

EDUCATION FOR SUSTAINABLE DEVELOPMENT IN THE PRE-SCHOOL PERIOD

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Abstract

Sustainable development is a concept that integrates environmental, social and economic considerations for a balanced and sustainable progress of society. Traditional development paradigms have focused exclusively on economic growth, often at the expense of environmental degradation and increasing social inequality. These consequences were considered inevitable and acceptable costs of economic prosperity, leading to serious global problems, such as climate change, massive loss of biodiversity, increased air and water pollution, and deep social inequality.

Contemporary challenges are forcing the limits of the old paradigm, forcing humanity to understand that economic development alone cannot ensure a sustainable future. That is why the new paradigm of sustainability integrates economic, social and environmental aspects as equally important.

Education plays the key role in the promotion and implementation of this paradigm, because through education conscious and responsible individuals are formed who actively contribute to the sustainability of their community and planet. Preschool, as the first form of institutional education for children, has the main role in laying the foundations for sustainable development and developing environmental awareness among the youngest. Bearing in mind the importance of forming healthy habits from an early age, we conducted a survey among educators in preschool institutions. The research includes an analysis of the implemented programs for sustainable development in preschool institutions, as well as a review of their effectiveness in practice. Through a detailed analysis of the application of these programs, the research identifies the challenges that arise in the process of their implementation, as well as the opportunities for their improvement. In addition, the role of educators, parents and the community, who are key actors in supporting the educational process for sustainable development and jointly contribute to its successful application, is analyzed.

The conclusions of this research confirm that education for sustainable development in the preschool period is of great importance for the formation of future sustainable citizens. Raising aware and responsible children, who understand and care for their environment and community, is the basis for creating a more sustainable and responsible future.

Keywords: Sustainable development, preschool education, implementation of sustainable development practices in daily activities in kindergartens.

1 INTRODUCTION

Despite the existence of pedagogy as a separate science, its direct impact on environmental education is still superficial and can most often be recognized only in the definition of some global educational goals and activities the pedagogical aspects of which are insufficiently developed. A comprehensive theory of environmental education has not yet been created, because the educational fields in which it is realized are diverse and often not integrated.

Delving into scientific analysis and applying an ecological approach, [8] interprets environmental education as a precursor to education for sustainable development, and its organization and realization as a specific ecological-pedagogical process. Through this in-depth integral and broad-spectrum analysis, the author establishes a basic environmental law of the educational process that is based on a specific model of environmental education. It very thoroughly and perspicaciously creates a system of scientific facts, generalizations, conclusions, and hypotheses and charts the path along which environmental education for sustainable development should be developed.

This, for us new, approach for the author is an assumption that she tests in order to rethink some of the key pedagogical terms such as: upbringing, development, goal of environmental education or ecological education, methods and means.

Keeping in mind the humanistic and holistic approach to the treatment of the educational process, the idea of ecological development of children and youth, the idea of forming personalities who will be perceived as an integral part of the environment that surrounds them can be rightly promoted. At the same time, the need to ensure active participation of children in their own development as a pedagogical premise should be respected in planning, organization, implementation and evaluation of environmental education. It actually means that children should be treated as subjects, which necessarily requires a change in the position of the pedagogue.

In this context, when creating the concept of sustainable development, it is logical to start from sensitizing children to the environment, developing self-confidence, initiative for independence and knowledge, as well as developing communication skills and environmental management skills. Regarding that, we must emphasize that the knowledge of the developmental needs and the specificities of children are basic determinants for the organization of appropriate activities, in accordance with the child's level of development.

Education is a long-term, continuous, systematized and expedient process, so it cannot be expected that all the desired goals will be achieved simultaneously and in a short period of time, but, with a high probability, pedagogical science confirms that the continuous use of methods that enable a high level of activity for children contributes to that process. According to Lepičnik Vodopivec [8] the development and application of problem-solving strategies is an important pedagogical aspect of environmental education and education for sustainable development. It means experiencing, getting to know and appreciating the environment, based on which the child develops certain skills. In order to be able to experience, get to know and determine the values of the environment, the child must get to know itself, its senses and how to include them in the process of getting to know the environment, to be able to name, describe, determine common and different characteristics, to know how to measure, to classify according to established groups and different characteristics, to investigate and predict the critical values of the results and their use.

