CHAPTER 6
DIGITAL EDUCATIONAL CONTENT AS A TOOL FOR SHAPING STUDENT YOUTH'S ENVIRONMENTAL OUTLOOK IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT GOALS

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The current stage of society's development is characterized by the aggravation of global environmental challenges that have become systemic and transnational in nature and directly affect the quality of current and future generations' life. In this context, the formation of students youth's ecological outlook as an integrative characteristic of a personality that combines a system of ecological knowledge, value orientations, norms of responsible behavior, and readiness for practical activities in accordance with the principles of sustainable development is of particular relevance. The implementation of the Sustainable Development Goals (SDGs) adopted by the United Nations, in particular SDG 4 "Quality Education", SDG 12 "Responsible Consumption and Production", SDG 13 "Combating Climate Change", SDG 15 "Protecting and Restoring Terrestrial Ecosystems", objectively necessitates rethinking of the content, forms and means of environmental education in general secondary education institutions.

The digitalization of the educational space significantly transforms pedagogical practice, expanding the possibilities of access to knowledge, individualization of learning, visualization of complex environmental processes, and active involvement of students in cognitive activities. In this aspect, digital

educational content appears not only as a technical resource or a collection of electronic materials, but also as a powerful pedagogical tool for targeted influence on the cognitive, emotional-value, and activity spheres of a student's personality. Its use makes it possible to integrate environmental education with the ideas and objectives of the SDGs, promotes systemic thinking, environmental responsibility, and awareness of the relationship between individual human actions and global sustainable development processes.

At the same time, the effectiveness of digital educational content as a tool for shaping environmental outlook largely depends on scientifically based theoretical and methodological foundations for its development and implementation. This actualizes the need to understand philosophical, psychological, pedagogical and didactic approaches to environmental education, to clarify the pedagogical potential of digital resources, and to determine the methodological principles of their integration into the educational process, taking into account the values of sustainable development. In this regard, a research study on the analysis of digital educational content as a tool for shaping student youth's environmental outlook in the context of the SDGs is timely, socially relevant, and methodologically justified.

Modern scientific research shows a steady trend toward rethinking environmental education through the prism of sustainable development, digital transformation, and a competency-based approach. In this context, the key issue is the formation of a new environmental culture and environmental outlook of the younger generation, based on the values of responsible attitude to the environment and awareness of global environmental challenges. Thus, the work of L. Volovyk, T. Chornoshtan, K. Kovalska emphasizes that the ecological culture of students in the context of sustainable development should be formed as a holistic socio- cultural formation that combines knowledge, values and behavioral practices, and education is considered as a leading mechanism for the implementation of the SDGs [1].

An important theoretical and methodological basis for the problem under study is the idea of innovating environmental education in the digital dimension. The analytical review by T. Hodetska presents a systematic analysis of current digital trends in education, proving that digital educational resources contribute to increasing the interactivity, accessibility and personalization of environmental education, as well as create conditions for the integration of formal and non- formal education in the field of sustainable development [2]. Similar ideas can be traced in the work of M. Horobei, who substantiates the potential of digital tools in the implementation of environmental education and environmental activities in Ukraine and the EU, in particular in the context of the spread of digital platforms, online campaigns, and virtual environmental projects [3].

The concept of the “digital turn” in education was thoroughly analyzed in the study by A. Hrebeniuk and I. Okseniuk, who consider digitalization as a strategic factor in ensuring sustainable development of society. The authors emphasize that digital educational technologies have not only an instrumental but also a worldview impact, forming students' ability to think systematically, critically, and understand the interconnections between social, economic, and environmental processes [4]. In the same vein, V. Kovalchuk argues that digital technologies are an effective means of forming students' environmental culture in accordance with the SDGs, as they ensure the integration of environmental content with real-world practices of sustainable development and activate the educational and cognitive activities of education seekers [5].

The regulatory and conceptual framework for the use of digital educational content is determined by national framework documents, in particular the Conceptual and Reference Framework for Digital Competence of Teachers and Research and Academic Staff [6] and the Digital Competence Framework for Ukrainian Citizens [9]. These documents outline the key competencies necessary for the effective use of digital resources in the educational process, which is directly related to the implementation of environmental education in the digital

environment. The Law of Ukraine “On Education” [8] and the CMU Resolution on the Functioning of the Unified State Web Portal "Action. Digital Education" [7] consolidate the strategic course for digitalization of education, creating institutional conditions for the introduction of digital environmental content.

A separate group of studies is devoted to the development of digital literacy and teacher's pedagogical readiness. O. Stoika substantiates the need to form teachers’ digital literacy in the system of postgraduate education as a prerequisite for the effective use of digital resources, in particular, environmental ones [10]. This provision correlates with the scientific work of S. Tolochko, where digital technologies are considered as a tool for scientific and methodological support of environmental project activities of high school students for sustainable development [11].

