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## Structural components of adolescent's environmental awareness in a general education institution

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**Abstract.** The relevance of the problem of developing adolescents' environmental awareness is conditioned upon the need to instil in students the concepts of nature management and nature conservation in a general education institution to develop healthy behaviour towards nature and its resources, and an appropriate level of value attitude towards natural and cultural monuments. The purpose of the research is to identify the main structural components, factors and conditions for the development of environmental awareness of adolescents in educational institutions, and to identify opportunities for using the latest information technologies for the development and promotion of environmental awareness. To comprehensively explore the subject of environmental awareness, the research uses analytical, statistical and comprehensive research methods. The main results of the study are to identify the types and specific features of the development of environmental awareness in adolescents. The research presents the criteria of environmental competence: cognitive, value and activity-practice. The structure of the ecological consciousness of pupils of general educational institutions based on cognitive, connotative, axiological and perceptual-emotional levels is determined. The research considers the possibilities of using information technologies that will help to develop a new programme of adolescent consciousness-raising, namely, modern systems for displaying and disseminating information, social networks, and online conferences and online courses. The practical significance of the research work lies in the establishment of a new programme for the development of a healthy attitude of adolescents towards the environment and the establishment of basic values that should be used to preserve existing natural and cultural monuments, and in classes on environmental awareness in secondary schools, training courses and out-of-school education

**Keywords:** attitude to ecology; psychological influence; educational process; information technology; nature conservation

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### INTRODUCTION

Every year, the Earth's ecological situation is getting worse, mainly due to man-made factors, while the specifics of people's attitudes towards the environment and human interaction with the environment are changing (Chu & Karr, 2017). These changes and the decline in humanity's desire to care about the environment and the state of nature together necessitate a change in people's attitudes to the current situation by reviewing the specifics

of human interaction with nature. It means that it is necessary to develop environmental awareness in people, in particular in children and adolescents, who will be able to form more appropriate relationships with nature in their later life. Such environmental education is important for the development of healthy values and respect for the environment, which can influence changes in the state of the environment in the future. Therefore, the study of the



specific features of environmental awareness education is mandatory for the public desire to preserve nature and the environment and improve their condition, primarily as humanity is part of nature.

The source base of authors who have explored this issue includes the following: L. Chawla (2020), who in her work analysed the specifics of adolescent understanding and empathy for nature, and considered the importance of establishing their own opinion and a stable position on the subject of ecology in children through psychological development; I.O. Syaska (2010), who explored the importance of establishing curricula for high school students to help educate adolescents' environmental awareness, and examined a specific structure that helps young people to properly research and study the current issue, based on which to develop environmental awareness; A.M. Liovochkina (2013), exploring the psychological aspects of the ecological culture of student youth, emphasised the need to develop continuous environmental education, which should include, in particular, formal, non-formal and informal education of adolescents; L. Darling-Hammond *et al.* (2019) identified important points in the learning process that may be needed and rooted in the future, which is quite necessary in the context of the environmental problem; K.A. Grimmette (2014) described the features of the curriculum for adolescents and their environmental education, where the main results were the vision of the need for regular practices with young people to obtain the desired result by teachers; A. Fernandez *et al.* (2019) in their research paper explored the subject of information technology in the modern educational process, and identified specific tools that should be used in general education institutions.

The main purpose of this research is to examine the structure of adolescents' environmental awareness, to identify the features that shape people's attitudes towards the environment, and to establish possible regulatory features of children's attitudes towards nature and the environment by introducing the subject of environmental awareness into the curricula of educational institutions. In addition, the main objectives of the research work were to determine the types and criteria of the developed adolescent environmental awareness at the present stage; to establish standards of appropriate psychological behaviour towards the environment, nature and ecology; to develop a holistic educational programme for the development of children's environmental awareness in educational institutions based on modern information technologies. The originality of the study lies in highlighting the specific features of adolescents' psychological behaviour towards ecology and the environment, defining a normative model of the behaviour of modern youth, considering current environmental problems, and establishing a specific standard educational programme for the development of children's environmental awareness, which will be used in educational institutions on an ongoing basis to root the basic concepts and positive behaviour towards ecology and nature.