The initial stage of the development of a child's sensitivity to the environment is especially important for the child's motivation. A number of experts [13], point out that children must come into direct contact with the environment in order to gain important experiences. That's why in kindergartens (the first formal form of education) careful and daily planning for experiencing the environment is needed. This is a complex process that in the broadest sense takes place in two directions: The first direction is the child's description of the personal experience (describing the subjective world) parallel to the activity, where the child's imagination and creativity come to the fore; The second direction refers to the continuation of the activity, which in turn leads to comparing personal experiences with those of other participants, using verbal and non-verbal communication. In this context, several questions arise: Does the child know how to name its perceptions, feelings, and experiences? How will the child talk about fear or discomfort if its emotions do not recognize the new concept? How will a child form attitudes and relationships towards the environment and nature if the new concept is only shown to it through television? How will the educator help the child in searching for suitable words for individual experiences? and similar.

As early as the first half of the nineteenth century, Friedrich Wilhelm August Fröbel (1782-1852) [4] emphasized the importance of experience in the learning process: "Children must master the language of things before they master the language of words." The father of kindergartens, Friedrich Fröbel, stressing the importance of early childhood education, emphasized that children do not distinguish red from green, sweet from bitter, rough from smooth, cold from hot, or any of the multitude of physical sensations, and therefore, according to him, the natural world is the first curriculum that children learn from, through direct interaction with objects.

This conception of early childhood education is promoted by the great early childhood scholars Froebel, Montessori, Steiner, Piaget, and Vygotsky. The guiding principle of early childhood environmental education appears to be the matching of curricula with instruction that stimulates children's interest and activity. This principle is widely accepted in practice and is advocated by most pedagogues. This raises the question - *Who feeds on education?*

The appeal of the school psychologist Gardner from Harvard can serve as an answer to the question posed. Psychological knowledge is valuable to us not only because of the ecology of the person but also because of sustainable development in general. The practice of particular education has been inherited from the period of industrialization and has been mechanically taken over in times of technological change, to keep up with the demands of machines and the free market. After all, the free market is nothing more than a machine market. The mindless race in the material processing of the world, the increase of profits and the spread of consumer culture - who imposed those needs on man? Machines. Their ability to work

more and faster than man. However, sustainable development and ecological balance are human needs. Returning to nature is nothing more but the return of man to himself.

What part of the child's personality do we actually act on in the process of upbringing and education?

Pedagogical influence should not be directly aimed at the young person but should develop objective relationships among which the child develops as a person with positive feelings and attitudes towards nature. The consideration of subjectivity as a category of relationships is extremely significant for pedagogical practice. The idea of constructing environmental education in accordance with the laws of the development of subjectivity lies at the heart of this approach. Therefore, ontogenetic determinants are interpreted as a subject of various relationships viewed through the prism of three basic and significant features - biosystems, personality, and social being.

The concept of "sustainable development" should be given credit for providing us with a "generative metaphor" – or plot – around which various key economic and environmental interests can be assembled. As such, it initially proved to be a very functional concept for establishing a common way of speaking about environmental issues. In essence, the concept suggests that "we can have both", both further growth and a cleaner environment. However, it is wrong to consider sustainable development as an apparently sterile idea, invented mainly to divert environmentalism from a more radical course of action, especially from stricter restrictions on economic growth.

There are several definitions of ecologically sustainable development. In doing so, one concludes that it is not only complex, but also causes numerous mutually opposing views in its translation. The conclusion of this is the conceptual character of sustained development. However, upbringing and education are not "known quantities" either, but the didactic-methodical process achieves the set objectives. Thus, upbringing and education and sustainable development can meet as two variable concepts ready for mutual cooperation, regardless of what products their combination will yield. Educational goals and sustainable development goals are not *a priori* scientific goals. They can be pragmatic, religious, ideological, scientific, they are emphasized as concepts that strive towards the same goal. Nor does education itself imply scientific content.

