense of importance as a person. Because of the kindergarten's involvement in the program, the vast majority of children are able to behave responsibly towards nature and the environment. The children also believe in themselves and the choices they make. They believe that they can participate in change (Ekoškola, n.d.).

2.2.1 Becoming an Eco-School

Eco-School certification has its own symbol, which is the green flag. To obtain this certification, an educational institution must do the following:

1) Complete all 7 steps of the program
2) Write an electronic application with the necessary attachments, which the school sends to the program coordinator.
3) Kindergarten must undergo an assessment visit where the kindergarten is introduced to the organization's team.

If the kindergarten has completed all the steps, it can then obtain the Eco-School certification. The ceremony usually takes place at the end of the school year and is usually attended by government representatives and other important guests (Sůrová et al., 2015).

2.3 Eco-Schools programme in the Czech Republic

As mentioned above, Eco-Schools started to take shape in the Czech Republic after 2005, mainly due to the TEREZA organization. The team of this educational center creates educational materials for children, organizes seminars and provides personal consultations (Sůrová et al., 2015). It involves around 400 Czech school establishments. As far as kindergartens are concerned, the following kindergartens in Prague, for instance, have been certified as Eco-Schools:

- Ekoškolka Rozárka

- MŠ Dubeč

- MŠ Na Děkance

- Ekoškolka Vidoule

- MŠ Sluníčko

- MŠ Hvězdička

(*Jsem Učitel*, n.d.).

2.3.1 TEREZA Educational Centre

The Tereza organization is an educational center that began to take shape in the 1980 s. The organization creates educational programs and materials for school institutions in the Czech Republic. Tereza was established to promote the environment and guide children and pupils to behave responsibly towards nature. Among the educational programmes that the educational center facilitates are the Ekoškola programme or, for instance, “Badatelé” and “Učíme se venku programmes”. The Centre is guided by the following five values:

1) Initiative

2) Integrity

3) Openness

4) Respect

5) Cooperation

In general, the aim of ecologically oriented kindergartens is the development of basic competences of each child, thanks to which the environment is maintained and improved, i.e. sustainability. Eco-kindergartens fulfil this goal by being out in nature every day and by introducing ecology-focused activities into their curriculum (*Co děláme,* 2025).

2.3.2 Mrkvička

Mrkvička (Little Guide to Quality Environmental Education for Kindergartens) is a programme implemented since 2007 by Pavučina under the auspices of the Ministry of Education. It is a nationwide programme and currently involves almost 950 kindergartens from all over the country. The programme supports kindergartens with information and offers a methodology and the possibility of transferring experience between participating schools in the field of EVVO. It offers a regular supply of materials produced by Mrkvička that focus on a specific topic in each area. Although the programme focuses primarily on kindergartens, membership is also open to other school settings, namely primary school years 1 and 2, kindergarten clubs and centers (*Co děláme,* 2025).

2.4 Environment as a third teacher

The importance of the environment

There is no doubt that the environment, both external and internal, strongly influences the process of education and learning. The Reggio Emilia educational approach considers the environment as a third teacher. This approach originated in the post-war period in the northern Italian city of the same name. The Italian educator Loris Malaguzzi is considered to be the founder, who recognizes three teachers:

1) the parent or family in general

2) educators
3) the environment

The teachers of the Reggio Emilia approach found that the child should learn in an environment in which he or she feels comfortable and at ease. On the other hand, it must also contain enough stimuli to develop natural curiosity (Jančaříková, 2019).

2.4.1 The kindergarten environment

The environment has a key influence on how children go through the learning process. If the space is properly designed, it supports and motivates children to learn (O'Brien, 2023). However, unpleasant and dirty environments such as unmaintained areas of the city also affect children. However, children who grow up in natural environments show a deeper interest in and respect for nature. They also tend to be happier and more content (Jančaříková, 2022).

2.4.2 Indoor environment

The choice of an appropriate environment is crucial for EE, as children spend time in it and this influences their relationship with nature, values and ecological habits. It is necessary to create a dynamic environment that is regularly changed based on the needs and wishes of the children. Aesthetics and taste should also be considered. Clear spaces, bright rooms, careful selection of furniture and other materials that fit the rooms. If the environment is to teach, it needs to be tastefully arranged and encourage children to learn (O'Brien, 2023).

In terms of interior design, the kindergarten should choose natural elements and materials such as wood or straw. The toys used should be mostly toys that are not decorated, modified in any way. Wooden toys and felt toys. The nursery ideally does not own any "artificial" toys that can be replaced with natural versions. Furniture should be wooden. Ideally from local producers (Vošahlíková, 2010). Each classroom should be equipped with bins for sorted waste, preferably for paper, plastic and bio-waste. In the classrooms and corridors, thoughtfully selected plants are grown for the children to take care of. It is also possible to keep animals that are suitable for the particular kindergarten environment. Aids that should be provided in the classrooms include:

- Magnifying glasses for observation
- Scales and weights
- Tools for measuring (e.g. tape measure)
- Tools for comparing and measuring (e.g. measuring cups)
- Natural materials (e.g., cereals, legumes, pinecones, dry plants, bark, bark, rocks, shells) (Jančaříková & Kapuciánová, 2012)
- Atlases and picture encyclopaedias (Jančaříková, 2022)

As for the decoration of classrooms and, where appropriate, corridors, there can be bulletin boards on the walls with children's artwork or other material related to EE. It is also important to renew them. It is also possible to use natural materials and use them as decoration, for instance, on windowsills (Jančaříková, 2022).

2.4.3 External environment

Equally important is the selection of the optimal external environment. For pre-school children, the kindergarten school garden is a suitable outdoor environment. It is important what kind of garden the preschool institution has (Jančaříková & Kapuciánová, 2012). The garden should be carefully designed and landscaped to provide a variety of play opportunities while fostering a relationship with nature (Hederer, 1994).

An appropriate garden should also encourage activity and discovery. Some elements are more interesting to the child than others. For instance, children appreciate simple play elements that stimulate their imagination and allow for different variations of play more than elaborate imitations that have a fixed meaning. The garden should have a variety of hidden corners, varied environments and different play elements. It should be varied and offer children more challenging terrain, such as sloping terrain that allows them to move up and down hills, rather than carefully maintained lawns and paved terrain. It is advisable to have trees to climb or logs to crawl on (Jančaříková & Kapuciánová, 2012).

The garden should be covered with grass, but there should also be other natural materials such as pebbles, grass or bark (Vošahlíková, 2010). It is advisable to introduce children to all the elements (air, fire, soil and water). They can be introduced to air, for instance, by

installing a wind chime, which will play more if the wind is stronger. It is useful to have a fire pit in the garden to introduce children to another element. It is also advisable for the garden to provide different types of soil, including a "mud pit" or "rock pit" (Jančaříková & Kapuciánová, 2012). Children should have access to water. Ideally, the garden should have a pond, stream or other water source (Vošahlíková, 2010).

It is also advisable to have beds with vegetables or flowers for the children to take care of. Ideally, this is a permaculture garden. As far as outdoor play elements are concerned, there should be climbing frames and benches made of natural materials. But ideally there are natural elements in the garden, such as tree trunks and boulders (Vošahlíková, 2010).

The nursery should regularly visit local animal breeders or preferably has its own animals. Animals such as snails, butterflies, a cat or bees are suitable for a nursery. The kindergarten should also care for wild animals and build shelters for them, such as birdhouses and the like. The garden should also contain compost, which should be placed in a corner of the garden (Jančaříková & Kapuciánová, 2012).

2.4.4 Natural Garden

The standard of school gardens plays a crucial role but is often overlooked. Yet children spend time in them almost every day. If a kindergarten is interested, it can seek to achieve certifications that confirm the environmental friendliness of the gardens. One of the institutes that grant certification is the Veronica Ecological Institute, which offers a "Natural Garden" certificate. There are currently around 560 gardens in the country that hold this certificate. There are certain criteria that must be achieved in order to receive it. These include:

- not using artificial fertilizers
- no pesticides, herbicides or chemical sprays
- the presence of a flowery meadow
- the presence of a wild corner
- the presence of deciduous trees and native conifers
- presence of compost
- cultivation of vegetables and herbs

- the presence of a fruit garden

By obtaining the certificate, the nursery confirms that it acts in accordance with nature (Ledvina, n.d.).

2.5 Good practice example

With the agreement of the headmistress, we can cite as an illustration of good practice the garden of the kindergarten Semínko, located in the Czech Republic in the capital city of Prague. It is a kindergarten that prides itself on ecological and sustainable education, respect for nature and a respectful approach to children. It holds the Natural Garden certificate from the aforementioned institution. In the garden there are trees such as pine trees, hazel currants, dale shrubs such as blackberries and fruit trees such as apple trees. The children, together with their teachers, harvest their fruits in season and then process them, for instance, into cakes or to make their own ciders. The garden also has raised beds, which the children tend and grow vegetables from seed. This gives the children the opportunity to observe the growth process from seed to harvest with their own eyes. There is also a variety of herbs in the garden. Compost and animal houses are included. The kindergarten prides itself on cooperation with the parents and, as part of this cooperation, parents participate in the garden work a few times a year. The garden has been designed to provide plenty of space for play, encouraging discovery and experimentation. There is also a mud pit and water features, which are said to be among the children's favorite features of the garden. The kindergarten uses both wind and solar energy, with a solar panel on the roof of the building. The larger garden space is occupied by a shed, which resembles a hayloft, where outdoor learning can take place. The kindergarten has the advantage of being in the immediate vicinity of the farm. Therefore, it is not uncommon for the children and their teachers to go on excursions around the farm where they can observe various domestic animals such as sheep, rabbits and goats. In addition, it is possible to walk to a nearby orchard, meadow, forest or wetland (*Zahrada a badatelna,* 2019).

The kindergarten also includes a "study room," which, in addition to suitable literature for children, contains various tools (e.g. magnifying glasses, binoculars, animal-friendly trapping tools) that support children in their exploration. The nursery prides itself on time spent outdoors in all weathers (*Zahrada a badatelna,* 2019).

