

# CHAPTER 1

## GENERAL PEDAGOGY AND HISTORY OF PEDAGOGY

### PEDAGOGICAL ANALYSIS OF THE CONTENT AND STRUCTURE OF ECOLOGICAL CULTURES OF ENVIRONMENTAL SPECIALISTS

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**Abstracts.** In the face of escalating environmental challenges, the imperative for sustainable development has never been more urgent. Central to this pursuit is the cultivation of an ecological culture, particularly among those who will one day lead, manage, and innovate within the realm of environmental sciences. This paper seeks to delve into the pedagogical underpinnings that foster such a culture, specifically within the educational pathways of environmental specialists. The concept of ecological culture, with roots tracing back to the 1980s, represents not merely an academic discipline but an essential paradigm through which humanity's survival and the biosphere's integrity are interconnected. The notion of ecological culture encompasses a broad spectrum of understandings and practices that reflect a harmonious interaction between humans and their natural environment. Historically viewed as a subset of broader cultural dynamics, it has evolved from the peripheral to the central focus of educational agendas in response to global ecological crises. This evolution underscores the shift from viewing ecological issues as isolated challenges to recognizing them as integral to all aspects of societal development. This article examines the structural and content-related aspects of ecological culture in the training and education of environmental specialists. By analyzing theoretical developments and practical applications, it aims to highlight how ecological education not only imparts knowledge but also shapes the ethical and practical frameworks within which future environmental stewards operate. In doing so, it explores how an interdisciplinary approach can enrich this educational process, preparing students not just to understand but also to act upon environmental challenges with insight and responsibility. This holistic approach is crucial for fostering a generation of specialists capable of steering our society towards a sustainable future, emphasizing the critical role of education in shaping ecological consciousness and action.

**Keywords:** natural resources; ecological training; educational institutions; methods of formulating ecological culture; pedagogical analysis.

**JEL Classification:** I 23, Q 51

**Formulas:** 0; **fig.:** 0; **tabl.:** 0; **bibl.:** 25

**Introduction.** The most expedient direction that will ensure the continued existence of all mankind is sustainable development, the main tasks of which are a balanced solution of socio-economic problems and preservation of the natural environment. Such development determines the need for people to live in accordance with the laws of nature, to be aware of certain requirements and prohibitions provided by these laws; all this will become possible when a new type of ecological culture is formed. Problem definition entities and structures concept «ecological culture» began to be intensively studied since the 80s of the past century. Thorough disclosure various aspects of it can be found in the works of famous people scientists of Ukraine and abroad. It should be said that ecological culture can be called both attributive, that is, an organic component of human life from the beginning of its origin, and phenomenal (from the XX century), when society is more and more convinced of the need to implement widespread changes, in the reorientation of human thinking, which will lead to a healthy, fulfilling, happy life in harmony with nature and the surrounding world.

Concept «structure» ecological culture (from the Latin *struktura* - to build, to build), can be defined as a structure and the internal form of system organization, as the unity of stable, regular relationships between its elements. The structure of ecological culture as an objective unity of components, exists in reality and does not depend on our knowledge or ignorance about her.

For complete definition entities concept «ecological culture» we will first turn to concepts «culture and "ecology"». The term "culture" comes from the Latin «*cultura*», what means «processing, agriculture, upbringing, education, development, adoration, respect». Thus, this term is interpreted ambiguous and multifaceted. In ancient times the term «culture» was most often used for the designation of human agricultural activity, or the upbringing and education of children (including regarding their improvement your physical condition). Subsequently, this term acquired universal value, pond category, what characterizes personality.

Environmental culture is the level of people's perception of nature, the world around them, and their assessment of their position in the universe, the attitude of a person to the world. Here it is necessary to immediately clarify that what is meant is not the relationship between man and the world, which also involves feedback, but only his relationship to the world, to living nature. In connection with the global ecological crisis, it is necessary to clarify what relations between man and nature can be considered harmonious, how human activity affects the environment, and to note why it is so important to talk about ecological culture, especially now. It should also be noted that the level of ecological culture is directly proportional to the ecological situation in the world and is directly dependent on the perception of the biosphere.

**Literature review.** The analysis of studies shows that there is theoretical developments of entities ecological culture, which was subject of research.