History teaches us that upbringing content and educational goals are different – from humane to ecocidal. In order to be able to give an approximate definition of upbringing and education, it is necessary to explain what we want for them. Combining them with ecology as a science, she formulates it as ecological upbringing and education. Therefore, the first and fundamental goal of environmental education is to translate all issues of sustainable development into the language of science, and that means translating them from the abstract to an exotic field. If the advocates of sustainable development can scientifically prove their concepts and hypotheses, in the practice of the world community of environmental education, the goal is for it to enter the educational programs of all countries. According to the concept of the United Nations, the core of environmental upbringing and education consists of environmental protection.

However, it cannot be imagined without its awareness, mass (democratic, cultural, civilizational) acceptance of the demands, precise quantification of the input and output of the relationship between man and nature, good governance and justice both towards all peoples in the world and towards the generations that are to continue life on Planet Earth.

The current relations of environmental upbringing and education with sustainable development point to a dilemma, is it even possible to educate for sustainable development? A fundamental problem that is posed before "global learning" is the scientific basis of "education for sustainable development". Science has a strictly defined subject and methods of study. Sustainable development. Sustainable development, as we have repeated many times, is a process on a conceptual basis. In the decade designated by the United Nations, there should be a synthesis of analytical approaches, a definition of the subject, and finding of humane methods for managing sustainable development. The suppression of scientific substance from sustainable development is reflected in the determination that the definition of sustainable development must be equally accepted by all nations.

The German andragogue Martin puts it this way: If our world is to move along the path of sustainable development, then this applies to all the people of the world and their lifestyles. The same author refers to the high demands of sustainable development and the creation of ecological competitiveness of the global population. We must admit that not all human habits are scientifically based. Nor can any upbringing and education bring them into harmony with the principles of scientific thinking and action. Human habits can be scientifically described, but not programmed.

Therefore, the basic idea, and at the same time appeal – *is for children to become accustomed to a positive attitude towards nature from a young age (and for kindergartens to influence them through their educational staff)*.

This is confirmed by the words of Fritz Schumacher ("Small is Beautiful", 1975): Can we be guided by the fact that in a short period of time a large number of people will be able to change in order to save the modern world?

The main achievements in this paper refer to two basic aspects: theoretical and practically applicable. On a pedagogical level, these aspects are expressed through the following:

A current and significant scientific research problem in the field of pedagogy and ecology has been developed through several projects that are being implemented in kindergartens in the Republic of North Macedonia. As a result of this, one of the basic laws of education was derived, and that is the ecological attitude of students towards themselves, towards others and towards the environment.

2 METHODOLOGY

Preschool, as the first form of institutional education for children, has the main role in laying the foundations for sustainable development and developing environmental awareness among the youngest. Hence, in this research, an attempt is made to determine the attitudes and experiences of educators regarding education for sustainable development, which is implemented through the contents provided in the work program of preschool institutions.

The aim of the research was to collect data from the kindergarten teachers, in order to get a picture of:

- The awareness of sustainable development among different participants in preschool education,
- The knowledge, experiences and implementation of sustainable development in daily activities and
- The available support and resources for integrating sustainable development.

The research includes an analysis of the implemented programs for sustainable development in preschool institutions, as well as a review of their effectiveness in practice. The determination of this condition was additionally carried out through the data obtained from the educators. The research was conducted in June/July 2024, on a sample of 38 educators, in kindergartens located in the eastern part of the Republic of Macedonia. The deficiency of the research is the small number of respondents, objectively due to the vacation season and the reduced number of children in kindergartens.

For the purposes of the research, we used an electronic questionnaire for educators. The questionnaire was prepared for the needs of the research and it was filled voluntarily and anonymously.

The obtained data were analyzed and presented using descriptive statistics (frequencies (f), percentages (%)) using the statistical program SPSS 19.00.

3 RESULTS

3.1 Analysis of the Early Learning and Development Program

As part of the educational system, preschool education in R. Macedonia aims to include children from the age of 8 months to the age of 6 years, that is, before starting primary school. Currently (according to the existing Law on Child Protection, 2019) [9] the care and upbringing of children of preschool age in our country takes place in the following institutions: **Kindergarten** and **Center for Early Childhood Development**. They can be public (state, municipal) and private.