2.6 Ecological running of the kindergarten

To implement environmental education, it is essential to establish measures that reduce the environmental burden. Environmentally friendly approaches such as waste segregation, conservation of resources such as water and electricity, and the use of eco-friendly detergents are the minimum that any nursery with an environmental programme should aim for. Other steps can include purchasing energy efficient appliances, using renewable energy sources, composting, and insulating the building (Vošahlíková, 2010). Electricity generation has a major impact on the environment. Therefore, alternatives such as solar, wind or hydroelectric energy sources are suitable. As far as water consumption is concerned, it is important to keep an eye on water consumption. Optimally, the temperature should not exceed 45 degrees Celsius. A solar system can be used to heat the water. It is advisable to purchase appliances for the kindergarten that are more powerful and therefore have lower consumption. Appliances should be disconnected from the mains after use. Talking about eco-friendly lighting, it is necessary to save by always switching off the lights after leaving the premises or not switching them on at all if not needed. It is advisable to get time switches and install them in areas such as corridors or toilets. It is also necessary to think about the correct shade of light of the bulbs (white/yellow) in different rooms (Janíčková, 2019).

As far as water management is concerned, the Semínko kindergarten uses lever taps instead of conventional taps, which reduces the time needed to adjust the water temperature. Rainwater is also used, which is then used to water the vegetation in the garden. The nursery has purchased windows with good quality seals and ensures that ventilation is short and efficient. It focuses on eco-friendly lighting and appliances. It also focuses on waste segregation and waste minimization, for instance preferring larger product packages over small ones or avoiding plastic bottles and the like. The nursery uses only recycled paper, which is used to its maximum. Cleaning is carried out in an environmentally friendly way using environmentally friendly cleaning products. The kindergarten takes care to give preference to local producers over foreign ones. It uses an alternative source of energy, solar energy, where their solar panel contributes to heating a certain percentage of the water used (*Ekoprovoz,* 2019).

It should be mentioned that each eco-nursery is unique and operates according to its own capabilities, be it financial, social or space for instance. Each eco-school works to improve

the environment in a different way. For instance, one preschool can sort waste, while another can afford to install solar panels with funding. All kindergartens need to have short- and long-term plans to implement environmental changes without the implementation of the eco-school missing the point. As funding is an important criterion for the inclusion of environmental elements in the functioning of kindergartens, it is important that kindergartens can apply for funding to help them implement their plans (Vošahlíková, 2010).

2.7 Web of Science articles

The focus of this section is on articles from the Web of Science database According to the Moravská zemská knihovna (2021), the Web of Science (WoS) is a product of Clarivate Analytics and is now presented as part of the Web of Kn WoS is a gateway to a wide range of information It is the world's foremost information resource in research and development, a collection of high-quality databases with information on articles, authors, content and references. It contains bibliographic records including abstracts, citations, citation and editorial data. authors from around the world, as well as links to full text In this part, the thesis deals with two themes:

1. The impact of existing and constructed environmental environments
2. Comparing approaches to EE in different types of kindergartens

2.7.1 The impact of existing and built environmental environments on environmental education in kindergartens

In the field of EE in kindergartens, a distinction is made between natural and built environments, which refers to the specific places and conditions in which children learn about nature and the environment (*UNEP Strategy for Environmental Education and Training*, n.d.).

Article 1 **Sustainable Environment Education in Pre-School Pupils**

This study originated in Northern Cyprus and aimed to find out how aware pre-school children are about environmental sustainability. The study was conducted among 134 children aged 5 years attending a private kindergarten in the city of Nicosia (Ozburak et al., 2018).

Today's children are getting further and further away from being in nature. The study mentions the importance of early guidance to love nature, to protect nature, so that children learn to respect the environment in which they live, to have a basic knowledge of natural phenomena. The study also talks about the benefits of children being in nature and the importance of the role of the teacher, which have been mentioned in previous articles (Ozburak et al., 2018).

This research looked at preschool children's awareness of how kindergartens are designed, constructed and managed with ecology and sustainability in mind and looked at children's understanding of the link between buildings and the natural environment. It also states that where the pre-school building is located is crucial (Ozburak et al., 2018).

Target group and solution method

The research took place in 2018 in the city of Nicosia, Northern Cyprus. The target group consisted of a total of 134 children aged 5 years from eight different classes. The research method used was an interview which relied on both open and closed questions. The interviews were conducted directly with the children on a face-to-face basis. A total of 17 questions were asked. The responses were evaluated based on 4 criteria according to the LEED Green Building Certificate System as follows:

- Sustainable sites

- Water Efficiency

- Energy Efficient

- Evaluation of Waste Materials

Within the "Sustainable sites" criterion, children were asked a total of 5 questions to determine their awareness. For instance, one of the questions was whether the children had already encountered the term "green roof" (91.80 % had not) or whether they had to choose between two picture options (A and B), which showed in option A natural playground toys and a playground and in option B a playground that does not contribute to sustainability. 43.29 % of them chose option A. Overall, 25.48 % of them showed awareness motion (Ozburak et al., 2018).

The second criterion focused on "Water Efficiency", where the research investigated the level of water awareness among the respondents. A total of 3 questions related to the topic were asked. For instance, it showed that 79, 10 % of the children had never heard of the term "saving water" and did not know what it meant. 23.87 % of the respondents were found to have a good level of awareness about the topic (Ozburak et al., 2018).

The third criterion was "Energy Efficiency", where the level of awareness about energy efficiency was surveyed. Respondents were asked 4 questions for instance if they knew what an air turbine was (71.64 % did not know) or what solar panels were (84.32 % did not know). As a result, 13.80 % of the respondents have awareness about efficient energy use (Ozburak et al., 2018).

The last criterion was "Evaluation of Waste Materials" which found out the awareness of children about waste materials. There were five questions. For instance, in the question on awareness of waste materials, as many as 99.25 % of the children did not mention garbage cans or bins for sorted waste. When asked where the garbage is taken to, only 12.68 % of them replied that to waste factories (Ozburak et al., 2018).

The study found that most of the children (80.78 %) do not understand the link between buildings and the natural environment. The study, like previous research, highlights the inclusion of EE in the curriculum of early childhood education (Ozburak et al., 2018).

Article **2 Nurturing Environmental Stewards through Preschool Physical Design**

This study comes from Malaysia and aims to analyze how Malaysian kindergartens can contribute to the development of environmental awareness among children. As it is well known, the ever-deteriorating environment poses a significant threat to the planet and the very existence of all inhabitants. There is massive deforestation, excessive pollution and irreversible environmental damage that must be countered. Therefore, it is important to raise awareness about environmental care and thereby encourage conservation and recovery efforts for the future. Adults often have ingrained habits that are difficult to change, so it is advisable to start with young children. This research explored ways to optimize the kindergarten environment in Malaysia in a way that respects the environment and promotes EE (Shaari et al., 2016).

Target group and solution method

The study was conducted using the qualitative method of analyzing secondary data, i.e. literature from various fields related to the research problem. The selected literature dates from 1970 to the present (Shaari et al., 2016).

The research focused on 3 areas:

- Impact of natural environment on children development

- EE for children

- Preschool physical design: enabling environmental education

Impact of natural environment on children development

After analyzing the selected publications, it can be said that the natural environment positively influences children's development, not threatens it. Children want to form a deep relationship with nature, which they see as a place for play and physical activity. Frequent and regular play in the natural environment has been found to stimulate all aspects of child development more readily than the indoor environment. This demonstrates the need to incorporate natural elements into the design of preschool environments. While the indoor environment may seem safer and more orderly for children, it lacks features that offer the critical stimulation they need to learn and experience. Playgrounds that contain materials that can be manipulated (e.g., cardboard boxes, toys, leaves, plants) have been found to allow for the development of creativity and motor skills but also teach children the properties of each element (e.g., the difference between wet and dry sand, how plants respond to environmental changes, etc.). It has been found that natural elements are suitable for all children regardless of age, social background and physical and mental fitness (Shaari et al., 2016).

Environmental education for children

The study talks about the fact that EE should not only be about imparting facts, but mainly about building a relationship with nature. Children's own experiences are needed to create a positive attitude towards the environment.

Preschool physical design: enabling environmental education

To build a strong relationship with nature, we need to encourage:

1. Children's interaction with nature

2. Ensure effective interaction with the natural elements

3. Developing a positive attitude towards the environment

4. Perception of the importance of nature conservation

5. Strengthening the relationship with nature

(Shaari et al., 2016).

Research mentions strategies to bring children closer to nature.

The indoor environment should be welcoming, with plenty of natural light, proper ventilation and warm colors. Spaces should be clean and well organized. This will make the children more efficient and motivated to learn (Shaari et al., 2016).

The outdoor environment should be a natural extension of the classroom. Children need to feel safe here. It is good to choose a combination of natural and artificial elements (e.g. grass, trees, and play elements). This increases children's interest in playing and exploring nature. The age and safety of the children should always be kept in mind (Shaari et al., 2016).

The kindergarten building should contain as many natural elements as possible (e.g. greenery, good orientation of the building, etc.). It is advisable to include gardening activities, to get plants for the classrooms that the children can take care of and to put pictures of plants or animals in the classrooms. In addition, it is advisable to purchase toys and furniture that resemble natural elements in their characteristics and color. The nursery should also have a place where natural objects can be handled (Shaari et al., 2016).

The study recommends that pre-school children should have regular contact with nature and natural elements. Through this approach, children will develop a relationship with the environment. The results of the research can help to organize the next steps that will

contribute to the introduction of new educational strategies. As previous studies have found, preschool education plays a crucial role in building environmental awareness (Shaari et al., 2016).

2.7.2 Comparing approaches to environmental education in different types of kindergartens

These articles deal with what awareness and attitudes children have about the environment. The two studies compare children from two different programs.

Article 1 **Environmental Education on Sustainable Principles in Kindergartens—A Foundation or an Option?**

A recent Croatian study looked at whether there are differences in attitudes and awareness of preschool children from two different programmes - environmental and language - in different areas of sustainable behavior, such as gardening, plants, food, etc. (Poje et al., 2024).