Culture, as a complex social phenomenon, has several "vectors" - subject-practical and spiritual, socio-historical and personal. Thus, the concept of «culture» is defined by L. Bueva as «...a set of material and spiritual values, created humanity in process socio-historical activity, covering, with one hand technical means production, material values, and from the second - spiritual values assets in the field of science, art,

literature, morality, education, etc.». Consonant to considerations specified authors and definition "cultures" in philosophical dictionary, and exactly:

In their definitions communication is being followed cultures with subject-creative activity, during whose happens self-development and self-affirmation a person.

Analysis of scientific literature by topic of our research gives U.S possibility affirm, what process formation cultures is going in interconnection and interdependence with formation society and all its factors, which are included an important place is occupied by the ecological situation in the country The causes of environmental problems are scientists they see in low cultural levels society, in its not yet formed moral and ecological culture.

Now let's move on to definition the concept of «ecology». «Ecology» – a greek word, consists with «oikos» – House, dwelling, family and «logos» - concept, teaching. He was introduced to science in 1866, Ernst Haeckel, an outstanding German natural scientist He considered subject study of the ecology of the relationship of living beings with surrounding environment.

In ecological encyclopedic in the dictionary, ecology is understood as synthetic biological science about the relationship between alive organisms and environment their residence. Ecology refers to fundamental division biology, which explores the fundamental properties of life. Basic subject ecology – study aggregates of living organisms that interact with each other and form with the environment a certain unity (i.e. system), c boundaries which is carried out process transformation of energy and organic matter.

In the last years ecological education and enough attention is paid to education at all levels. A number of scientific works of educators devoted to the problem of formation of the phenomenon ecological culture personality. Ecological culture is considered as necessary component optimization relationships between society and nature that exist condition survival humanity.

They are found in the literature the most diverse interpretation concept «ecological culture». The most common is definition, what given in work M. Reimers: «Ecological culture - stage i a component of global development culture, what characterized by sharp, deep and universal awareness essential importance ecological problems in life and in the future development humanity»[14].

Ecological culture according to V. Kryshchenko characterized as way self-organization essential human forces in specific conditions natural environment.

I. Zverev defines ecological culture as part of general human culture. On his opinion, ecological culture concerns everyone parties material and spiritual life our society, each a person and is expressed in such species scientific and practical activities that provide preservation and enrichment surrounding environment, create favorable conditions comprehensive development [6].

The main one trait ecological culture, believes I.D. Zverev, - there is «the ability to forecast remote consequences intervention a person in natural relationships, a broad view of multifaceted values of nature, skill submit all types of their activities to the requirements rational nature management, take care of the improvement of the

environment environment, prevent its destruction and pollution» [7, 9].

By statement L. Morozova, ecological culture is an important element of the general culture of mankind, and over time will settle down dominant place among others industries cultural activity. Examining this phenomenon, L. Morozova defines it as follow "Ecological culture is a creative, conscious activity people in process development and preservation vitally necessary values natural environment " [10, with. 90].

Almost all authors indicate the main ones components of ecological culture: system environmental knowledge; system of abilities and skills with rational using, enrichment and nature protection; system of environmental standards, values; social environmental practice.

Fenchak L.M. points out what essence the concept of "ecological culture" is defined on based on social order society of teaching and education specialist Formation of ecological culture is process complex, controversial and multi-stage AND offers the following structural elements ecological student culture : environmental knowledge - environmental thinking - ecological consciousness - ecological outlook - ecological ethics - ecological culture [16].

Each of them corresponds to a certain level or stage ecological formation mature a person However, without taking into account the outlook pedagogical aspects of determining the entire range of components affecting consciousness young people, you can't talk about formation ecological culture of the future specialist agrarian.

This is possible only with gradual transition from one stage to the next. From ecological knowledge to ecological culture - like that logic buildings this continuous chain, each stage of which (except the first and the latter) is based on the previous and prepares base for next All they interconnected, although each of them is relative independent. Between them exist certain succession Let's consider each of the named stages in more detail [17].

One from important elements and indicators, what characterize level ecological culture of the personality of the future agricultural specialists, have ecological knowledge. Exactly scientific, systematized environmental knowledge make up core theoretical equal environmental consciousness and culture, they are they can become basis for successful ecological activity people.

According to L. Nemec, the content of ecological of knowledge includes:

- understanding nature as the only one whole;
- dialectical understanding connection nature and society;
- the essence of the relationship between society and nature, a person and nature;
- moral and aesthetic influence of nature on a person;
- influence natural environment on health a person [11].

Ecological knowledge is systemic an element of environmental consciousness and culture. Nothing new is possible without ecological knowledge thinking, nor developing a solution strategy regional problems and further development cultures.

