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The Ecological Dimension of Sustainable Development: Bringing Forth Pedagogics to Safeguard the Global Future

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Training of citizens with a high level of environmental awareness, eco-consciousness and sustainable culture on the basis of new informed criteria for assessing the relationship between human society and nature should become one of the main instruments in solving extremely acute environmental and related socio-economic problems. Environmental education, as a holistic cultural phenomenon that includes the processes of inculcated education and (most importantly) personality development, should be aimed at the formation of ecological culture as a crucial component of the system of national and public education of all strata of the global population. In particular, within our educational system emphasis should be put on imparting through environmental education with the help of public environmental organizations by updating and making our academic disciplines, training programs, and approaches greener, more sustainable as well as making sure they provide professional environmental training through basic environmental education. Solving these pressing issues should ensure the formation of integral ecological knowledge and thinking platform within our educational institutions, necessary for the adoption of environmentally sound national and global decisions at all levels of the socio-political

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entities, groups, spheres of influence and activity fostering and facilitating thereby an in-depth mastery and understanding of ecological knowledge and agenda, furthering the formation and development of ecological thinking, consciousness and culture among students as well as the general population. With the presently looming threat of an environmental catastrophe, the authors are convinced that only a balanced, ecologically safe harmonious and sustainable program of action is our way out and should be the basic idea, forming and informing the methodological crux of environmental education in accordance with international policies, standards and practices.

Keywords: sustainable development, UNESCO, ecological safety, 2030 Agenda, levels of eco-education

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Historical context of environmental education

The first attempts at environmental education can be traced back to the beginning of the 18th century, when Jean-Jacques Rousseau emphasized the importance of education focused on the environment in his treatise "Emile, or On Education." Inspired by Rousseau's philosophy, Louis Agassiz encouraged students to study nature, not books. These two influential programs helped to clarify and elaborate environmental and nature studies curricula which first appeared in the late 19th and early 20th centuries. The contemporary movement of environmental education, which began to develop in the late 1960s and early 1970s, arises from the study of nature and champions education focused on the preservation of resources. With the onset of the Cold War, scientists (ecologists and educators among them) have begun to sound the alarm warning of radiation fallout, significant air pollution and hazardous depletion of natural resources, bringing attention to, stimulating, and fueling the public concern for health and the environment – all of this eventually contributing to the crystallization and unification of the phenomenon sustainable development coupled with the emergence of the field of environmental protection within academia (Stables & Scott, 2002: 58).

Thus, the term environmental education first appeared in *The Journal of Environmental Education* in 1969, having been coined by William B. Stapp, who became the first director of environmental education at UNESCO, followed by his post at Global Rivers International Network. Ultimately, the first Earth Day, held on April 22, 1970 – an event dedicated to heightening nationwide awareness regarding environmental issues – paved the way for the modern environmental education movement. At the same time, U.S. President Richard Nixon passed the National Environmental Education Act, which officially added environmental education to the K-12 school curriculum (Bonnett, 2007).

Following that, in the same year, the National Association for Environmental Education was created (1970) tasked with improving environmental literacy by providing resources to teachers and promoting environmental education programs. At the same time, environmental education received global recognition when a statement was made at the 1972 UN Conference on Environmental Issues in Stockholm proposing that environmental education be used as a tool to solve pressing global environmental concerns already beginning to present a serious threat to the global community. Based on the recommendations voiced at the conference, the UN created a United Nations Environment Program (UNEP), which as a regulatory body of the UN General Assembly, is aimed at monitoring environmental changes, encourages

and based on its findings coordinates international cooperation in the field of environmental protection. Accordingly, UNESCO and UNEP developed three main documents (the Stockholm Declaration in 1972, the Belgrade Charter in 1975 and the Tbilisi Declaration in 1977), which, in addition to other shared initiatives dealing with environmental issues, lay down the foundation and directions of environmental education and protection.