The quality of the experiences that the child acquires at an early age and the quality of the pre-school upbringing and education program are crucial for the child's further learning and success in school and later in work. That is why special attention should be paid to the programs for educational work according to which work is carried out in preschool institutions. Currently, educational work in preschool institutions is carried out according to the *Early Learning and Development Program*, which relies on the previously adopted Early Learning and Development Standards for children, prepared by a broad working group of representatives from key institutions and stakeholders [3]

The program itself relies on a holistic approach that is based on a systematized and integrated impact on all developmental domains of children, namely: Approach to learning, Health and motor development; Socio-emotional development; Language, communication and literacy development; Cognitive development and acquisition of general knowledge. All developmental domains are described through achievement standards, general goals, examples of activities, as well as didactic recommendations for each age, respectively [2].

The domain of *Cognitive development and acquisition* of general knowledge unites several segments such as: recognition, processing, organization and appropriate use of the given information. The process of cognitive development includes a complex of mental activities such as researching, discovering, presenting, sorting, classifying and memorizing, remembering and developing imagination. This area is realized through 4 aspects (logic and thinking; mathematics; science - getting to know and understanding the environment; art-visual education and musical education), of which *science - getting to know and understanding the environment* is focused and integrates contents from ecology and sustainable development.

Within the framework of the program itself, in addition to the goals that need to be realized, there are also proposed activities that educators can apply in their daily activities in order for children to get to know and understand the environment (living and non-living) that surrounds them, to see the cause-and-effect relationships between man, phenomena and processes occurring in the environment, as well as to develop awareness of the importance of ecology (Table no. 1). But despite the visibly stated learning outcomes, numerous additional invisible outcomes are also present, such as the learned values, norms, attitudes and social skills that children need for successful social integration.

Table no. 1: Excerpt from Early Learning and Development Program, Domain: Cognitive Development and General Knowledge Acquisition, Subdomain: Science

Development period from 3 to 4 years		
Goals	Examples activities	Expected results
To encourage the acceptance of ecology as part of the modern way of living	Activities of ecological nature (cleaning actions, recycling, caring for plants and the environment, garden corner, etc.). Using dramatizations with environmental messages.	Recognizes elementary procedures for proper environmental behavior.
Development period from 4 to 5 years		
to encourage the acceptance of ecology as part of the modern way of living; to develop abilities to use research and observation as a means of understanding and learning	Participation in environmental activities. Allow the child to express itself creatively through recycled material or unusable but safe material.	Recognizes and participates in activities to apply the rules of ecological culture
Development period from 5 to 6 years		
to train for flexible and divergent opinion in the process of research, discovery and learning; to encourage environmental awareness and the acceptance of ecology as part of the modern way of living.	The child participates in environmental activities	Recognizes and participates in activities to apply the rules of ecological culture

For the process of upbringing and education for sustainable development in kindergartens, it is of particular importance to accept the general guidelines given in the program itself. It clearly states the goals and tasks, methods, didactic and other materials and teaching facilities for the realization of the set goals. But it is also important what is not clearly and specifically recorded, but which is still important for the daily life of children, teachers and other employees of kindergartens. The program set up in this way gives the educator freedom and creativity to realize the stated goals in ways that are most appropriate according to the age of the children, the resources and materials at their disposal, as well as the equipment and location of the institution itself.

3.2 Opinion and attitudes of educators

The preschool age is the most suitable for forming children's basic perceptions of the world around them, in which parents, but also teachers in kindergarten, play a big role. Education for sustainable development, preservation of the environment and rational use of energy are part of lifelong education that should start from early childhood [6].

The research included 38 educators employed in the kindergarten "Pavlina Veljanova" in Kočani and the kindergarten "Goce Delcev" in Probishtip, located in eastern Macedonia. Educators who work with all age groups (small, medium and large) are equally covered in percentage. Regarding the work experience of the educators, it can be noted that in the kindergartens of our sample there is an equal percentage of educators with work experience of 5-10 years and 10-20 years (33.3%), 17% with work experience of 1- 5 years, and the rest are under one year of work experience. In terms of gender, predominantly (99%) respondents are female.

For a better overview of the findings, the questions in the questionnaire are structured in several units.