Ecological knowledge – its product social development They are growing in the process of historical formation of society, interaction between man and nature, from the empirical equal to equal theoretical systems, what make up basis ecological

outlook, consciousness and culture. Environmental level knowledge, in our opinion, affects the attitude people to nature, determines and regulates him.

Ecological knowledge are characterized certain structure I. Safonov in his own research singled out the following components [3]:

- knowledge of fundamental problems interaction society and nature, what include natural science and philosophy aspects;
- special environmental knowledge, which directly related with professional activity a person;
- ecological knowledge of the interdisciplinary character, i.e. knowledge that reflects the relationship of ecology - pedagogy, ecology - chemistry, ecology – economy etc.

N. Depenchuk and I. Drozdova to environmental of knowledge include [4]:

- characteristic general theories relationship a person with by nature;
- system natural science knowledge about the interaction of society and nature, stages development this one interactions;
- knowledge about socio-economic regularities nature management;
- history protection nature and organization her on modern stage;
- valuable ecological orientation;
- system legal and moral, scientifically based norms rules attitude to nature, skill and skills.

Trace to note what formation ecological cultures students higher agricultural educational institutions has its own features, to whose you can carry:

- relationship of global, regional and local information about ecological problems in educational and methodical complexes of disciplines everyone cycles preparation;
- legal support for environmental courses orientation;
- formation of co-evolutionary students approaches and views on environmental problems (study of relationships and interdependencies society and nature, which lays the foundations education of correct environmental behavior students agricultural technical schools in own future professional activity, allows have clear ideas about processes, what not lead to violation ecological balance in ecosystems);
- the vast majority of agricultural students of technical schools and colleges are natives of rural areas terrain, what closely connects their with surrounding environment and, accordingly, modern understanding ecological problems.

Environmental knowledge is the basis for higher education forms of human cognition - ecological thinking. Scientists own this phenomenon research are defined differently. So, R. Karpinska notes what ecological thinking synthesizes scientific knowledge as «...universal morality that transcends boundaries interpersonal relationship and includes the aesthetic attitude of a person to nature, elements of legal consciousness and philosophical understanding a person his own places in the surrounding world» [7, with. 25-28].

And academics V. Kaznachev and A. Yanshin note that «...ecological thinking is the level of knowledge, culture, upbringing, at which each in his professional and non-professional activity haunts purpose creation and organization of the best conditions for psycho-emotional, natural and social environment for further human development, preservation and development her health».

A special place in the chain of factors that condition the formation of ecologically mature person, takes ecological consciousness. under her on our opinion trace understand human the ability to perfectly reproduce reality in thinking.

With look content environmental scientists characterize it as «...a set of views, theories and emotions reflecting problems the relationship between society and nature in the plan their optimal solution in accordance with specific social and natural opportunities».

**Aims.** This paper seeks to delve into the pedagogical underpinnings that foster such a culture, specifically within the educational pathways of environmental specialists.

**Methodology.** Ecological consciousness is formed from knowledge and beliefs in the field of relationships society and nature, is based on ecologically expedient attitudes to natural resources, skills to apply scientifically determined decisions in relation to nature; reflects individual experience communication with natural systems Revealing structure ecological consciousness of our contemporary, scientists highlight those main components that reflect it social essence and regulatory functions. In connection with this, ecological consciousness contains [13]:

- conscious assimilation a person norm scientifically determined, ecologically appropriate, rational nature use and working out on this basis systems environmental beliefs, knowledge, skills, which provided optimal, in attitude to nature, him practical activity;
- mastering the norms of using technology, modern technologies and means organizations economic activity a person under from the point of view of a responsible attitude to problems ecology and preservation nature, legal culture and deep knowledge of nature conservation legislation, environmental situation, which was formed in the field of production activity, for place of residence, in the region and state, in global scales;
- understanding oneself as a part of nature which is for a person a source of health, humanism, patriotic feelings moral, aesthetic, sanitary and hygienic and others qualities, perception of nature as social values.

Environmental awareness is specific form reflection real ecological situations, a holistic vision of environmental problems, awareness unity people and environment, availability internal self-regulator ecologically civilized behavior, feelings responsibility, healthy way life, active participation in environmental protection measures.

The core of ecological culture and internal motivational regulator behavior is ecological outlook. By statement M. Bauer's ecological outlook is a totality principles, views, assessments, and knowledge that in generalized form determine integral understanding of the unity of the natural and social being, form ecologically oriented vital position [1].