Sustainable development is a concept that is known worldwide. The World Commission on Environment and Development sees it as development that takes care of the needs of the present while thinking of future generations. When we integrate the principles of sustainability into education programs, we help shape future leaders and concerned citizens. Finally, we help to shape children's mindsets to help solve complex issues and the ability to take responsibility. By incorporating the concept of sustainable development into the curriculum from kindergarten onwards, we are helping the next generation to fight for a better and more sustainable future, because children are the "building blocks" of the future world. The study compares pre-school children to sponges, who take in information from their environment and form their initial views of the world. Preschool education has lasting positive impacts on the child. Early childhood is a key age for forming the right values and attitudes, so this age should not be underestimated. They take their experience and knowledge from the pre-school institution with them. There is evidence that some children from high-quality preschools had better cognitive skills, more mature social behavior and were better prepared for school. In addition, quality pre-school preparation is often reflected in educational attainment and career choice. Preschools have great power to contribute to the education of environmentally, socially and economically conscious citizens by incorporating environmentally friendly practices and promoting inclusiveness. Those

programs that incorporate sustainability education, such as guidance on healthy eating, preference for local producers, and healthy physical activities contribute to the development of a "healthy" generation. This has benefits not only for the individual, but also for shaping a responsible future leading to sustainability. Experiencing nature has a positive impact on the cognitive development of the individual. Spending time in nature by pre-school children naturally increases awareness of the environment around us. It is appropriate to foster and deepen their sense of connection with nature. There are many known positive impacts on a child when they grow up in contact with nature, such as the ability to observe, problem-solving skills, concentration, memory training and consolidation, and so on. Ecological, environmental activities and frequent exposure to fresh air in preschools are essential in the emotional development of children. Not only do children show emotional well-being, but there is also a reduction in stress and improvement in mood. Children growing up with nature by their side show a higher likelihood of developing a stronger and deeper relationship with the environment. By fostering their relationship, supplementing it with EE and ecological practices (e.g. recycling and sustainable use of resources) in kindergarten, we create a sense of responsibility in children (Poje et al., 2024).

Target group and solution method

The target group of the study consisted of 58 children aged 4 to 6 years (43.1 % boys and 56.9 % girls) from the kindergarten "Dugo Selo" in the town of Dugo Selo, Croatia, attending either an eco-group called "Bees", or a language group called "Hedgehogs". The children attending the Bees class are used to learning about nature and ecology based on the curriculum of the group. They therefore have a basic understanding of nature, ways of protecting the environment and healthy lifestyles. The class is included in an international eco-school/school project (Poje et al., 2024).

The Hedgehogs class, on the other hand, follows an early English language curriculum. The study was conducted in 2016 using the face-to-face (F2F) method with a printed questionnaire, where the teachers interviewed the children orally. A total of 17 closed-ended multiple choice questions were answered. Children chose one answer each time. The research was based on voluntariness and anonymity (Poje et al., 2024).

Questionnaire survey

The questionnaire contained a total of 17 questions and two topic headings. The first heading consisted of a total of four questions that focused on exploring the values and attitudes of the respondents and the second heading was a knowledge test that contained the remaining 12 questions. The questions were designed to be understandable to all respondents. The knowledge test included correct answers (scored 1 point) and wrong answers (Poje et al., 2024).

Main topics

The questions from the survey could be categorized under several headings:

- Garden and gardening activities
- Plants
- Healthy eating and attitudes to food
- Waste sorting
- Knowledge test

(Poje et al., 2024)

The study set out to find out how different educational programmes influence attitudes and knowledge about different aspects of sustainability in pre-school children. Regarding the Garden and gardening activities heading, the children of the Bees class showed more knowledge regarding gardening, which is understandable. They also showed more knowledge regarding what is grown and harvested in the gardens. However, the response of some children (4 children in total) from the Hedgehogs class who believe that lemonade can be picked from the garden may seem worrying. The children from the Bees class demonstrated their knowledge of fruit and vegetables. For instance, they also knew that some fruits and vegetables are available in the winter months. The vast majority of children from the Hedgehogs class have the availability of fruit and vegetables linked to the summer months (Poje et al., 2024).

Under the Plants heading, children from the Bees class were found to have a multidimensional view of plants. That is, they understand a plant as food, medicine, decoration and so on. Most children in this class demonstrated knowledge of the interactions of different organisms in nature (Poje et al., 2024).

The next heading was the Healthy Eating and Attitudes to Food heading. This section of the questionnaire survey yielded positive results, with children from both classes having acquired the basic attitudes of healthy eating and proper food consumption. Most children believed food that comes from home is healthier than that from supermarkets. There was a difference of opinion about the most important meal of the day. The opinion of the Bees class was that it was breakfast, but in the Hedgehogs class some children were unsure between breakfast and lunch. None of the children considered dinner to be the most important meal of the day. All the children said it was healthier to eat in smaller portions more than once a day. All children were aware of the correct and safe handling of food. Children were also aware of food shortages at a global level (Poje et al., 2024).

Regarding waste segregation, children were aware of its importance and recycling of materials. In the Knowledge Test, there were significant differences between children from the environmental programme (Bees) and children from the language programme (Hedgehogs) (Poje et al., 2024).

Specialized programmes in kindergartens can have many advantages - children learn languages, sports, arts, etc. from an early age. However, these children also need to be provided with a general foundation for optimal and holistic development. This study recommends teaching children the basics of sustainable living and recommends its inclusion in the national curriculum. Teachers play a crucial role in education, and it is their responsibility to decide how to approach this topic. Pre-school education provides children with a foundation which they will use in their further education. What a child learns in pre-school can have major implications for how he or she will perceive the world in the future, which is why the results of the study recommend that sustainable development be included as a core part of the curriculum (Poje et al., 2024).

Article 2 **Investigation of environmental awareness and attitudes of children attending nature centred private kindergartens and public kindergartens**

This study originated in Turkey and aimed to determine the environmental awareness and attitudes of preschool children. The research was conducted among 5- to 6-year-old children attending science private and public kindergartens (Biber et al., 2022).

Similar to the previous study, this research speaks to the importance of promoting environmental awareness in children as early as preschool age. It is crucial at this age to create in them a love of nature and values and attitudes that contribute to a deep interest in it. However, despite the many benefits of spending time outdoors, many children prefer to spend time at home, preferably in front of the television or computer. Many studies have looked at the health benefits of spending time outdoors and examined what problems a lack of it can cause. As we have learned from previous studies, if a child grows up in contact with nature, they are more likely to be able to concentrate, be significantly less stressed and so on. Moreover, among other things, they do not suffer from vitamin D deficiency. By being in nature, the child discovers, learns and positively influences his or her health, but also develops attitudes and values that will make him or her indifferent to the state of the environment in the future. The perception of EE from pre-school age onwards has been steadily improving recently. Children in pre-school institutions have EE as an important part of their education and are used to spending time outdoors in nature on a daily basis. Preschool children thus gain direct experience with nature daily. Early experiences in nature and the development of environmental awareness are particularly important, both for the future development of the child and for the future of our planet (Biber et al., 2022).

Target group and solution method

The research was conducted in the academic year 2020-2021. The target group consisted of 96 children attending an EE kindergarten in Balıkesir province, Turkey (total of 48 children) and children attending a regular kindergarten (total of 48 children) aged 5-6 years. The study was conducted as descriptive research with a screening design (Biber et al., 2022).

Data collection

Two dimensions were used in the research namely:

- Form of personal information

- Scale of environmental awareness and attitudes

Teachers of the children helped with the personal information forms and filled them for them. The environmental awareness and attitude scale was then examined by the researcher for each child separately (Biber et al., 2022).

The Environmental Attitude dimension contained pictures of two situations. The Environmental Awareness dimension contained pictures for each situation. Children were given a green (correct), red (incorrect) and yellow (do not know) card to evaluate what they saw. They scored or did not score points for each answer (Biber et al., 2022).

The survey came as expected. Children attending the science kindergarten scored higher (47.96 total points) than children attending the public kindergarten (36.23 total points). Thus, this means that children attending kindergartens with an environmental program have a deeper knowledge of nature and better attitudes towards the environment. Thus, the inclusion of EE in the education curriculum was found to be meaningful and leads to the development of healthy attitudes of children towards the environment. According to the research findings, this study suggests the inclusion of EE in the curriculum of preschool children similar to previous studies and also appeals to involve families in kindergarten activities (Biber et al., 2022).

3 Research part

Introduction to the issue

Environmental education in kindergartens is a current topic and is increasingly necessary due to the growing awareness of the status of the planet's pollution. It is therefore necessary to foster values and attitudes in children from an early age that will lead to a lifetime of responsible and loving behavior towards nature and the environment in general.

Therefore, the research part focused on the quality of implementation of environmental education in kindergartens. The aim is to determine the current state of environmental education in kindergartens in the Czech Republic and abroad. Based on five sections, the strengths and weaknesses of environmental education in kindergartens were identified. The research in this thesis focuses on kindergarten teachers and its essence is to find out the current status and quality of EE implementation. In order to do so, a self-assessment questionnaire was used, the criteria of which were developed by research methods of doc. PhDr. Kateřina Jančaříková, Ph.D.

3.1 Hypotheses

This thesis is based on two hypotheses:

Hypothesis 1. Ecologically oriented kindergartens implement environmental education more intensively than state kindergartens.