The role of UNESCO in implementing the concept of environmental education

According to a recent report published by UNESCO, current ecological education is not adequately preparing students to adapt, take action and respond to climate change and environmental crises (Arico, 2014: 456-457). Hence, as part of the study "Educate for the sake of our planet", curricula and programs in almost 50 countries in all regions were analyzed. More than half of them do not mention climate change, and only 19% mention biodiversity. In particular, the study observed a lack of attention to socio-emotional skills and action-oriented competencies central to effective environmental action and preservation. In an online survey of approximately 1,600 teachers and educators conducted as part of this study, a third of respondents indicated that environmental issues are clearly not a significant part of the teacher education curriculum. Responding to these alarming findings UNESCO proclaimed that education should prepare students to understand the current crisis and shape the future of the world. To save our planet, we must change our way of life, ways of production, consumption and interaction with nature. The inclusion of education for sustainable development in all educational programs, therefore, must become a fundamental element (Eulefeld, 1979).

In order to remedy the situation, UNESCO has set itself a new goal: to make environmental education the critical component of educational programs globally by 2025. To make it a reality, the organization works with all of its 193 member states to support curriculum reform and track progress in spreading the necessary knowledge, skills, values and attitudes leading to positive changes and protecting the planet's future. In addition to that and to further strengthen the impact of this agenda, UNESCO launched #LearnForOurPlanet (#LearnForOurPlanet) worldwide campaign with the aim of calling for needed curriculum alterations as well as a wholesale systemic education sector transformation so that all people can learn for the sake of our planet, our own survival and for the sake of future life on our planet (Palmer, 2015: 264). As the leading institution of the UN system on education for sustainable development, UNESCO, therefore, aims to ensure that all students acquire the knowledge, skills, values and guidelines necessary to act for the benefit of the planet, coexisting in a productive, sustainable manner. Accordingly, in order to cement these ambitious aspirations, in 2019, the UN General Assembly adopted a resolution calling on the international community to expand the scope of education in the interests of sustainable development whereby the achievement of the goals of the 2030 Agenda is aimed at bring prosperity, peace and sustainable development both locally and globally (Shulla et al., 2020).

Guidelines of environmental competence formation

As part of the UNESCO drive for a raising the standards of environmental awareness and education, the authors presently would like to turn to highlighting a number of important constituent elements at the core of the methods utilized to develop a more robust education

for sustainable development (ESD) curriculum. In particular, we feel it paramount that every educator (regardless of the level of instruction) should foster self-discovery, promote self-education through various environmental education activities, aiding them in making independent eco-friendly, responsible consumption decisions in every daily life aimed at fueling and improving communal and global sustainable development. Undoubtedly, these provisions require the emergence and incorporation into the nationwide curricula of a fundamentally new pedagogical approach that tries to instill a truly pro-active, responsible stance towards the students' daily activities, informing their decisions with critical, impactful data able to bring about an incremental change in their environmental attitude and values (Hart & Nolan, 1999: 42-43).

As a result, one can observe a gradual positive shift in the learners' ecological outlook and activity, represented by conscious enlightened behavior towards personal environmental choices, which generally requires the following:

a) developmental and systematic character of education;
b) enriched scientific nature of the content and methods of the educational process, its convergence with modern relevant scientific findings and social practices;
c) cultural relevance, understood as the correspondence of education to the achievements of the global and national culture;
d) adequate planning – a thorough process of harmonization of the natural, age- and level-related characteristics of a personal and group study program;
e) interconnected nature of educational activities, theoretical knowledge and practical skills and real-world ecological activity of the individual;
f) activity and independence in educational activities, interconnection and unity of educational and research work, education and self-education;
g) democracy and openness of the learning environment, a productive mixture of education and upbringing;
h) taking into account of the level of students' preparation, age and individual capabilities;
i) creation of a positive classroom emotional climate, careful consideration of the motivational underpinnings of various ecological studies and learning activity as well as creative imparting of the system of appropriate environmental usage attitudes and dispositions;
j) a combination of collective and individual forms and methods of educational work and empowerment, which ensures personal and professional development and full self-actualization of the students' latent potential to be capable, effective actors of positive global sustainable development.

At the same time, we believe that proper understanding and appreciating of the goals, ends and means of environmental education in the context of effective, sustainable development practices, likewise, involves: expanding the concept of environmental education to cover broad developmental psycho-social issues; encouraging the development of system-oriented, critical and creative thinking, covering all levels of education and their interconnected relation to the various elements of the students' personal and professional sphere; consideration of moral and value aspects of environmental education, promoting the ethics of responsibility; fostering the shift of emphasis from a purely didactic information transfer to the development of immersive learning environments promoting and providing proper problem-based engagement and

imparting decision-making skills through the introduction and constant classroom practice and reinforcement of the active-learning methodology (Sorensen, 1997).