However, essential for ecological worldview is not only knowledge, but and belief. Really, knowledge – logical component worldview, cognitively intellectual side outlook, and belief – moral and emotional and psychological attitude to knowledge, to reality.

Emerging environmental beliefs on basis worldview, is the source environmental needs - activity needs (practical her side), directed on preservation nature as conditions existence human society. Such way environmental beliefs are a deep recognition the truth of their knowledge about the unity of nature and society, the place and role of man in this unity, inadmissibility violation connections which provide her integrity.

The complexity of dependencies between knowledge, beliefs and practical activities as elements of activity affecting each other one necessary on our view, constantly to take into account in the process of environmental education and training for the purpose of forming ecological cultures students higher agricultural educational institutions I-II levels accreditation.

As note N. Depenchuk and I. Drozdova, subject study environmental ethics is relationships between people because of their attitudes towards nature, which is carried out on the basis of certain way production But the authors claim that the main meaning of ecological ethics – not in regulations actions human and in inclusion in the worldview of people of such knowledge about nature, which would serve as the basis of the correct attitude towards it [5].

Such an approach on today is very relevant.

Having analyzed the series original source with problems of environmental ethics, we discovered it elements:

- respect for life, which is based on a rule, what each form life is unique and therefore requires respect from the side a person;
- responsibility for life on Earth, destiny future generations and everyone alive creatures by quality surrounding environment;
- careful attitude to use of mineral raw materials without wastage, as one from means preservation Earth;
- solidarity a person with natural environment, which is based on moderation;
- social understanding as way understand others.

Presented factors they can become the rules which ones must to be guided humanity to be ecologically cultural and educated.

Structural elements of this quality are system scientific knowledge, aimed at knowledge processes and consequences activities of man and society in nature, ecological value orientations, knowledge of norms and rules behavior in the environment and readiness to environmental protection activities. The basis of this definition is the theory of activity, in the structure which we highlight such components ecological cultures:

- need-motivational (combination encouraging reasons activities);
- intellectual (specific knowledge, facts concept, theories, regularities);
- professional (active participation in environmental protection activities, application acquired abilities and skills for solving professional problems with taking into account ecological and moral imperatives).

**Results.** Let's stop more in detail on content characteristics these components ecological cultures.

Need-motivational component characterized by the fact that it is need-motivational sphere ecological activity student consist of a wide variety of interests,

needs, aspiration, imitation, etc. According to modern psychological and pedagogical ideas about we consider human behavior and activity internal and external motives for environmental activity. To motives, what arise directly in process activity and perform her as a result belong to:

- cognitive motives prompting to ecologically oriented activity with the goal knowledge of phenomena, processes and regularities development surrounding environment;
- aesthetic motives arising in communication process with by nature under time excursions, hikes, conversation;
- communicative motives, what are characterized aspiration to joint collective ecological (educational and practical activities, desire to participate in common business, communicate with friends in healthy (positive) communicative atmosphere);
- learning motives are related to interest to various forms of educational activity (in particular, to gaming and research).

Intellectual component of ecological students' cultures consists, first of all, of environmental knowledge. In general, they are containing scientific information in the field of theoretical and applied ecology Regularities development of nature and society (worldview aspect), information about the ecological state of the locality, one's country (environmental outlook and awareness). Learning by students specified provisions on levels understanding entities ecological phenomenon which are studied, will allow set and realize connections between phenomena and processes of nature, to identify them structure, causes and sources of functioning and, such way to form integral natural and scientific picture the world.

Professional activity component ecological culture is ecological actions that are carried out in accordance with the perceived purpose These actions are performed due to availability environmental knowledge and skills, and the consequences of such actions are specific personally or socially significant the results Ecological ability of students are shared on two groups:

- educational and cognitive - work skills with special literature ecological subjects, messages and reports from the studied literature;
- practical - the ability to predict individual consequences intervention a person in natural processes, the ability to correlate their utilitarian need with requirements rational nature use, the ability to explain and involve others (first of all your peers) to nature protection activity.

Professional activity component reflects nature and performance as educational activity with mastery environmental knowledge and skills, and specific practical activities of students from protection of the natural environment. Cannot consider ecologically cultural student, which has a fairly large amount of environmental knowledge, is able to analyze natural phenomena and relationship with nature, but does not reveal corresponding ecological activity.

Formation of ecologically oriented and ecologically mature personality by mastering the above components – it complex, polyhedral, controversial, and gradual process multi-stage continuous education, which implemented for by acting not only on human intelligence, but and on her emotions, on all spectrum her spiritual abilities



in combination social and family education.