## MATERIALS AND METHODS

In the course of the study, the features and types of structures of environmental awareness of young people, which is most common among all students of secondary schools, were thoroughly examined, the main characteristics of the regulatory model of adolescents' behaviour towards nature and ecology were identified, and a framework for use in educational institutions to teach the basics of environmental awareness to students was developed. In addition, analytical, statistical and comprehensive research methods were used.

The analytical method is based on the specific features of teaching the subject of environmental awareness in educational institutions, the main types and structures of youth attitudes towards ecology and the environment are identified, and the literature is analysed to understand different types of opinions and research of scientists, which helped to develop common generalised standards of adolescents' behavioural model concerning the environment. In addition, it provided an opportunity to learn about the psychological characteristics of people's modern attitudes towards the environment, identify the main criteria for caring for and protecting nature, and define the previously established standards for the development of environmental awareness among secondary school students and the specifics of their observance. The statistical method was used to establish visual indicators of adolescents' current attitudes towards ecology, which were used to conduct an additional analysis of the indicators for further use in establishing a regulatory educational programme to develop respect for ecology and the environment. The integration method has become the foundation for the development of a general educational programme, based on modern information technologies, which can be used in educational institutions for a more in-depth study of the problem of environmental awareness by adolescents and the development of normal behaviour towards the environment.

The combination of all these methods allows for a comprehensive study of the subject of environmental awareness of young people and specific conclusions on how to improve the current situation and restore respect for nature to preserve it and establish the main criteria for the development of adolescents' environmental awareness, identify factors that influence the development of environmental competence, and establish the structural components of a sufficiently developed environmental awareness of adolescents.

The problem of determining the structural components of the development of adolescent environmental awareness within educational institutions is becoming increasingly important to explore, as over the years the planet's ecology has become increasingly adverse, which may threaten the ecological state of the Earth in the future. To establish a clear framework for the research and a more structured study of the subject, the research work was divided into two main parts, namely: identifying the types and structures of adolescents' environmental awareness, which will help to develop a modern picture of youth's relationship with the environment, analysing the types of psychological

manifestations regarding environmental conservation and nature protection, and establishing a normative model of adolescent environmental awareness that discloses the specific features of the necessary attitude of young people to nature for the sake of its conservation and possible restoration; designing an educational programme for the development of children's environmental awareness, including information technology, to increase children's interest and facilitate the programme within educational institutions.

## RESULTS

### The structure of youth environmental awareness and its standard model

The development of society today is gaining momentum every year, leading to an increase in the number of industries and factories, which in turn causes a deterioration in the state of the Earth's environment. It means the need to acquire a certain level of environmental awareness of the planet's population to preserve it, which primarily concerns adolescents who will determine the specifics of the work of enterprises and other aspects of life that interact with natural

factors and resources in the future. In addition, considering that during adolescence, a certain system of beliefs is established and personal opinions develop, which together can influence a person's needs and aspirations, it is necessary to establish certain standards to develop environmental awareness from an early age (Esquer *et al.*, 2022). In the modern sense, the concept of environmental awareness is a solution to the problem of ecology and the environment through systematic decision-making, along with the development of compassion and a desire to protect nature and awareness of the consequences of human activity. In addition, the concept is based on an understanding of the ecological aspect and cause-and-effect relationships in human interaction with nature. In addition, a person can listen to the opinions of adults from an early age, which can foster certain attitudes and environmental practices, including caring for nature or lack thereof (Trask-Kerr *et al.*, 2019). The acquisition of these aspects by a person, and especially by adolescents, depends on many factors that can radically change the adolescent's personal opinion, which ultimately leads to neglect of the environmental situation (Table 1).