Coupled with these broader concerns and approaches are a set of additional specific principles of environmental education, favoring:

a) **universality, continuity and variability** as providing the possibility of choosing the level, content, pace, and form of environmental education in accordance with social requirements, personal abilities and inclinations;
b) **systematicity and integrity of assimilation of eco-related knowledge**, which promotes the understanding of the interdependence of natural and social processes, highlighting the inextricable connection between man and nature and our effects on it;
c) i**nterdisciplinarity**, which considers ecological education as a synthetic science, harmoniously incorporated in the practice of the broader educational process and, therefore, relying on a cross-disciplinary approach that fosters impactful personal attitude and differentiation of pedagogical influences while taking into account the individual characteristics of each particular student;
d) **the unity of local, regional and global approaches**, which provides familiarization with environmental problems at various levels and scopes of formal and practical participation in solving environmental problems calling for short, long-term and immediate engagement;
e) **practical orientation**, which involves solving specific environmental problems by means of developing a strong, well-informed grasp on environmental issues, acquiring effective ecological know-how, practicing and honing professional environmental skills and abilities.

Principles of eco-competence

In assessing the ecological education within our national education system, the authors conclude that present environmental content of school and university subjects acts only as a minor cumulative (at times – a very disorienting one) factor in the formation of the students' environmental competence, since a typical Ukrainian school, (at best) presents ecology-related material and issues by means of an interdisciplinary inculcation, since ecology and environmental science are not a separate subject. Our comprehensive analysis of educational programs, thus, revealed that the main didactic role and responsibility in covering environmental and ecology-related status quo and approaches belongs primarily to the disciplines of geography and biology (Vysotska, 2011).

Thus, a shameful statistic is that on average environmental issues at pre to middle-level school account for only 8% of the total volume of educational issues, comprising a meager 6% of the total educational process. Such quantitative indicators are hopelessly behind compared to most global trends, which demonstrate a clear expansion of the study and research of the environmental issues within the Western educational process and curricula. These examples of the broadening influence of ecologically-related content within modern, progressive European countries suggests that in order to achieve a successful formation of the informational and cognitive component necessary for a well-structured scientific and academic approach to environmental studies and research, it is crucially important to balance the course content whereby we present ecological science findings and build courses according to the global,

regional, and local principle of individual and shared environmental impact (Kopnina, 2020: 6). Following with this general principle of environmental education as well as its direct impact on the formation of environmental competence among the student body is particularly relevant, as it affects and enriches their everyday level of environmental competence and practice. Thus, while we arm our students with the relevant knowledge while engaging their active ecological participation in the day-to-day affairs of their community outside of the classroom, it is important to keep them aware and enthusiastic about finding ways how to connect their immediate ecological activity to the global level and efforts aimed towards actualizing sustainable environments not as an auxiliary agenda, but as a core ever-present conviction and drive determining the worldview of the individual.

While our analysis of local educational programs gives grounds for the conclusion that ecological knowledge is mainly focused on a predominantly scientific approach (leaving little room for creativity or alternative views), mostly scrutinizing and relating to global and regional environmental problems, there is, at the same time, a paradoxical striking lack of material devoted to the environmental problems of the natural and man-made environmental hazards at the primary school level, which, to our mind, is decisive in the formation of the student's maturity and environmental competence (Kahn, 2010). A person's awareness of his own involvement in environmental problems is of particular importance for the formation of environmental competence. This requires information related to their manifestation at the household level and in everyday activities. Having acquired knowledge at the everyday level, the schoolchild not only realizes the nature and extent of his own impact on the environment, but also learns to act in such a way as to minimize his impact on it.