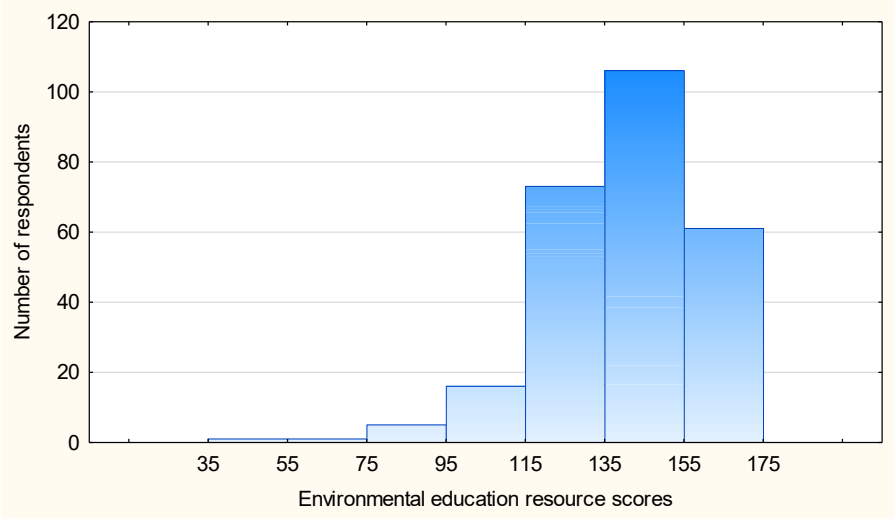
Hypothesis 2. The availability of natural environment around the kindergarten influences the frequency of environmental activities.

3.2 Methodology

The research was combined research. The instrument was a self-assessment questionnaire developed by doc. PhDr. Kateřina Jančaříková, Ph.D., developed in 2010. The data for the questionnaire survey were collected by the author of this thesis in collaboration with doc. PhDr. Kateřina Jančaříková, Ph.D. and Mgr. Magdaléna Kapuciánová. The research results were evaluated by statistical methods in cooperation with a statistician. The degree of implementation of environmental education was determined through sections A, C, D and E

of the self-assessment questionnaire. Section A was devoted to the means of environmental education, section C to the elements of the internal environment of the kindergarten, section D to the elements of the external environment of the kindergarten and section E to the expected outcomes of the EVVO. For each section, a score was created to assess the extent to which environmental education is implemented in that area.

Scores in the environmental education resource area were calculated for each respondent (i.e., each kindergarten) as the sum of the response codes for all items in Area A. The total number of items in this area was 35, and each item was rated on a scale of 1-5, with 1 indicating the lowest possible extent of a given environmental education resource and 5 indicating the highest possible extent of a given environmental education resource. Thus, the total score could range from 35-175, with 35 indicating the lowest possible extent of environmental education resources in each kindergarten and 175 indicating the highest possible extent of environmental education resources in each kindergarten. The distribution of score values for all kindergartens participating in the survey is shown in the following bar chart.

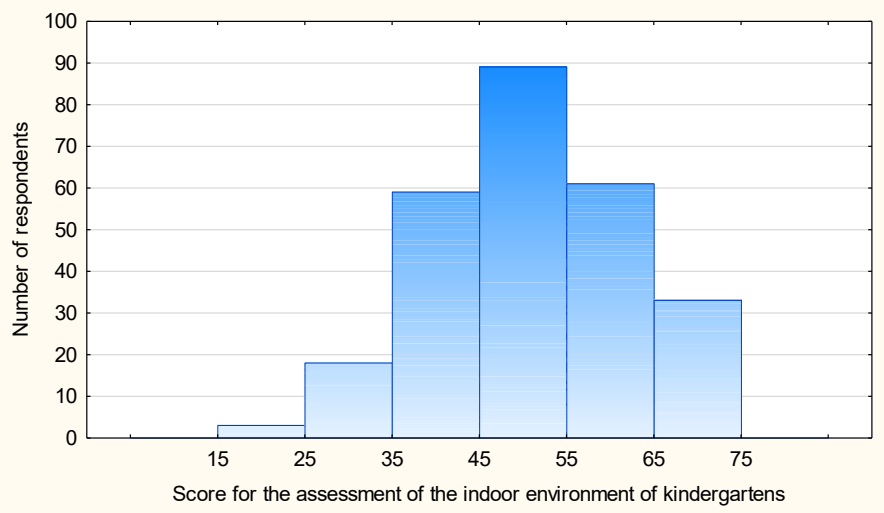


Graph 1 – Environmental education resource scores

Source: own processing

Scores in the area of assessment of the indoor environment of the nursery were calculated for each as the sum of the response codes for all items in area C. The total number of items in this area was 15. The total score could therefore range between 15 and 75, with 15 being the lowest possible level of pro-environmental elements in the indoor environment of the nursery school and 75 being the highest possible level of pro-environmental elements in the

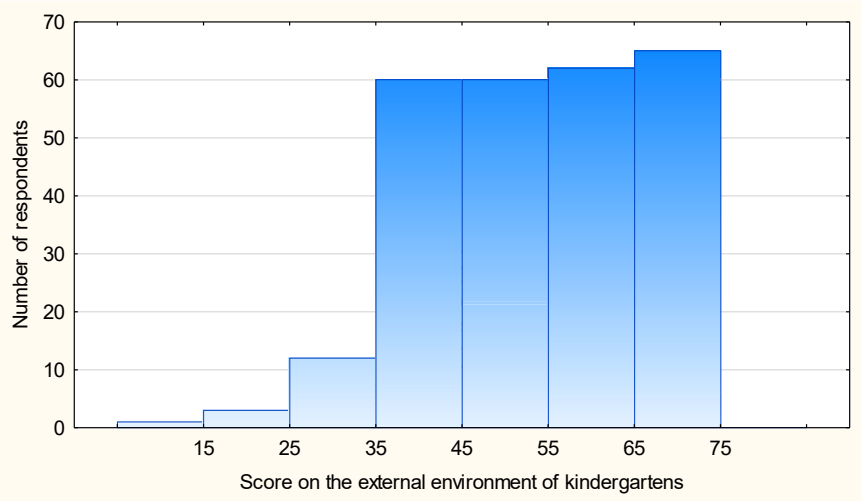
indoor environment of the kindergarten. The distribution of score values for all the kindergartens participating in the research is shown in the following bar chart.



Graph 2 – Score for the assessment of the indoor environment of kindergartens

Source: own processing

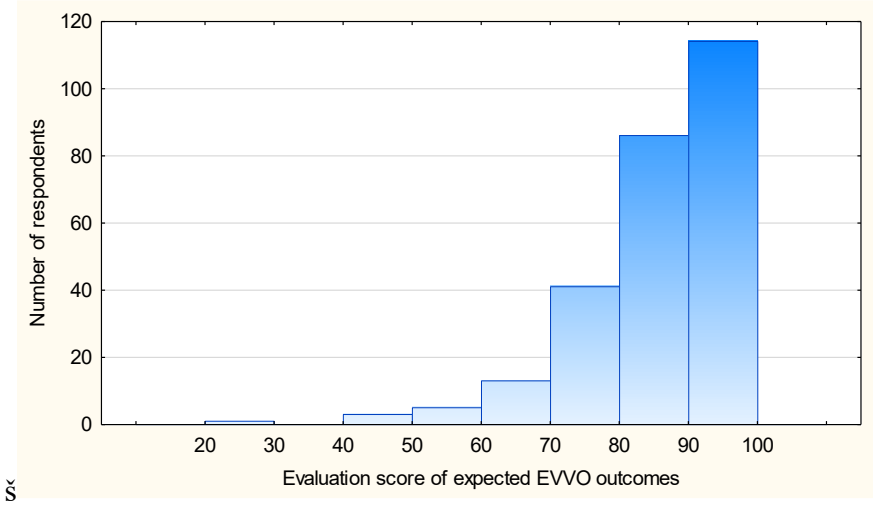
Scores in the kindergarten external environment assessment domain were calculated for each as the sum of the response codes for all items in Domain D. The total number of items in this domain was 15. The total score could therefore range between 15 and 75, with 15 being the lowest possible level of pro-environmental elements in the external environment of the kindergarten and 75 being the highest possible level of pro-environmental elements in the external environment of the kindergarten. The distribution of the scores for all kindergartens participating in the research is shown in the following bar chart.



Graph 3 – Score on the external environment of kindergartens

Source: own processing

Scores in the EVVO Expected Outcome Assessment domain were calculated for each as the sum of the response codes for all items in Domain E. The total number of items in this domain was 20. The total score could therefore range between 20 and 100, with 20 being the lowest possible level of pro-environmental values and 100 being the highest possible level of pro-environmental values. The distribution of scores for all kindergartens participating in the research is shown in the following bar chart.



Graph 4 – Evaluation score of expected EVVO

Source: own processing

Comparisons of these scores for different government and organic kindergarten schools were made using the Mann-Whitney test. In addition to the resulting p-value of the test, means and standard deviations were reported for the groups being compared and ordinal statistics were reported via box plots. Calculations were performed using TIBCO STATISTICA software, the significance level for deciding the null hypothesis was 5 %.

3.2.1 Development of a research instrument (self-evaluation questionnaire)

The questionnaire that was used for the research part of this thesis entitled "Quality of EVVO implementation" was created by PhDr. Kateřina Jančaříková, Ph.D. and based on the author's consent it was allowed to use it for the purpose of this thesis. The questionnaire is primarily intended for kindergarten teachers. It is a self-evaluation questionnaire - i.e. a questionnaire used for self-evaluation and analysis of one's own work or activity. This particular questionnaire allows preschool teachers to assess and retrospectively evaluate their work, the environment in which they work and also their progress. The questionnaire focuses on 5 areas labeled as area A, B, C, D, E which dealt with:

1. Means of environmental education

2. Teacher's evaluation of the implementation of EVVO in kindergarten

3. Evaluation of the internal environment of the kindergarten

4. Evaluation of the external environment of the kindergarten

5. Evaluation of expected EVVO outcomes

Respondents answer using a Likert scale of five levels, whereby:

- 1 = never" (or "no", "cannot", etc.)
- across the scale (2 - 3 - 4),
- = 'often', 'regularly' (or 'yes', 'can every day', etc.).

The questionnaire survey contained a total of 95 questions, i.e. area A = 35 questions, B = 10 questions, C = 15 questions, D = 15 questions and area E = 20 questions.

3.2.2 Research design

The research sample consisted of a total of 263 respondents, all of whom were kindergarten teaching staff. Respondents from the following types of preschools participated in the research:

1. State - 83,7 %

2. Ecological - 2,7 %

3. Church - 0.8%

4. Special - 1.9%

5. Private - 1.5%

6. Montessori - 1.9%

7. Foreign - 7.6%

Respondents were informed in advance of the purpose of the survey and its objective. The questionnaire was completed on a voluntary basis and based on anonymity of the information provided.