A significant contribution to the theoretical and methodological understanding of the problem is made in the works of L. Mironets and S. Tolochko, who define the theoretical and methodological foundations of the use of digital technologies in the formation of education seekers’ environmental competence, focusing on the integration of competence, activity and system approaches [13]. Further development of these ideas is presented in a collective monograph with the participation of S. Tolochko, which reveals the essence of digital pedagogy of open education and its effectiveness in the context of globalization processes [14].

The international dimension of the problem is represented in UNESCO documents, in particular in the Roadmap for Education for Sustainable Development, which emphasizes the role of digital technologies in achieving the SDGs and forming an environmentally responsible citizen [12]. In the same context, the research by S. Tolochko, N. Bordiuh, and A. Godunova on the use of artificial intelligence in education for sustainable development, which demonstrates modern international practices and Ukrainian experience in the context of war, is noteworthy [15]. The work by A. Truten and S. Tolochko

complements the said scientific discourse by revealing the possibilities of STEM education and project technologies in the formation of high school students' environmental competence [18].

The generalization of the analyzed sources allows us to state that digital educational content is considered by modern scholars as a strategic tool for integrating environmental education with the SDGs, which has significant pedagogical potential for shaping students youth's environmental outlook on the basis of sustainable development.

The theoretical and methodological understanding of the integration of environmental education with the Sustainable Development Goals (SDGs) is based on modern philosophical, socio-pedagogical and didactic concepts that define education as a strategic factor in ensuring society's sustainable development. In the scientific discourse, environmental education is not seen as an isolated field of knowledge, but as an interdisciplinary phenomenon aimed at forming an ecological outlook, systemic thinking, and a value-based attitude towards the environment in accordance with the global sustainable development agenda.

In the philosophical and ideological dimension, the theoretical basis for integrating environmental education with the SDGs is the concept of sustainable development, which combines the environmental, social and economic dimensions of civilization development. In this context, education performs a transformative function, forming students' understanding of the interdependence of natural and social processes, the limited natural resources and the need to harmonize relations in the human-nature-society system. This approach ensures the transition from a knowledge-based paradigm of environmental education to a value-oriented and action-oriented one, which is in line with the SDG ideology.

An important theoretical basis is the competency-based approach, according to which environmental education is aimed at developing environmental competence as an integrated learning outcome. Environmental competence

encompasses a set of knowledge about sustainable development, environmental problems and ways to solve them, value orientations towards environmental preservation, as well as the ability to behave environmentally responsible and participate in sustainable development practices. In this sense, the SDGs are the thematic content of environmental education, a criterion for determining the expected learning outcomes.

Methodologically, the integration of environmental education with the SDGs is based on a systems approach, which allows us to consider environmental problems as complex open systems that function in conjunction with economic, social and cultural factors. The application of a systems approach in the educational process contributes to the formation of a holistic vision of sustainable development issues among students, awareness of the cause-and-effect relationships between human activity and the state of the environment, and understanding of the multilevel nature of environmental challenges – from local to global.

Interdisciplinary and integrative approaches are an important methodological basis, which ensure the inclusion of sustainable development ideas in the content of various academic subjects - natural, social, technological, as well as in extracurricular and project activities. Such integration helps to overcome the fragmentation of environmental knowledge and forms a holistic picture of the world in which environmental, social, and economic aspects of development complement each other.

A special place in the methodology of integrating environmental education with the SDGs is occupied by an activity-based approach focused on engaging students in active environmentally oriented activities. The implementation of this approach involves the use of project-based, research, and problem-based learning, in which students gain experience in making decisions aimed at achieving the SDGs at the local level. Such activities facilitate the transition from the declarative

assimilation of sustainable development values to their internal adoption and practical implementation.

In the context of the digitalization of education, it is methodologically important to combine environmental education with digital pedagogy and the ideas of education for sustainable development (ESD). Digital educational resources, platforms, and tools create conditions for visualizing global environmental processes, modeling sustainable development scenarios, analyzing real environmental data, and engaging students in global initiatives related to the implementation of the SDGs. In this way, the digital environment becomes a space for integrating the theory and practice of environmental education.

Therefore, the theoretical and methodological foundations for integrating environmental education with the SDGs are determined by a set of interrelated approaches - worldview, competence, systemic, interdisciplinary, and activity-based - that together ensure the formation of students' environmental outlook in accordance with the values and goals of sustainable development.

The pedagogical potential of digital resources in modern environmental education is determined by their ability to provide qualitatively new opportunities for the implementation of educational, upbringing and developmental tasks in the context of sustainable development. In the scientific and pedagogical discourse, digital resources are seen not only as technical means of transmitting information, but also as a multidimensional educational tool that integrates the content, methods, forms, and technologies of education and contributes to the formation of an ecological outlook, ecological competence, and digital literacy of students.