**Table 1.** Factors that adversely affect the development of environmental awareness

Category	Factors
Personal factors	Lack of sufficient knowledge: lack of understanding of concepts related to ecology, ecosystems, adverse factors affecting nature, and the concept of nature conservation
	Passive attitude to the problem: lack of empathy and desire to improve the situation
	Ignoring the situation: reducing the importance of the current environmental situation under the influence of tasks and circumstances that adversely affect the environment
Social factors	Fear of irreversibility: the impossibility of reversing the changes made in the past in the future, and the fear of unfamiliarity with the idea and rapid change in the specific circumstances of the environmental situation
	Standards of acceptability: specific behavioural features of the environment that may hinder a person's initiative to take measures to preserve the environment and nature
	Territorial location: lack of desire to change the environment due to the usual circumstances in a particular area of residence (presence of industries, factories and other institutions that adversely affect the environment and nature)
Organisational factors	Decision-making by another party: the presence of possible influence from management or older people whose decisions cannot be changed (due to specific features of child-rearing, when the child's opinion is not considered)
	Restrictive rules: the inability to perform certain actions due to special regulations, rules and other policies that to some extent put personal opinion on the back burner
	Identity and the desire to follow the opinions of others: the need to adapt to the opinions and actions of others for personal social contact with peers
	Lack of resources: lack of additional sources of information that could better demonstrate the specific features of the current state of the environment, possible alternative resources from unconventional sources and nature protection

**Source:** compiled by the author based on data from M. Shen and J. Wang (2022)

Notably, the study of the environmental aspect in adolescence can lead to a certain understanding of one's involvement in the current state of the environment and the problems caused by humans, and can positively influence the development of an appropriate perception of natural problems and the development of an environmentally competent person (Zsoka *et al.*, 2013). In addition, the criteria

for assessing the level of environmental awareness of a person can be seen, which develops an understanding of the need to support and protect the environment in various aspects (taking independent steps and actions to improve the ecological state of the planet, expressing one's opinion to society and encouraging others to collectively fight against modern environmental problems, etc.) (Table 2).

**Table 2.** Environmental competence criteria

Criterion	Characteristic features
Cognitive	<ul style="list-style-type: none"> <li>• understanding of the concepts of development and existence of ecosystems that are related to production and human health;</li> <li>• the ability to analyse situations and their cause-and-effect relationships with possible environmental problems;</li> <li>• understanding and projecting the possible consequences of human activity on the environment, considering the current production characteristics.</li> </ul>
Value-based	<ul style="list-style-type: none"> <li>• an opportunity to express compassion and a desire to protect nature;</li> <li>• understanding the necessity to care about the state of nature and the environment on a daily basis in everyday life and educational activities;</li> <li>• demonstrating interest in the world's natural and environmental problems;</li> <li>• demonstrating interest in learning new material on ecology and methods of its protection.</li> </ul>
Action-practical	<ul style="list-style-type: none"> <li>• having a steadfast stance in the face of environmental vandalism in all areas of life;</li> <li>• the possibility of supporting environmental standards and consciousness in life, taking the initiative in addressing environmental issues in educational institutions.</li> </ul>

**Source:** compiled by the author based on data from T. Dzhengiz & E. Niesten (2020)

Notably, the development of a clear environmental awareness among adolescents is a special way to harmonise the trends in the development of society, which is mainly designed to improve the situation of nature and its ecosystems and to preserve resources to continue a stable life on the planet. Considering that the consciousness and environmental competence of most people do not meet the criteria of competence concerning ecology and nature, certain disputes arise in society, leading to an aggravation of the environmental situation and the lack of certain collective impulses to improve it (Amran *et al.*, 2019). In addition, notably, the development of a child's environmental awareness depends on culturally specific features, namely, different manifestations of human attitudes towards nature. Environmental awareness can be considered a certain cross-cultural phenomenon that needs to be normalised for the global work of humanity to restore the environment and protect nature in general (Padalka, 2018).