3.3 Knowledge and attitudes of educators

For preschool children's learning, in addition to the physical environment, the stimulating social environment plays an important role, where children through social interaction learn to cooperate, share, participate, etc. in different problem situations. In that stimulating social environment, in addition to children, educators themselves have a significant role, and are expected within their roles to know how to recognize the processes and laws in children's development and accordingly to plan, prepare and provide conditions in which each child will optimally use and develop all its development potentials [10].

Based on this, the first set of questions refers to the knowledge and attitudes that educators have about and towards sustainable development and ecology activities that are implemented in the kindergarten work program. It is positive that all educators unanimously answered that they are familiar with the concept of ecology and sustainable development. In the attempt to define the term ecology, the following types of answers were observed: *Care for a clean and healthy environment, as well as for the entire planet; Awareness of behavior towards nature and preserving it; Healthy environment; Environmental care and protection; Clean environment, etc.*

When defining the term sustainable development, we received the following types of answers from educators: *Improving the quality of life of all the inhabitants of the planet, without jeopardizing its survival; Maintenance of nature and smart use of its resources, saving and recycling; Environmental maintenance, etc.*

Regarding the level of awareness about **ecology**, they evaluate it as very informed (50%), while for the term **sustainable development**, 50% evaluate it as less informed, 33% - informed, and 17% very informed.

A large percentage of them (57%) answered that they had not attended *any training or seminars related to ecology or sustainable development*. And from those who answered affirmatively that they have attended some training, they generally are of the opinion that such trainings did not help them to expand their knowledge about ecology and sustainable development.

In general, we can conclude that the educators from our sample have basic knowledge about ecology and sustainable development, but still in the direction of lifelong learning and investing in their potential, it is important to get involved in additional activities (seminars, workshops, etc.) in order to deepen and expand the acquired knowledge and skills. It is also important to mention the quality of the trainings and workshops that are organized in that direction, to offer elaborated topics, practical activities/good practices and guidelines on how they could implement this knowledge in their daily activities in a quality way, through integration or correlation with other topics/contents that touch on this issue.

3.4 Implementation in daily work

The acquisition of experiences and learning through play and from direct experience in children creates a solid foundation for the development of the communication-interaction dimension in the development of feeling and awareness of the environment [6]. In the preschool period, children develop rapidly in all areas: cognitive, socio-emotional, physical, psychomotor, linguistic and aesthetic. In this period, in addition to basic habits and skills, it is important for children to develop environmental awareness. The development of environmental awareness and the adoption of ecological educational values among

children of preschool age is possible through a variety of activities, adapted to the age and needs of children. Therefore, in addition to the knowledge that educators have about education for sustainable development, it is also important how much of that content they implement in their daily work with children. With this in mind, the next questions we asked the educators was how much of the knowledge related to sustainable development they implement in their activities with children.

Of the majority of offered activities related to ecology, the largest percentage (67%) answered that the work in their group practices *cleaning the environment*, and 33% of them practice activities that include *observing nature*.

While from the offered activities related to sustainable development, the most common activities that educators implement in their group are: *recycling* (50%), *saving water and energy* (33%) *using renewable energy sources* (17%).

In terms of the frequency with which they include children in conversation and activities related to ecology, educators answered that they do it *several times a month* (50%), *several times a week* (33%) and a small part (17%) *daily*, while activities related to sustained development they implemented *several times a week* (67%) and *daily* (33%) (Chart no. 1).

It is positive that a large percentage (83%) of them believe that children show interest in activities related to sustainable development, while 16% of them are not sure about that statement.

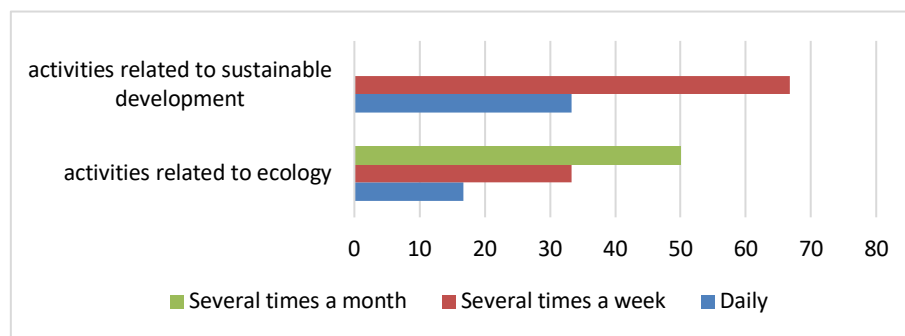


Chart no. 1: Educators' opinions on how often they involve children in conversation and activities related to ecology and sustainable development

3.5 Support and Resources

For the successful implementation of the planned activities, in general, and especially those related to sustainable development, the support of the entire educational and administrative-management staff is needed.