But, according to M. Bauer, the level of mastery data components ecological cultures depends on many factors and, first, from age characteristics [2].

In terms of worldview and value aspects, Fenchak L.M. offers highlight the following degrees ecological maturity of the individual: informative and preparatory (preschool), basic – worldview (school), worldview - mature (higher), and professionally - professional (postgraduate).

**Discussion.** On our view, specified degrees ecological maturity is very valuable in system of continuous environmental education and in the process formation ecological cultures personality. Given the specificity of our research, we consider it necessary to consider mastering components of environmental culture by students on worldview-mature levels a worldview-mature (higher) level to provide higher educational institutions of I-II levels accreditation. They provide general and professional environmental education. general education completes the formation of an ecological worldview every student, and professional education teaches on professional level to decide ecological problems. At the same time, professional environmental education you can conditionally share on humanitarian, natural, industrial and agricultural. General and the first two species professional ecological education form ecological awareness, ecological and ethical qualities, ecological culture and understanding modern problems protection environment, and industrial and agricultural ecology differentiates and deepens everything said before and provides specialized knowledge to address these problems in specific industry folk economy [8].

It should also be noted that it is ecological education and education, which are provided higher educational institutions, is continuation of previous stages of training. In connection with this is education on these levels must be qualitatively higher, with a deeper level of knowledge about the environment [5].

Based on acquired knowledge on worldview- mature levels their valuable grades, functioning and deepening of ecological thinking of future specialists is formed a systemic view of nature is being formed environmental awareness that enables y any situations do ecologically smart choice and do not allow to apply damage to nature, to see not only limited neighbors, but and remote consequences anthropogenic actions.

Ecological culture includes in himself the ecological system existing in society education and education people. Level ecological culture of the individual with this view you can consider as level her ecological upbringing, and ecological education and education answer task formation of ecological culture. Based on this we think what directions formation of ecological culture of the future agricultural specialists perform ecological education, environmental education, and environmental activity.

Modern ecological education is education, which prioritizes eco-human and noosphere one's values, which targeted on radical solution problems formation ecological personality culture. It should be noted that itself on itself ecological education does not solve this one problem if it is separated from others species education, as and solution problems formation of ecological culture is impossible without solving the entire chain of global problems humanity. But, what more educated humanity, those more it aspires to ensuring personal environmental safety, creatively

suitable to this one problems.

We believe that environmental education in higher educational institutions I-II levels accreditation has to be carried out in close quarters connection with physical, chemical, engineering technical, economic, legal and humanitarian education in the process of studying all natural sciences and special disciplines, which to one degree or another affect different people aspects nature management.

Analysis scientific and pedagogical literature testified that today environmental education in system of higher education of Ukraine is being implemented and is developing by such scheme [9]:

Basic environmental education of students at based on the study of general humanitarian and natural sciences discipline;

Independent course on the basics of ecology up to 54 hours. depending on the profile faculty;

Further on the formation of environmental of knowledge under time study special and applied disciplines, as well as applied ecological practicums;

Generalization and fixing ecological of knowledge in practice, involvement students to research work with ecological topics;

Using conscious ecological of knowledge during the course and diploma designing.

In modern pedagogical literature, as in foreign and domestic, it is determined that education in the field of the environment is permanent process, which covers people of all ages at all levels of formal and non-formal education. She prepares people for life, teaches them to understand the main problems environment and gives skills and means, necessary for that in order to education could play a role in improving conditions life a person and preservation the environment.

In concepts continuous ecological education and upbringing in Ukraine are revealed fundamental principles ecological Education:

- continuity, systematicity and systematicity, which provide organizational conditions for the formation of ecological cultures personalities;
- education of understanding of integrity, unity the surrounding world, the inextricable connection of its components (a significant role in the organization this principle plays back doctrine about ecosystem, biosphere and noosphere);
- an interdisciplinary approach to formation ecological culture, what provides not mechanical inclusion various of knowledge environmental orientation to the content of different subjects, and their logical subordination main goals ecological education;
- coverage of environmental problems on global, national and regional studies levels;
- the focus of education on development value-motivational spheres personality [8].

Specific principles of environmental education define environmental education independent direction in system general education and education.

Weekend position in interpretable the concept of «ecological education" became its definition in scientific literature. I.Dedyu v encyclopedic dictionary writes that "ecological education is the formation of a person's conscious perception of the surrounding natural environment, beliefs if necessary thrifty attitude to nature, intelligent use of its resources, natural resources» [18, p. 358].