It means that by using the regulatory framework for human behaviour with nature, and the public desire to solve the problem and comply with the established provisions, certain results can be achieved, which in turn can have positive consequences in the future (Hosany *et al.*, 2019). First of all, adolescents should work on activating self-awareness processes, the ability to correctly develop and communicate their thoughts about certain situations, and encourage others to develop environmental awareness, demonstrate compassion for and care for nature, which is closely related to the child's self-esteem and social stereotypes on this subject (Balundé *et al.*, 2020). It once again demonstrates the need to bring public opinion to the development of environmental competence. Below is a certain model of normalisation of adolescents' environmental awareness, which can further become an impetus for personality development, and an opportunity to reinforce the necessity to explore and observe the basics of environmental awareness of their environment and peers (Table 3).

**Table 3.** The structure of adolescent environmental awareness

Cognitive level	Conative level
<ul style="list-style-type: none"> <li>• Environmental knowledge and erudition</li> <li>• Awareness of the relationship between man and nature, as well as man, nature and culture</li> <li>• A meaningful assessment of the ecological situation</li> <li>• Understanding the environmental situation</li> <li>• Recognizing sources of threats to nature</li> <li>• Formation of a personal opinion and the ability to defend it</li> <li>• Control and management of own actions</li> <li>• Formation of ecological position</li> </ul>	<ul style="list-style-type: none"> <li>• The ability to self-regulate in the environment, think critically and defend one's own opinion</li> <li>• Practical experience of interaction with the environment</li> <li>• Compliance with norms regarding behavior in the process of interacting with nature</li> <li>• Desire and ability to protect nature</li> <li>• Willingness to act on the basis of ecological imperatives of consciousness</li> </ul>
Axiological level	Perceptual-emotional level
<ul style="list-style-type: none"> <li>• Acceptance and understanding of ecological and natural values</li> <li>• The formation of opinions regarding the preservation of ecology and the nature of the environment</li> <li>• Conducting a moral and ethical assessment of social aspects of environmental reality</li> <li>• Ecological stereotypes</li> <li>• Taking into account the value of the environment and ecology of the planet</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental perception (desire to learn the necessary information regarding the existing problem)</li> <li>• Formation of reflection on the attitude of people to natural resources and ecosystems</li> <li>• An emotional and adequate assessment of the environmental situation</li> <li>• Awareness of connections between man and nature</li> <li>• A sense of responsibility and empathy for nature and ecology</li> </ul>

**Source:** compiled by the author based on data from I.M. Muñoz-García *et al.* (2022)

Therefore, notably, specific factors influence the structure of adolescents' environmental awareness, namely individual and social factors that develop their thoughts and attitudes towards the environment (T. Loughland *et al.*, 2002). If the normative structure that can develop children's environmental competence is observed and constantly reinforced, it is possible to promote this aspect and to educate individuals with a clear position on the preservation of the environment and nature.

#### **Educational programme for the design and development of environmental awareness in children**

It can be stated that it is almost impossible to achieve the above provisions of environmental awareness in adolescents when they learn the material on their own due to possible social stimuli and already entrenched ideas about human behaviour and interaction with nature. A possible solution to this situation is to use a specific curriculum for children in educational institutions to develop environmental awareness (Hrybiuk, 2019). Such a course helps to make the subject of ecology and nature conservation compulsory, which can affect the change in the nature of adolescents' environmental competence, and to learn the basics of environmental care in practice.

In general, the course can consist of four main modules that will help to gradually introduce students to the basics of environmental awareness and develop new ideas about this aspect (Nabochuk, 2015). In addition, contemporary information technologies should be used to make the material more modern and interesting. Possible tools for the IT classroom include the following: using interactive whiteboards, working with presentation software, taking online courses, watching videos, taking computer tests to test knowledge, designing projects, using games on the required subjects, holding online conferences, examining the material in electronic resources, disseminating the necessary information about the course programme, etc (Tomchuk *et al.*, 2022). Modules can be as follows:

1. Introduction to the subject and exploration of basic concepts related to ecology, environmental awareness, ecosystem, nature and related subjects.
2. Analysing literature, films, blogs and other information sources to consider the specifics of the development of environmental awareness in adolescents.
3. Conducting conversations, conferences and other events to discuss the problem and develop a common opinion in groups (classes).
4. Conducting psychological trainings, and preparing presentations, reports, and creative projects based on the material examined.