3.2.3 Data collection

The questionnaire was distributed exclusively in electronic form directly to the selected kindergartens. Kindergartens across the country and also from abroad were contacted. The electronic form of the questionnaire allowed for faster distribution. Data was collected from 2022 to mid-March 2025.

3.3 Result

The types of kindergartens that participated in the survey were divided according to two aspects: in terms of the size of the settlement into urban and municipal, and according to the focus of the kindergarten into state, environmentally oriented, private, church, Montessori and special. Foreign kindergartens were a specific group. The absolute and relative frequencies of the categories are shown in the following tables.

Table 1 – Kindergartens by size of settlement

Categories	Absolute frequency	Relative frequency
City	160	60,8
Village	103	39,2

Source: own processing

Table 2 – Kindergartens by focus

Categories	Absolute frequency	Relative frequency
State	220	83,7
ECO	7	2,7
Private	4	1,5
Church	2	0,8
Montessori	5	1,9
Special	5	1,9
Foreign	20	7,6

Source: own processing

Within the research sample of 263 kindergartens, 160 kindergartens were urban (60.8%) and 103 kindergartens were municipal (39.2%). In terms of focus/type, 220 government kindergartens (83.7%), 7 environmentally oriented kindergartens (2.7%), 4 private

kindergartens (1.5%), 2 church kindergartens (0.8%), 5 Montessori kindergartens (1.9%), 5 special schools (1.9%) and 20 foreign kindergartens (7.6%) participated in the survey.

The average rating for each item in Section A of the self-evaluation questionnaire is shown in the table below:

Table 3 – Average rating of individual items in Section A

Item	Average	Item	Average	Item	Average
A1	4,39	A13	4,21	A25	4,35
A2	4,57	A14	3,71	A26	3,85
A3	4,53	A15	4,43	A27	4,21
A4	4,65	A16	4,12	A28	4,78
A5	4,31	A17	2,94	A29	4,48
A6	4,75	A18	3,92	A30	4,02
A7	4,13	A19	4,08	A31	3,89
A8	4,55	A20	3,96	A32	4,63
A9	3,04	A21	3,11	A33	2,21
A10	4,13	A22	4,01	A34	4,77
A11	2,97	A23	4,05	A35	3,93
A12	3,07	A24	3,89		

Source: own processing

According to the mean scores, it can be interpreted that the most frequent means of environmental education were items A28, A34 and A6, i.e. "*Children are informed about safe ways to move and stay outdoors*" (mean 4.78 on a scale of 1-5), "*All children's creations and achievements are appreciated and displayed on the notice board. Not only the best ones*." (average 4.77) and "*They have the opportunity to express their opinion, ask questions*." (average 4.75). On the other hand, the least frequent means of environmental education were items A33, A17, and A11, i.e., "*They have the opportunity to learn about traditional methods of dressing or cleaning clothes (e.g., sun bleaching), dishes (e.g.* 'They *have the opportunity to participate in the preparation of food in traditional ways (e.g. pucca)*.' (mean 2.21), 'They *learn about the life of their ancestors. They try out their tools, techniques and lifestyles*." (average 2.97).

The average rating for each item in Section B of the self-evaluation questionnaire is shown in the table below:

Table 4 – Average rating of individual items in Section B

Item	Average	Item	Average
B1	4,30	B6	4,78
B2	3,08	B7	4,15
B3	4,11	B8	4,71
B4	4,67	B9	4,57
B5	4,15	B10	3,92

Source: own processing

According to the average rating, it can be interpreted that the highest rated items of the teacher's evaluation were items B6, B8 and B4, i.e. "*She takes care of the children's self-care. Involves children in group work.*" (mean 4.78), "*Encourages curiosity. Appreciates children's activity*." (mean 4.71) and "*Acknowledges the individual peculiarities of each child's personality and development. Does not overload the children*." (average 4.67). On the other hand, the lowest rated teacher evaluation items were B2, B10 and B3, i.e. "*Regularly attends EVVO conferences and seminars. Meets female teachers from the nursery school who serve as examples of good practice*." (mean 3.08), "*Critically evaluates information (e.g. advertisements).*" (mean 3.92) and "*Prefers to do her own work with children rather than visiting eco-centers and lecturers*." (mean 4.11).

The average ratings for each item in Section C of the self-evaluation questionnaire are shown in the table below:

Table 5 – Average rating of individual items in Section C

Item	Average	Item	Average	Item	Average
C1	3,79	C6	3,90	C11	3,05
C2	2,25	C7	2,76	C12	3,81
C3	3,75	C8	3,91	C13	3,83
C4	3,23	C9	2,91	C14	3,76
C5	4,25	C10	3,14	C15	3,33

Source: own processing

According to the average rating, it can be interpreted that the most frequent environmental elements of the indoor environment of the kindergarten were items C5, C8 and C6, i.e. "*There are always waste separation bins in the classroom, at least for paper, plastic, bio-waste. In the corridor of the kindergarten there are bins for glass, tetra pack and selected hazardous waste (monocles, batteries)*." (mean 4.25), "*In the classroom there are always magnifying glasses for children to observe and experiment.*" (mean 3.91), and "*There are*

indoor plants in the classroom." (mean 3.90). On the other hand, the least frequent environmental features of the indoor environment of the kindergarten were items C2, C7, and C9, i.e., "*We keep a class pet in the classroom*." (mean 2.25), "*In the classroom, we grow plants brought from nature (mosses when we discuss mosses, etc.) or plants interesting to children (carnivorous, etc.).*" (mean 2.76), and "*In the classroom, scales and weights are always available for children to compare weights.*" (mean 2.91).

The average rating for each item in Section D of the self-evaluation questionnaire is shown in the table below:

Table 6 – Average rating of individual items in Section D

Item	Average	Item	Average	Item	Average
D1	3,99	D6	3,03	D11	3,48
D2	3,98	D7	4,38	D12	1,80
D3	3,48	D8	3,82	D13	3,00
D4	3,78	D9	4,43	D14	3,30
D5	4,33	D10	3,66	D15	3,65

Source: own processing

According to the average rating, it can be interpreted that the most frequent environmental features of the external environment of the nursery were items D9, D7 and D5, i.e. "*There is a bird feeder and a birdhouse in the garden. There are 'houses' for bumblebees in the garden.*" (mean 4.43), "*In the garden, children can play with different natural materials, especially pebbles and stones, pinecones and sticks, wood and bark.*" (mean 4.38) and "*We maintain a natural environment in the garden (i.e. not artificial or English lawn).*" (mean 4.33). In contrast, the least frequent environmental features of the external environment of the nursery were items D12, D13 and D6, i.e. "There is a *weathervane in the garden (or on the roof of the nursery). The children have the opportunity to learn about and observe the wind*." (mean 1.80), "*There are water tanks in the garden. Children have the opportunity to learn about the element water and also about aquatic animals*." (average 3.00) and "*In the garden, children can play with mud or clay. There is a 'mud pit'*." (mean 3.03).

The average ratings for each item in Section E of the self-assessment questionnaire are shown in the following table:

Table 7 – Average rating of individual items in Section E

Item	Average	Item	Average	Item	Average

E1	4,81	E8	3,85	E15	4,25
E2	4,79	E9	4,02	E16	3,43
E3	4,57	E10	3,86	E17	4,08
E4	4,42	E11	4,46	E18	4,79
E5	4,37	E12	4,06	E19	4,15
E6	4,82	E13	4,37	E20	4,27
E7	4,71	E14	4,57		

Source: own processing

According to the average rating, it can be interpreted that the highest ratings in the pro-environmental values were for items E6, E1 and E18, i.e. "*Positive relationship with nature - do not worry, do not destroy, do not bother*" (average 4.82), "*Building respect for life*" (average 4.81) and "*Connection to the seasons. Undertaking seasonal activities*." (mean 4.79). Conversely, the lowest scores under pro-environmental values were for items E16, E8, and E10, "*Gradual learning about our and the world's habitats and their inhabitants*." (average 3.43), "*Preference for local products*." (mean 3.85) and "*Learning about the history of the landscape around the nursery*." (average 3.86).

3.3.1 Hypothesis testing

H1: Ecologically oriented kindergartens implement environmental education more intensively than state kindergartens.

The extent of implementation of environmental education was determined through sections A, C, D and E of the self-evaluation questionnaire. The scores of each section, described in the methodology, were compared for environmentally oriented and government kindergartens.

Statistical hypotheses:

H_0: Scores on environmental education resources do not differ for environmentally focused kindergartens and public kindergartens.

H_A: Scores on environmental education resources differ for environmentally focused kindergartens and public kindergartens.

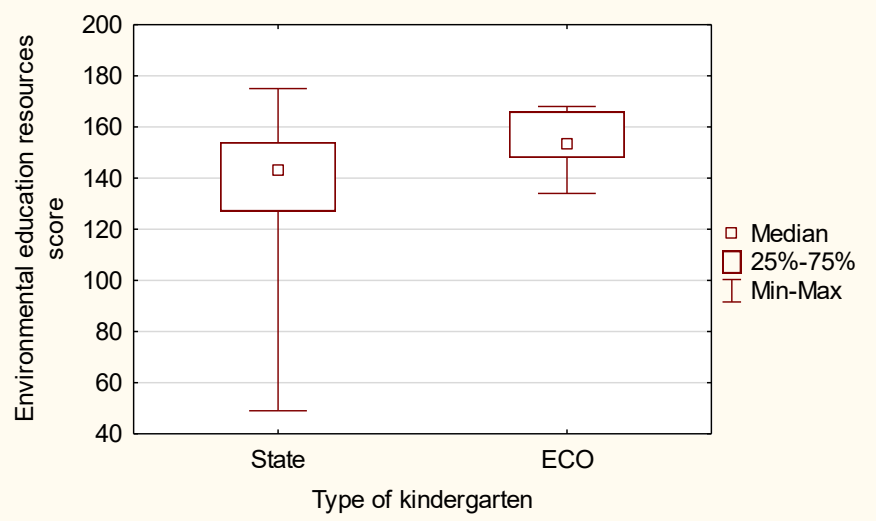
The comparison was performed using the Mann-Whitney test, the resulting p-value of which is presented in the following table together with the descriptive statistics of the two groups compared.