As noted A. Nekos «... none of the directions of education is integrated by others in such quantities as ecological. Ecological education – it a kind of integrator in modern education process» [11].

Problem solving ecological education turns out to be much more difficult on practice.

If ecological education a person is defined totality her of knowledge about features of society's interaction with nature, then ecological education has lot more complex content, because in addition to environmental knowledge, includes in himself wide spectrum the most diverse human qualities and characteristics of a certain worldview worldview, moral, legal, ecological, social principles and norms. Therefore, it is ecological education is unthinkable in separation from aesthetic, moral, legal education and upbringing. There are countless examples barbaric attitude towards the nature of people ecologically educated. Environmental education provides for the formation of such humanistic qualities of the personality, which, having become its internal property are functioning in practice of everyday life as an internal regulator and human behavior controller [19-25].

Ecologically a well-educated person is not out of compulsion, but rather out of principles will not allow himself to be harmed nature and other people. In this regard environmental education is crucial today condition preventing further degradation natural environment, software coevolution of nature and society, creation noosphere - such a symbiosis of society and nature, in which overcome a threat ecological crisis, and man and nature are in a state of harmonious balance [9-11].

The most important condition, and at the same time an indicator of the level of ecological development personality culture is a practical activity. In her appear and are fixed various motives of attitude towards nature and those positive personality qualities are formed, which determine the desire to live in harmony with by nature.

A. Nekos defines ecological activity as a person's actions aimed at the maximum it is possible to eliminate the main contradictions between effort a person to landscaping in wide understanding words and creation therefore ecologically safe environment. Otherwise saying ecological activities are actions aimed at creation environmental safety, based on consent from laws of nature.

So, only having mastered elements of ecological cultures - appropriate ecological knowledge, outlook- value orientations, thinking style, ecologically directed skills and skills, if there is a desire to take active participation in environmental protection activities and the ability to predict possible consequences development of nature - we can talk about formation ecologically literate and ecologically cultural specialists.

**Conclusions.** The paper brings into focus the necessity of integrating ecological education within the broader spectrum of educational disciplines to foster an enduring ecological culture among future environmental specialists. The conclusions derived from this analysis underscore several critical aspects:

1. Ecological education benefits from an interdisciplinary approach that bridges the gap between natural sciences, humanities, and technical subjects. This holistic integration ensures that students not only gain scientific knowledge but also develop the moral and ethical dimensions necessary to apply this knowledge responsibly.

2. The need for a continuous and systematic ecological education is paramount. It should begin at the earliest stages of formal education and continue through higher education. This approach is fundamental in shaping a deeply ingrained sense of ecological responsibility and awareness.

3. Theoretical knowledge of ecology must be complemented by practical applications. It is through hands-on experiences and real-world problem-solving that students can truly appreciate the impact of their actions on the environment and learn the skills necessary to mitigate negative effects.

4. Ecological education should aim to form not only knowledgeable but also ethically oriented individuals who view environmental stewardship as a personal responsibility. This requires cultivating values that prioritize sustainable practices and respect for nature.

5. Educational institutions must prepare students to tackle environmental challenges not only with knowledge and skills but also with a professional ethos that emphasizes ecological ethics in their field of work. This preparation should be viewed as a critical component of their professional identity and capability.

6. The formation of an ecological culture is not merely an educational goal but a societal necessity. As the ecological crises deepen, the impetus for a cultural shift towards sustainability becomes more urgent. Educators and policymakers must focus on nurturing an ecological consciousness that transcends academic learning and permeates all aspects of daily life.

7. While global ecological issues are important, ecological education should also focus on local environmental problems. This dual focus ensures that students can relate global challenges to their immediate surroundings, making the learning experience more relevant and impactful.

8. Encouraging research and innovation within ecological studies is essential. This not only advances the field but also stimulates student engagement and interest in pursuing ecological solutions creatively and effectively.

9. Engaging with local communities in ecological projects can enhance learning and foster a community spirit of environmental responsibility. It also helps students understand the practical implications of their academic knowledge and the social dimensions of ecological issues.

In conclusion, the pedagogical analysis reveals that developing an ecological culture within educational settings requires a committed, integrated, and proactive approach. By instilling ecological values and knowledge from an early age and reinforcing them through higher education and professional training, society can cultivate environmentally aware and responsible individuals poised to lead the change towards sustainable development.

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