In the current Ukrainian realities of distance learning, caused by quarantine measures during the COVID-19 pandemic and later by the situation of military operations, and considering the age specifics of the teenage audience, both established forms and approaches to environmental education and modern media formats have proven themselves well: webinars, online master classes, online trainings and online marathons, psychological online quests and online

conferences, live broadcasts of Reels and Stories on Facebook or Instagram, informational and motivational videos on YouTube, Telegram channels and the youth network TikTok (Moshura, 2021). It is the combination of conventional and modern approaches, methods and forms of psychological and pedagogical influence that will develop the adolescent's competence to independently search for and comprehend environmental information.

For a clearer result and to consolidate the material, students should take additional ethics courses and work with a psychologist to help children behave properly and defend their position on any life issues, including their attitude to the environment (U.S. Department of Education, 2021). Using such methods can lead to the development of a public desire to preserve nature and the planet's ecology in the future and to the development of a systematic understanding of human connections with nature and cause-and-effect relationships about the activities of people today.

## **DISCUSSION**

Based on the study of the structure of youth environmental awareness development, it can be said that man-made environmental problems caused by human activity are an important aspect to be explored in general education institutions to help children critically assess the current state of the environment, have an understanding of the characteristics of the planet's ecology, and know and be able to protect nature and encourage others to develop public environmental awareness, which in turn is necessary to regulate the current state of the environment.

As L. Chawla (2020) notes in her research, modern children have an understanding of current environmental issues and can empathise with nature in this regard. In addition, the author notes the need to use psychological and educational practices to confirm the position of children and develop environmental awareness. It cannot be stated that most children are interested in this subject from childhood, as at an early age few parents will tell their children about the complexities of the environment and humanity's impact on it, but at a more mature age, it is possible if clear provisions are made to help develop environmental awareness. Practical training makes sense in this case, otherwise, a teenager will not be able to acquire the necessary knowledge to protect nature and care for the environment on their own.

In her dissertation, Syaska (2010) emphasises that using specific programmes to learn about the ecology of the planet and the basics of its protection is necessary in the modern world, especially given the current environmental situation. It will help young people to care about the environment from an early age, thus instilling the necessary knowledge on this subject, which will be used in their work and passed on for generations.

In her research work, K.A. Grimmette (2014) noted that the implementation of educational programmes in educational institutions has a positive result, and therefore it makes sense to take specific measures to raise the necessary degree of environmental awareness among children, which

further development is necessary for nature conservation. This opinion can be considered reasonable since properly designed curricula can influence young people's attitudes towards the environment in the way of protecting and preserving it. In addition, the environmental competence of the teachers themselves is important in teaching such programmes, as they will be able to explain and teach students how to properly care for and protect nature, and to instil a proper understanding of the need to preserve the environment (Lackney, 2008).

A. Fernandez *et al.* (2019) noted in their research that it is important to conduct courses and programmes for adolescents in educational institutions using information technology, as this will generate interest and engagement, which will lead to the required curriculum outcome. Considering that most children and adolescents are now growing up with access to and use of information technology in their everyday lives, such encouragement of children can have positive results, especially if current youth trends are considered (namely, by providing examples through bloggers' media materials or documentaries, and by teaching the material through conferences, presentations, etc.)

In their work, L. Darling-Hammond *et al.* (2019) note that education can help to further develop young people with the attitudes necessary for the future, which is a great lever for preserving nature and the ecology of the world. In addition, scientists indicate that it is possible to reach an unquestionable consensus in the learning process, but there can be no complete agreement of all parties to the learning process since each student and teacher has their own opinion on a particular subject, but with specific standardisation of the specifics of the environmental awareness programme, the result can be close to the above.

Summarising the study and researchers' opinions on the structure of adolescents' environmental consciousness in general education institutions, it can be said that there is a certain need to develop in children in educational institutions such concepts as ecology, nature protection and identification of the specific features of human interaction with nature, which can be a step towards the development of environmental competence to establish clearer countermeasures to the current environmental situation of the planet. Almost all authors have a common opinion on this aspect, which means that this subject is popular and necessary to explore in educational institutions while using modern information technologies to make the learning process more interesting and to obtain as much information as possible on the subject.