Table 8 – Mann-Whitney test: p-value and descriptive statistics

Kindergarten type	number	average	Standard deviation	median	p-value
ECO	7	154,7	11,8	153,0	0,032
State	220	140,0	20,3	143,0	(reject H_0)

Source: own processing

The scores for environmental education resources were 153.0 points at the median and 154.7 points at the mean with a standard deviation of 11.8 points for environmentally oriented kindergartens and 143.0 points at the median and 140.0 points at the mean with a standard deviation of 20.3 points for public kindergartens. The p-value of the Mann-Whitney test with respect to 3 decimal places came out to be 0.032, i.e. below the 0.05 level of significance. The null hypothesis was rejected in favor of the alternative hypothesis. At 0.05 level of significance, there was a difference in scores on environmental education resources between environmentally oriented kindergartens and government kindergartens. The scores on environmental education resources were statistically significantly higher for environmentally focused kindergartens than for government kindergartens. The ordinal statistics, i.e., median, lower and upper quartiles, minimum and maximum, for both comparison groups were displayed using a categorical box plot.



Graph 5 – Environmental education resources score

Source: own processing

Statistical hypotheses:

H_0: The scores in the area of indoor environment assessment of kindergartens do not differ for environmentally oriented kindergartens and state kindergartens.

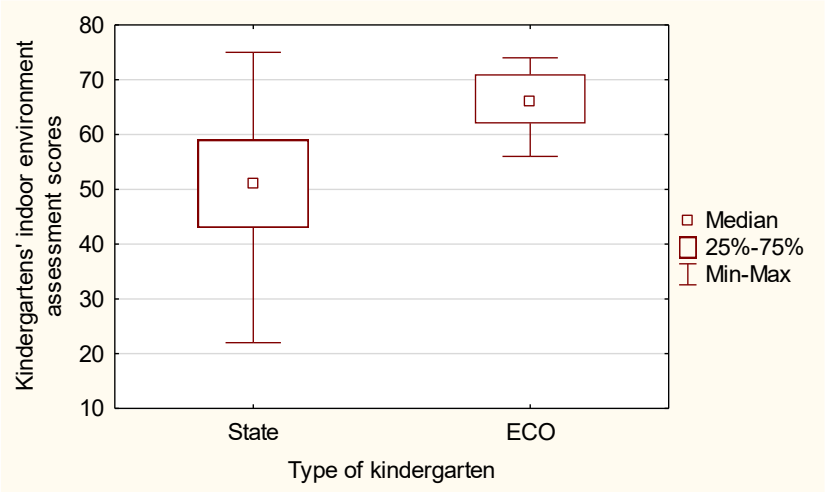
H_A: Scores on the indoor environment assessment of kindergartens differ for environmentally oriented kindergartens and state kindergartens.

Table 9 – Mann-Whitney test: p-value and descriptive statistics

Kindergarten type	number	average	Standard deviation	median	p-value
ECO	7	66,1	6,1	66,0	0,048
State	220	50,6	10,9	51,0	(reject H_0)

Source: own processing

The scores for the indoor environment of the kindergartens were 66.0 points in the median and 66.1 points in the mean with a standard deviation of 6.1 points for the ecologically oriented kindergartens and 51.0 points in the median and 50.6 points in the mean with a standard deviation of 10.9 points for the state kindergartens. The p-value of the Mann-Whitney test with respect to 3 decimal places came out to be 0.048, i.e. below the 0.05 level of significance. The null hypothesis was rejected in favor of the alternative hypothesis. At 0.05 level of significance, there was a difference in the scores of indoor environment assessment of the nursery schools between environmentally oriented nursery schools and government nursery schools. Scores in the area of assessment of the indoor environment of the kindergarten were statistically significantly higher for environmentally oriented kindergartens than for state kindergartens.



Graph 6 – Kindergartens' indoor environment assessment scores

Source: own processing

Statistical hypotheses:

H_0: Scores on the external environment assessment of the kindergarten do not differ for environmentally oriented kindergartens and state kindergartens.

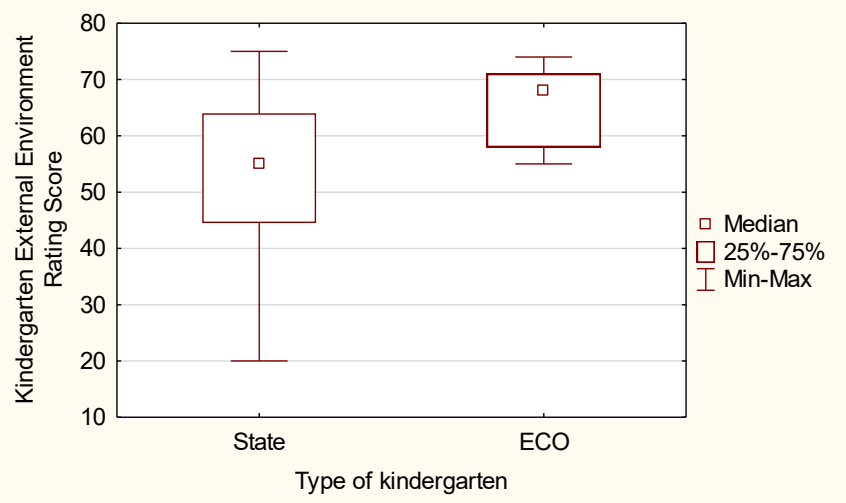
H_A: The scores in the external environment assessment of kindergartens differ for environmentally oriented kindergartens and state kindergartens.

Table 10 – Mann-Whitney test: p-value and descriptive statistics

Kindergarten type	number	average	Standard deviation	median	p-value
ECO	7	65,9	6,9	68,0	0,000
State	220	54,0	12,3	55,0	(reject H_0)

Source: own processing

The scores for the external environment of the kindergartens were 68.0 points in the median and 65.9 points in the mean with a standard deviation of 6.9 points for the ecologically oriented kindergartens and 55.0 points in the median and 54.0 points in the mean with a standard deviation of 12.3 points for the state kindergartens. The p-value of the Mann-Whitney test with respect to 3 decimal places came out to be 0.000, i.e. below the 0.05 level of significance. The null hypothesis was rejected in favor of the alternative hypothesis. At 0.05 level of significance, there was a difference in scores on the external environment assessment of the nursery schools between environmentally oriented nursery schools and government nursery schools. Scores in the area of assessment of the external environment of the kindergarten were statistically significantly higher for environmentally oriented kindergartens than for state kindergartens.



Graph 7 – Kindergarten external environment rating score

Source: own processing

Statistical hypotheses:

H_0: The scores on the expected EVVO outcomes do not differ for environmentally oriented kindergartens and state kindergartens.

H_A: The scores on the EVVO expected outcomes domain differ for environmentally focused kindergartens and state kindergartens.

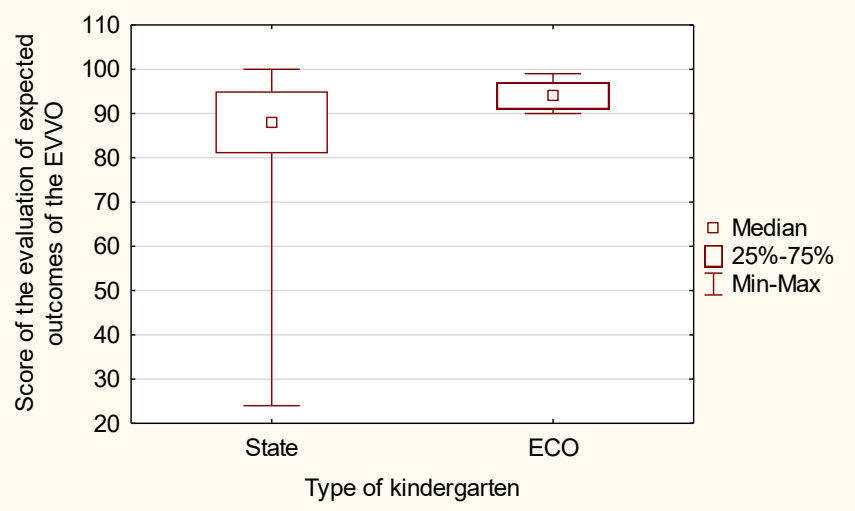
Table 11 – Mann-Whitney test: p-value and descriptive statistics

Kindergarten type	number	average	Standard deviation	median	p-value
ECO	7	94,1	3,2	94,0	0,011
State	220	86,5	11,4	88,0	(reject H_0)

Source: own processing

The scores for the external environment of the kindergartens were 68.0 points in the median and 65.9 points in the mean with a standard deviation of 6.9 points for the ecologically oriented kindergartens and 55.0 points in the median and 54.0 points in the mean with a standard deviation of 12.3 points for the state kindergartens. The p-value of the Mann-Whitney test with respect to 3 decimal places came out to be 0.000, i.e. below the 0.05 level of significance. The null hypothesis was rejected in favor of the alternative hypothesis. At 0.05 level of significance, there was a difference in scores on the external environment assessment of the nursery schools between environmentally oriented nursery schools and government nursery schools. Scores in the area of assessment of the external environment

of the kindergarten were statistically significantly higher for environmentally oriented kindergartens than for state kindergartens.



Graph 8 – Score of the evaluation of expected outcomes of the EVVO

Source: own processing

Overall, the results of the statistical testing support the hypothesis *"Ecologically oriented kindergartens implement environmental education more intensively than state kindergartens"*, as the scores in all areas were statistically significantly higher for ecologically oriented kindergartens than for state kindergartens.

H2: The availability of natural environment around the kindergarten influences the frequency of environmental activities.

Statistical hypotheses:

H_0: There is no correlation between the scores on the assessment of the external environment of the nursery and the scores on the environmental education resources.