First of all, the pedagogical potential of digital resources is manifested in the possibilities *of expanding the cognitive component of the ecological outlook*. Digital educational platforms, multimedia teaching materials, interactive maps, simulations, and virtual laboratories provide access to up-to-date, scientifically verified information on global and local environmental issues, climate change, biodiversity, and the use of natural resources. According to T. Hodetska, digital

resources increase the visibility and structure of environmental knowledge, contributing to a deeper understanding of complex natural processes and phenomena [2]. This is especially important for the integration of environmental education with the SDGs, as it allows visualizing the interconnections between the environmental, social and economic aspects of sustainable development.

The significant pedagogical potential of digital resources is in the *formation of emotional and value-based attitudes towards the environment.* The use of video content, digital storytelling, and virtual tours to environmental sites or regions of environmental disasters helps to develop empathy, environmental sensitivity, and awareness of personal responsibility for the environment. As noted by L. Volovyk, T. Chornoshtan, and K. Kovalska, the formation of environmental culture is impossible without a value component, and digital resources significantly enhance the educational effect of environmental education due to the emotional intensity and approximation of educational material to real life situations [1].

In the active dimension, the pedagogical potential of digital resources is realized through *the activation of educational, cognitive, and project activities of student youth*. Online collaboration platforms, cloud services, digital tools for data collection and analysis create conditions for organizing environmental projects, research, STEM and environmental project activities aimed at achieving the SDGs. The works of A. Truten and S. Tolochko emphasize that the use of digital and project-based technologies in STEM education contributes to the formation of environmental competence of high school students by involving them in solving real environmental problems [18]. Such activities develop students' ability to apply knowledge in practice, work in a team, and make responsible decisions.

An important aspect of the pedagogical potential of digital resources is *the ability to personalize and differentiate learning*. Digital learning environments allow you to adapt the content and pace of learning to the individual educational needs of students, taking into account their level of training, interests and motivation. This is in line with the principles of inclusive and quality education set

out in SDG 4 and creates conditions for engaging a wider range of students in environmental issues. A. Hrebeniuk and I. Okseniuk emphasize that the digitalization of education contributes to the increase of students' subjectivity and the development of their autonomy in learning, which is an important prerequisite for the formation of sustainable worldviews [4].

Special attention should be paid to *the integrative potential of digital resources*, which consists in combining environmental education with other educational fields and global sustainable development initiatives. Digital resources provide a way out of the classroom system, allowing for the integration of formal, non-formal, and informal education, and engaging students in international environmental projects [16, 17], online campaigns, and UNESCO educational platforms. The Roadmap for Education for Sustainable Development emphasizes that digital technologies are a key factor in scaling up sustainable development ideas and building global citizenship [12].

Thus, the pedagogical potential of digital resources in shaping the ecological worldview of students lies in their ability to comprehensively influence the cognitive, emotional, value and activity spheres of the individual, ensure the integration of environmental education with the SDGs and create conditions for the implementation of innovative pedagogical approaches in the digital educational environment.

Summarizing the results of the theoretical analysis of scientific and regulatory sources, we have established that digital educational content in modern conditions is a systemic pedagogical factor in the formation of student youth’s ecological worldview in the context of the Sustainable Development Goals. Its theoretical and methodological foundations are based on the integration of the concept of education for sustainable development, competence-based, systemic, activity-based, and interdisciplinary approaches, which ensures a holistic understanding of environmental problems as complex socio-natural phenomena and contributes to the formation of responsible worldviews.

It is proved that the integration of environmental education with the SDGs involves not only the inclusion of relevant thematic content in the curriculum, but also the reorientation of educational outcomes to the formation of environmental competence, values of sustainable development and students' readiness for practical environmentally sound activities. In this process, digital educational content ensures the connection of global guidelines for sustainable development with the local educational experience of students, promotes awareness of the cause-and-effect relationship between human activity and the state of the environment, and forms systemic and critical thinking.

It has been established that the pedagogical potential of digital resources is realized through a comprehensive impact on the cognitive, emotional, value, and activity spheres of the individual, expanding the possibilities of visualization and modeling of environmental processes, intensifying project and research activities, personalizing learning, and integrating formal and non-formal environmental education. At the same time, the effectiveness of using digital educational content directly depends on the level of digital competence of teachers, scientific and methodological support, and the compliance of digital resources with the values and principles of sustainable development.

Thus, the results of the theoretical analysis demonstrate the need for targeted, methodologically sound implementation of digital educational content as a strategic tool for shaping the ecological outlook of students that meets the current challenges of digital transformation of education and global challenges of sustainable development.

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