## CONCLUSIONS

The study identified that the development of environmental awareness is influenced by various groups of factors: individual, social and organisational. The task of the educational institution is to help students acquire the necessary environmental competences: cognitive, value and activity-

practical, i.e. to provide adolescents with relevant knowledge, develop an appropriate attitude towards them and encourage them to implement them in everyday life. Having achieved the purpose of the study, the author has established that the structure of adolescent environmental awareness consists of several levels, the interaction between which determines an appropriate attitude to the environment.

Based on the results of the study, it can be stated that the necessary measures to protect the environment and nature should be developed in modern youth to preserve the environment today and in the future. Therefore, it is of particular importance to develop the environmental awareness of children and adolescents in educational institutions, where a special programme of education for normal attitudes to ecology and nature will be used, and where universal values regarding attitudes to nature, the specifics of nature protection and the preservation and restoration of the environment will be developed. The current features of adolescents' attitudes towards the environment are not promising, as in most cases, their parental upbringing and education based on educational programmes do not use the features of environmental protection. The priority concepts to be explored are the preservation of life and nature on Earth, the preservation of natural and cultural monuments, the basics of protecting nature and resources, and the development of a normal attitude towards nature. The concept should be developed through the introduction of a modern system of teaching environmental awareness, and additional information opportunities, such as using messengers, applications, etc.

Further development of the subject of the structural components of adolescents' environmental awareness in the context of a general education institution can be continued through the study of the current attitude of adolescents to nature and the environment, and tracking the historical factors of the current worldview of adolescents. In addition, it is possible to examine the psychological characteristics of young people's current attitudes to environmental problems and nature conservation, and possible principles for changing people's psychological attitudes towards environmental problems, tilting them towards more conscious and sustainable environmental protection. In addition to the newly established educational programme for the development of environmental awareness among adolescents, the practical use of basic methods of nature conservation and ecology to develop healthy environmental habits can be added in the form of additional classes in educational institutions, and special regular trainings.

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## CONFLICT OF INTEREST

None.

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## **Структурні компоненти екологічної свідомості підлітка в умовах загальноосвітнього навчального закладу**

**Анотація.** Актуальність досліджуваної проблеми формування екологічної свідомості підлітків зумовлено необхідністю в умовах загальноосвітнього навчального закладу прививати учням поняття природокористування та природозбереження, для того щоб формувати здорову поведінку людей щодо природи та її ресурсів, а також належний рівень ціннісного ставлення до природних та культурних пам'яток. Мета статті – визначити основні структурні компоненти, чинники та умови формування екологічної свідомості підлітків в освітніх закладах, а також виявити можливості використання новітніх інформаційних технологій для розвитку та популяризації питання екологічної свідомості. Для того щоб комплексно дослідити тему екологічної свідомості, у статті використано аналітичний, статистичний та комплексний дослідницькі методи. Основні результати дослідження полягають у з'ясуванні типів та особливостей формування екологічної свідомості у підлітків. Представлено критерії екологічної компетентності: когнітивний, ціннісний та діяльнісно-практичний. Визначено структуру екологічної свідомості учнів загальноосвітніх закладів на базі когнітивного, конантивного, аксіологічного та перцептивно-емотивного рівнів. Розглянуто можливості використання інформаційних технологій, які допоможуть формувати нову програму виховання свідомості підлітків, а саме: сучасних систем для показу та розповсюдження інформації, соціальних мереж, а також форматів онлайн-конференцій та онлайн-курсів. Практичне значення дослідницької роботи полягає у створенні новітньої програми формування здорового ставлення підлітків до екології та встановленні базових цінностей, якими варто керуватися, щоб зберегти наявні пам'ятки природи та культури, а також на заняттях з виховання екологічної свідомості в загальноосвітніх закладах, навчальних курсах та закладах позашкільної освіти

**Ключові слова:** ставлення до екології; психологічний вплив; навчально-виховний процес; інформаційні технології; природозбереження

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