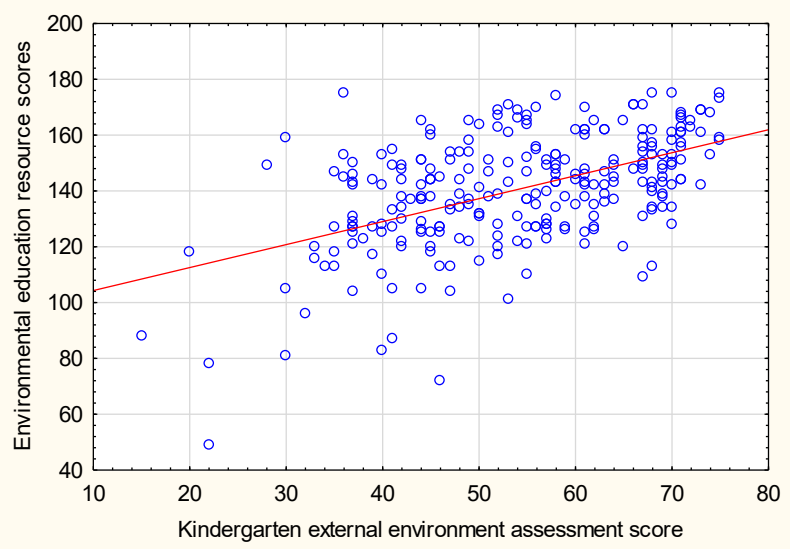
H_A: There is a correlation between the scores on the external environment assessment of the nursery and the scores on the environmental education resources.

Table 12 – Spearman's correlation coefficient and independence test

R value	p-value	H_0 decision	dependence proven
0,47	0,000	reject	yes

Source: own processing

The p-value of the test of independence based on Spearman's rank correlation coefficient was 0.000 with respect to 3 decimal places, i.e. lower than the chosen significance level of 0.05. The null hypothesis was rejected in favor of the alternative hypothesis. At the 0.05 level of significance, the relationship between the scores on the external environment assessment of the kindergarten and the scores on the environmental education resources was demonstrated. Given the positive value of the correlation coefficient (0.47), this is a direct relationship. The value of the correlation coefficient is between 0.3 and 0.5, so it is a medium intensity of dependence. Overall, it can be interpreted that an increasing score in the area of environmental education resources is associated with the score in the area of the external environment assessment of the kindergarten in the medium intensity of dependence. The increasing tendency can be observed from the dot plot indicatively interleaved with the regression line.



Graph 9 – Environmental education resource scores

Source: own processing

The results of the statistical testing support the hypothesis in the wording *"The availability of natural environment around the kindergarten influences the frequency of environmental activities"*, as kindergartens that score higher on the external environment also tend to score higher on environmental education resources.

3.4 Discussion

The aim of the research was to determine the status of environmental education in kindergartens. Environmental education and guiding children to protect the environment is a topic that has received more and more attention in education in recent years. Therefore, the author decided to map the current level of implementation of environmental education in preschools.

The questionnaire survey shows many statistically significant results. In the context of environmental education, teachers most often inform about safe ways of moving and staying outdoors (question A28, mean 4.78). Their creations and results are appreciated and displayed on the bulletin board not only the best ones. (question A34, average 4.77). They have the opportunity to express their opinion, ask questions (question A6, average 4.75). These results indicate that probably environmental education in preschools is often associated with safety, warm positive communication and evaluation of each child.

A not very surprising finding is that kindergarten children are not very familiar with traditional practices of cleaning, tidying, etc. when these practices are not seen as much anymore. For instance, traditional cleaning with the help of table salt has been replaced by a variety of cleaners with different focuses - for the hob, for rust, for limescale, degreasers and so on. In the past, all-purpose cleaners were used and today there is a plethora of different products with different focuses in the shops. What many children do not realize is that simple, eco-friendly products that have been used for generations before us can also be used for cleaning or maintenance. From the results, it can be concluded that there is relatively little linking of environmental education with historical or traditional contexts in kindergartens. Perhaps this is because educators do not want to deal with this too much or simply find it difficult and challenging to implement activities with such a focus.

The results of section B show that kindergarten teachers encourage children to be independent, inquisitive and respectful of their individual needs, but at the same time foster relationships. This is important when implementing environmental education.

Conversely, it is important to focus more on teacher training and professional development in EE, such as attending professional seminars, sharing good practice and being able to work

critically with information. This finding demonstrates the need to provide more accessible and quality training for kindergarten teachers in environmental education.

The results show that rather basic simple elements such as waste separation, the presence of indoor plants or the availability of simple research tools are implemented in preschools. Less common elements such as keeping an animal in the classroom, growing non-traditional plants already require some extra care and responsibility and are therefore unlikely to be found in many preschools. However, this does not necessarily mean anything bad. If a pre-school decides to keep an animal, it must carefully consider which species is most suitable for the environment. It is important to consider the animal's diet, living and care requirements. Consideration should be given to ensuring that the animal is suitable for children and safe for them. It is therefore important to consider the breeding of an animal or plant that requires extra care (Jančaříková, 2022).

Kindergarten teachers prefer elements that are simple, can be easily integrated into the routine and are not demanding in terms of care or organization. This includes the installation of bird feeders, birdhouses. More complex elements are more likely to be avoided by pre-schools, according to the results, probably because they require special care, knowledge and time.

A surprising finding is that pre-schools pay relatively little attention to the origin of products, even though this is related to environmentally responsible behavior. This fact may be linked to the fact that influencing the origin of products is the responsibility of the founder or the head cook. It should also be considered that local products are often more costly than foreign products.

The research for this thesis followed a set timetable. In addition to the author, the thesis supervisor, doc. PhDr. Kateřina Jančaříková, Ph.D. and Mgr. Magdaléna Kapuciánová, whose data were provided to the author for use. A total of 263 respondents participated in the research. Although this is a fairly representative sample, it would have been preferable to work with an even larger number of respondents to increase the validity and meaningfulness of the results.

The author of this paper was very pleased with the willingness and helpfulness of the respondents who participated in the survey. Most of them responded positively to the

questionnaire and willingly shared their experiences. Some of them even stated that filling in the questionnaire itself inspired them to reflect on the implementation of environmental education in their kindergarten and motivated them to improve or expand some activities. This feedback was very valuable and encouraging for the author.

Conclusion

The thesis was developed on the topic "Comparison of the implementation of environmental education in different types of kindergartens" and focused on mapping the state of environmental education in preschools in the Czech Republic and abroad. The theoretical findings of the thesis were combined with a quantitative research investigation, namely a questionnaire survey.

The theoretical part dealt with the importance and impact of environmental education for preschool children, introduced the international Eco-School program, which is also the largest educational program in the world in the field of education for a more sustainable way of life. It also discussed the concept of the environment as a "third teacher". The situation abroad was examined through scientific articles from the WoS database, and the findings and conclusions were described.

The research aimed to find out how different kindergartens differ in their approach to environmental education, and how the conditions of the indoor and outdoor environment, the pedagogical focus of the school or the school's setting, for instance, influence the implementation of these activities.

The results confirmed that kindergartens focused on environmental education are more involved in environmental activities than regular kindergartens. Also crucial is the finding that the environment as such, and kindergartens near forests, meadows, ponds, etc. are engaged in environmental activities in a greater way. Further research with a larger sample of respondents and a broader scope is needed to gain a more comprehensive and deeper insight into the issue of environmental education. Further studies can contribute to a better analysis of the situation and possible changes in education.

The thesis provided an insight into the current state of environmental education in pre-schools. Its results confirm that the pre-school age is crucial for the formation of children's values and attitudes, and pre-primary education can make this very the findings can serve as inspiration for further research.

The thesis on this topic has been a real challenge for the author. During the preparation of her thesis, the author deepened her knowledge in the field of environmental education of

preschool children, which provided her with a deeper insight into the topic and made use of this knowledge.

List of abbreviations

ECO – Ecological (kindergarten)

EE – Environmental education

EVVO – Environmentální vzdělávání, výchova a osvěta

F2F – face-to-face

LEED – Leadership in Energy and Environmental Design

MŠMT – Ministerstvo školství, mládeže a tělovýchovy České republiky

SEER

US – United States

WoS – Web of Science

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Vyjádření k využití nástrojů umělé inteligence

Při tvorbě této diplomové práce nebylo použito nástrojů umělé inteligence. Jedná se zcela o mou vlastní tvorbu.

List of attachments

Attachment 1 - Self-evaluation questionnaire for the Kindergarten "Quality of EVVO implementation"

Self-evaluation questionnaire for kindergartens "Quality of EVVO implementation" (Jančaříková, 2010)

Answer the questions by ticking the box - scale from least frequent (1) to most frequent (5).

I.e. from 1 = "never" (or "no", "cannot", etc.),
across the scale (2 - 3 - 4),
5 = "often", "regularly" (or "yes", "may every day", etc.).