To the question: *How do you evaluate the resources and support you receive for implementing activities on education for sustainable development?* 67% of educators evaluate them as *good*, while 33% as *unsatisfactory*. Regarding the support they receive from the administration for the implementation of activities of this type, 50% answered that they receive *partial support*, 31% that they receive *complete support*, and 19% that they *do not receive support*.

In terms of cooperation with parents, educators state that they are *partially* (61%) involved in activities related to sustainable development, 22% that they are *involved*, and the rest that they are *not involved* in activities of this type. In terms of the type of activities they are involved in, dominating (70%) activities from home (eg recycling, gardening, etc.), and a small part in workshops, seminars and volunteer activities/projects organized by the preschool.

In addition, the biggest challenges faced by educators during the realization of activities that include topics of sustainable development are: *Lack of resources* (67%), *insufficient training of educators* (21%), and *lack of time* (12%) for the realization of this type of activities. This also correlates with the previously received finding, as well as noted recommendations from the educators included in the sample, that educators are not sufficiently informed about the concept of sustainable development and the way to implement activities of this type in everyday activities, whether through correlation with other areas/topics or as an independent activity. This is followed by the fact that it is necessary to work on raising the knowledge and skills of educators by organizing additional trainings on this topic and its implementation in the current activities in preschool institutions. And of course, for all this to be planned

and implemented, the unreserved support of the management staff of kindergartens is necessary, among other things, by providing the necessary material, technical and spatial conditions for their successful realization, as well as opportunities for greater involvement in projects and project activities in order to exchange them, as well as deepen and expand their experiences for implementing activities of this type in their practice.

4 CONCLUSIONS

A large number of studies related to child development confirms that the experiences children acquire during early childhood are critical to their long-term success. The responsibility for creating a stimulating environment that encourages positive experiences during this period is shared between parents, educators, teachers, the wider community and politicians. They all play an important role in encouraging the growth and development of young children, as well as in building skills and attitudes that help them adapt more easily to the challenges of the world.

The results we obtained through the analysis of the work program of preschools indicate that it is based on the holistic approach to the development of children and it is divided into several domains/areas, according to the developmental domains of child development. The program itself, through the separate domains (specifically the domain: *Cognitive development and acquisition of general knowledge*, subdomain: *science - getting to know and understanding the environment*) offers the opportunity to realize and deepen topics that include ecology and sustainable development. The program set up in this way gives the educator freedom and creativity to realize the stated goals in ways that are most appropriate according to the age of the children, the resources and materials at their disposal, as well as the equipment and location of the institution itself.

Sustainable development can and should be included in the plans of the pedagogical activities of the educational work in kindergartens as a vision and perspective, and as a precisely determined content [5].

The obtained results point to several conclusions. First, the preschool institutions themselves, despite the fact that the program itself provides latitude and opportunities for the educator's creativity when developing such topics, do not have clear strategies or models through which their role in the process of upbringing and education for sustainable development would be recognized [7]. Furthermore, the analysis of the educators' answers shows that the institutions for preschool upbringing and education themselves are not sufficiently stimulating, by offering adequate support to educators in the realization of topics and activities for sustainable development, they are not sufficiently recognized, and sometimes not anticipated. It is not enough for children from the youngest age to just stay in the environment, to learn about natural disasters, but they should also be encouraged to actively support sustainability. For that, we also need well-educated educators, ready to consciously make decisions and improve educational practice. Raising aware and responsible children, who understand and care for their environment and community, is the basis for creating a more sustainable and responsible future.

The very upbringing and education for sustainable development in early childhood should be recognized as a dynamic, not a static process, as a means, not an end, as a challenge for permanent cultural and social changes, not a one-time measurable outcome [5].

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