Ways of formation of educational eco-competence. The general overload of the lesson process practically makes it impossible to expand environmental issues with materials of local rank and those that have a domestic orientation. However, today's realities require changes in the style of nature use among today's students and their families. Therefore, the introduction into the extracurricular process of a series of special optional courses devoted to local everyday problems is almost the only possible way to mitigate this contradiction. Courses on studying the problem of household pollution ("Click on the garbage!") have been developed for students in grades 7-9, which clearly illustrates everyone's involvement and responsibility in relation to the problem, and a comprehensive course "The House You Live In" that shows the main environmental problems that arise as a result of personal or family consumption of natural resources. High school students are assigned the "Energy Conservation" course aimed at developing the skills of economical use of nature and provided for the possession of a certain amount of knowledge in physics (Vysotska, 2011).

Such direct involvement in solving environmental problems makes it possible to resolve the main contradiction of modern school environmental education between the predominantly uncritical totality of environmental knowledge presented in various educational subjects and the possibilities of schoolchildren in their application, limited by social status and role, age-related psychophysical characteristics, etc. (Kato, 2015). The interdisciplinary approach to eco-education consists in the coordinated use of the educational and educational potential of all educational subjects and extracurricular educational work with the aim of forming the environmental competence of schoolchildren. Environmental education and upbringing in the vast majority of general educational institutions of our country are carried out according to multi-subject and mixed models. According to this approach, the principle of interdisciplinary becomes of primary importance, since the ecological content is presented aspect by aspect in

each educational subject of the natural and social-humanities cycles in accordance with their specifics,

Levels of Eco-education

Lastly, we would like to briefly set out a vision for a level-based ecological curriculum that involves all manner of educational establishments if they are to provide effective up-to-date environmental education. The basic level of environmental education (as well as the formation of environmental competence) is intended for schoolchildren and the general population, whose professional activities do not significantly affect the state of the environment. Formation of the basic level of environmental competence is provided by the primary school (grades 5-9). It is standard and mandatory for every ordinary citizen, regardless of age, social status, profession, etc. (Havrysh, 2014).

The advanced level of environmental education (environmental competence) is aimed at professional groups that have a significant impact on the environment or are directly engaged in environmental protection activities. Since the general processes of reforming the education of Ukraine envisage the introduction of specialized training already in the senior classes of the comprehensive school, accordingly, the formation of an in-depth level of environmental competence begins in the senior school (grades 10-11). Coupled with levels of ecological pedagogics are particular aspects of the formation of environmental awareness among students educators need to consider. Thus, the cognitive plane is presented in the content of natural and humanitarian subjects. This is scientific knowledge about the structure, energy, and functioning of the biosphere as a whole system, the unity of man and society with nature, ecological problems and ways to solve them, and modern tasks of nature protection. The value aspect of the content is determined by the moral and value orientation of a person's relationship to nature, a sense of responsibility to current and future generations, and consideration of nature as a unique, universal value. The normative sphere of eco-education contains a system of norms, rules, prescriptions and prohibitions regarding human interaction with the environment, legal bases of nature use, environmental rights and responsibilities of citizens (Ibid: 27).

Active is a set of various types and methods of activity aimed at the formation of cognitive and practical abilities and skills of an ecological nature in schoolchildren, the development of willpower, as well as the needs and abilities to show activity in solving environmental problems. A prominent place among them is the ability to make ecologically balanced decisions, to foresee the possible consequences of activities for the environment, to combine one's own life interests with the modern and perspective state of the environment.

Conclusions

Currently, notwithstanding acceptance of the UNESCO 2030 Agenda roadmap and implementation conditions, Ukraine is delaying the adoption and development of the concept of Education for Sustainable Development. environmental education in Ukraine and in many parts of the world continues to be based on the principles of approaching nature as an inexhaustible resource without taking into account the catastrophic consequences of such an approach. And these consequences have already led to irreversible changes and require a radical restructuring of approaches to the formation of both the general principles of environmental education and the training of "professional ecologists" for all branches and systems of management and ensuring the appropriate level of technogenic and ecological safety of life.

At the current stage of education reform, a new position regarding environmental education should be established as a tool for the socialization of the individual, and his adaptation to life in an urbanized environment in the conditions of the development of a civil, informational society. This approach to the understanding of environmental education makes it possible to present it as a new educational field with extracurricular functions aimed at forming value orientations of attitudes towards the environment: natural and artificial – transformed by human activity and the inner world of the person himself, his health, spiritual and material needs. Environmental education should receive the status of a strategic, large-scale, important priority field, with expanded and updated content, form and methods of education.

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