ENVIRONMENTAL EDUCATION - in the implementation of EVVO children:

A1	They're having fun. The implementation of EVVO is not boring and unpleasant.	1	2	3	4	5
A2	They receive information that is appropriately simplified and presented in relation to their age and disposition.	1	2	3	4	5
A3	They receive stimuli for touch, hearing, taste, smell, i.e. not only for sight. They learn to explore the world with all their senses.	1	2	3	4	5
A4	They can show activity, curiosity, creativity, learn to discover.	1	2	3	4	5
A5	They listen to stories from nature books.	1	2	3	4	5
A6	They have the opportunity to express their opinion, ask questions.	1	2	3	4	5
A7	They play appropriate non-competitive games.	1	2	3	4	5
A8	Together with adults they admire nature and its components.	1	2	3	4	5
A9	They experience the positive economic impact of their environmental efforts (they learn how the money from the paper collection was used, etc.).	1	2	3	4	5
A10	They are introduced to specific examples of the treatment of living creatures or the environment around the school, the child's home.	1	2	3	4	5
A11	They get to know practically the life of their ancestors. They try out their tools, techniques and lifestyles.	1	2	3	4	5
A12	They get to know practically the life of other cultures (e.g. Indians, Eskimos). They try out some of their tools, techniques and lifestyles.	1	2	3	4	5
A13	Participates adequately in work for nature (ploughing, watering, feeding game at the feeder or bird feeder in winter, or collecting rubbish, etc.).	1	2	3	4	5
A14	It teaches critical thinking (searching for truths and half-truths), distinguishing between fact and fiction.	1	2	3	4	5
A15	They work with natural materials in art activities. They make with natural materials.	1	2	3	4	5
A16	They sing and listen to music about nature and the music of nature (clapping, cracking cones, buzzing, rustling, etc.).	1	2	3	4	5
A17	They have the opportunity to participate in the preparation of food in traditional ways.	1	2	3	4	5
A18	The teacher encourages and inspires by using drama education (using puppets or imitation).	1	2	3	4	5

A19	Children have the opportunity to regularly take care of something living (tree, flower bed, animals, etc.)	1	2	3	4	5
A20	Participates in the appearance of the surroundings of the kindergarten (raking leaves, taking care of the well, etc.) - brigades.	1	2	3	4	5
A21	They learn the basics of scientific observation (problem definition, expected result, experiment, recording, discussion, conclusion).	1	2	3	4	5
A22	They learn to perceive the dependence of animals and plants on the environment (a fish on dry land gets scared, etc.).	1	2	3	4	5
A23	Teaches to read information from the landscape (e.g. "the trees have droopy leaves, it is dry, they need water", "the animals are stocking up, it will be a hard winter", etc.).	1	2	3	4	5
A24	They grow a plant to eat (e.g. peas or potatoes).	1	2	3	4	5
A25	They learn that food is prepared from plants, animals or fungi, i.e. that it is a product of nature ("We know what we eat").					
A26	They experiment and learn the basics of experimentation. Their small and larger discoveries are rewarded.	1	2	3	4	5
A27	They are outside for at least two hours in the morning every day. They have the opportunity to learn from nature.	1	2	3	4	5
A28	They are informed about safe ways of moving and staying outdoors (how not to get hurt, what not to eat, what not to eat, how not to get lost, what to do if...).	1	2	3	4	5
A29	They celebrate important events (anniversaries, birthdays, Earth Day, harvest festivals, opening of wells) in order to develop their relationship with nature.	1	2	3	4	5
A30	They have the opportunity to form an intense relationship with a particular place or tree.	1	2	3	4	5
A31	They learn to protect their bodies from the adverse effects of a polluted environment (cigarette smoke, exhaust fumes, loud noise, blinding light...).	1	2	3	4	5
A32	They can manipulate gadgets.	1	2	3	4	5
A33	They have the opportunity to learn about traditional methods of cleaning clothes (e.g. sun bleaching), dishes (e.g. using vinegar) or work surfaces (e.g. using table salt).					
A34	The creations and results of all children are awarded and displayed on the bulletin board. Not only the "best".					
A35	They have the opportunity to remind themselves of their experiences in nature from time to time with a portfolio or a bulletin board with photos and drawings, or a memory box with pebbles and other trinkets from their travels.					

Evaluation of the teacher in the implementation of EVVO in the kindergarten

B1	EV programmes are prepared in accordance with the knowledge of the field.	1	2	3	4	5

B2	He regularly attends EVVO conferences and seminars. He gets to know female teachers from kindergartens who serve as examples of good practice.	1	2	3	4	5
B3	She prefers to work with children herself, rather than visiting eco-centres and lecturers.	1	2	3	4	5
B4	It is aware of the individual peculiarities of each child's personality and development. It does not overload children.	1	2	3	4	5
B5	Modifies the indoor and outdoor environment to better meet EVVO requirements.	1	2	3	4	5
B6	She takes care of the children's self-care. Involves children in joint work.	1	2	3	4	5
B7	Involves parents (seniors or the public) in the life of the kindergarten.	1	2	3	4	5
B8	It encourages curiosity. Values children's activity.	1	2	3	4	5
B9	He is a positive role model for children. She perceives herself positively.	1	2	3	4	5
B10	Critically evaluates information (e.g. advertisements).	1	2	3	4	5

Evaluation of the internal environment of the kindergarten

C1	In the classroom, we place and renew picture boards (bulletin boards) related to EVVO.	1	2	3	4	5
C2	We keep an animal in the classroom - a class pet.	1	2	3	4	5
C3	We provide visiting programs with various animals (hunter, falconer, etc.).					
C4	In the classroom we display and renew our collections of natural history (stones, shells, butterflies, herbarium, etc.)	1	2	3	4	5
C5	In the classroom there are always bins for waste separation, at least for paper, plastic, bio-waste. In the corridor of the kindergarten there are bins for glass, tetrapack and selected hazardous waste (monocells, batteries).	1	2	3	4	5
C6	There are houseplants in the classroom.	1	2	3	4	5
C7	In the classroom, we grow plants brought from nature (mosses, when we discuss mosses, etc.) or plants interesting to the children (carnivorous, etc.).	1	2	3	4	5
C8	Magnifying glasses are always available in the classroom for children to observe and experiment.	1	2	3	4	5
C9	Scales and weights are always available in the classroom for children to compare weights.	1	2	3	4	5
C10	In the classroom, the children are always provided with tape measures, strings and other tools for measuring and comparing lengths.	1	2	3	4	5
C11	Water measuring cups (or sand and small objects) are available in the classroom for children to compare volume and quantity.	1	2	3	4	5
C12	Poisonous plants (oleander, dieffenbachia) are not within reach of the children in the classroom.	1	2	3	4	5

C13	In the classroom, children are provided with natural materials (pinecones, dry plants, bark, bark) for spontaneous creation of an artistic or construction type.	1	2	3	4	5
C14	There are no "disposable" toys in the classroom, i.e. toys with a short shelf life.	1	2	3	4	5
C15	There are 15 or fewer children per adult in the class.	1	2	3	4	5

Evaluation of the external environment of the kindergarten
(garden, including the immediate surroundings of the kindergarten, if used daily)

D1	There are a large number of different corners in the garden.	1	2	3	4	5
D2	In the garden, the children have the opportunity to observe animals (e.g. shrews, snails, butterflies, robins, or even a cat or rabbits).	1	2	3	4	5
D3	In the garden, children have the opportunity to observe interesting plants (lianas that climb, sage that moves when touched, nettles that burn, etc.).	1	2	3	4	5
D4	In the garden there are beds or shrubs (currants, thornless blackberries) and trees (apple trees, hazel trees, mulberry trees, mulberry trees) with edible fruits that children can observe and eat.	1	2	3	4	5
D5	We maintain a natural environment in the garden (i.e. no artificial or English turf).	1	2	3	4	5
D6	Children can play with mud or clay in the garden. There is a "mud pit".	1	2	3	4	5
D7	In the garden, children can play with various natural materials, especially pebbles and stones, pinecones and sticks, wood and bark).	1	2	3	4	5
D8	The garden has sloping terrain. Children can walk uphill and downhill. They learn to overcome natural obstacles (roots).	1	2	3	4	5
D9	There is a bird feeder and birdhouse in the garden. There are "houses" for bumblebees in the garden.	1	2	3	4	5
D10	There is compost in the garden.	1	2	3	4	5
D11	There are mysterious places in the garden.	1	2	3	4	5
D12	A wind vane is placed in the garden (or on the roof of the kindergarten). Children have the opportunity to learn about the wind and observe it.	1	2	3	4	5
D13	There are water tanks in the garden. Children have the opportunity to learn about the element water and also about aquatic animals.	1	2	3	4	5
D14	There is a fireplace in the garden, which is used for festive occasions. Children have the opportunity to learn about the element fire.	1	2	3	4	5
D15	There are no poisonous plants/fungi in the garden.	1	2	3	4	5

Evaluation of expected EVVO outcomes - we strive for ..

E1	Building respect for life	1	2	3	4	5
E2	Developing the ability to admire nature and its beauty and love of nature.	1	2	3	4	5

E3	Cultivating humility (there are so many things people don't understand). Cultivating the awareness that one is part of the globe.	1	2	3	4	5
E4	Cultivate the awareness that happiness and success are not just material things.	1	2	3	4	5
E5	Saving on food, even if we have enough money, that frugality, there is no shame. Using non-new things (clothes, gadgets and toys).	1	2	3	4	5
E6	Positive relationship to nature - do not worry, do not destroy, do not bother	1	2	3	4	5
E7	Direct contact with nature.	1	2	3	4	5
E8	Preference for local products.	1	2	3	4	5
E9	Insight into preparation technologies (how to make what, what is made of what). Children are introduced to the fact that food, medicines and many useful items (furniture) are of natural origin.	1	2	3	4	5
E10	Learning about the history of the landscape around the kindergarten.	1	2	3	4	5
E11	Perception of nature over longer periods of time.	1	2	3	4	5
E12	Knowing what decomposes in nature and what doesn't.	1	2	3	4	5
E13	Understanding of basic processes in nature (cycles, relationships between plants and animals).	1	2	3	4	5
E14	Respect the relationship between the environment and human health.	1	2	3	4	5
E15	Knowing that pests are not just pests - that is, that every creature has a purpose.	1	2	3	4	5
E16	Gradual learning about our and the world's habitats and their inhabitants.	1	2	3	4	5
E17	Introduce model (appropriately selected) animals, plants and fungi.	1	2	3	4	5
E18	Seasonality. Undertaking seasonal activities.	1	2	3	4	5
E19	Professional correctness (we tell the children the professional names of animals and plants or we tell them that we do not know the species and we identify it together...).	1	2	3	4	5
E20	Sustainable operation of the kindergarten - waste prevention, use of energy-saving fluorescent lamps, insulation of the building, sealing of windows, etc.	1	2	3	4	5

The criteria contained in the questionnaire were developed by the research methods of Assoc. PhDr. Kateřina Jančaříková, Ph.D. The self-assessment questionnaire is designed for the needs of kindergarten teachers. Primarily it should be used for self-evaluation.
The essence of self-evaluation is that the teacher evaluates herself and her work environment as well as her progress. In order to assess progress, it is important that the teacher keeps the first completed questionnaire and after a certain period of time (a year) or experience (an EVS course), she completes the Self-Evaluation Questionnaire again and compares it with the first one.