



Nataliia BIELOVA,

Candidate of of Geographical Sciences, Associate Professor
of the Department of Geography and Natural Sciences,
Vasyl Stefanyk Carpathian National University (Ivano-Frankivsk, Ukraine)

Наталія БЕЛОВА,

кандидат географічних наук, доцент, доцент кафедри географії та природознавства,
Карпатський національний університет імені Василя Стефаника (м. Івано-Франківськ, Україна)
nataliia.bielova@cnu.edu.ua
ORCID ID 0000-0003-4230-0418

Uliana BORYS,

Candidate of Pedagogical Sciences, Lecturer,
Kolomyia Pedagogical Proffecional College of the Ivano-Frankivsk Region (Kolomyia, Ukraine)

Уляна БОРИС,

кандидат педагогічних наук, викладач,
Коломийський педагогічний фаховий коледж Івано-Франківської обласної ради (м. Коломия, Україна)
ulaborus333@gmail.com
ORCID ID 0000-0002-2670-8061

Andrii CHERVINSKYI,

Candidate of Historical Sciences, Associate Professor Faculty of Natural Sciences,
Vasyl Stefanyk Carpathian National University (Ivano-Frankivsk, Ukraine)

Андрій ЧЕРВІНСЬКИЙ,

кандидат історичних наук, доцент, доцент кафедри географії та природознавства,
Карпатський національний університет імені Василя Стефаника (м. Івано-Франківськ, Україна)
andrii.chervinskyi@pnu.edu.ua
ORCID ID 0000-0002-2128-196X

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INFORMATIONAL AND DIDACTIC ASPECTS OF USING MUSEUM PEDAGOGY RESOURCES IN SCHOOL GEOGRAPHY EDUCATION

Abstract. The article explores the informational and didactic aspects of using museum pedagogy resources within the system of school geographical education. The purpose of the study is to theoretically substantiate and identify the informational and didactic aspects of utilizing museum pedagogy resources in school geography education. The research objectives are as follows: to analyze scientific approaches to museum pedagogy as a component of the modern educational space; to define the essence and structure of informational and didactic aspects of using museum resources in geography teaching; to characterize the didactic potential of museum information for the development of students' geographical competencies; and to substantiate the features of effective integration of museum resources into school geography education.

The didactic potential of museums as a special educational environment has been justified, combining subject-expositional, informational, and digital resources to form students' holistic geographical understanding. Theoretical approaches to museum pedagogy as an interdisciplinary field based on constructivist learning models, activity-based, and competency-based approaches have been analyzed. The possibilities for integrating museum resources into the content of



school geography courses have been determined to deepen knowledge of natural complexes, cultural landscapes, regional characteristics, and socio-economic processes.

Particular attention is given to the informational resources of museums (exhibits, collections, archival materials, multimedia, and digital platforms) and their didactic adaptation to the age and cognitive characteristics of students. The didactic functions of museum resources in geography education are characterized as cognitive, motivational, developmental, value-oriented, and integrative. Forms and methods of applying museum pedagogy in the educational process are proposed (lesson-excursions, integrated lessons, educational projects, research activities, virtual tours) to facilitate the development of subject-specific and key competencies in students.

It has been demonstrated that the systematic use of museum resources in school geography education enhances learning motivation, stimulates cognitive activity, promotes the development of spatial thinking, ecological culture, and civic consciousness. The importance of museum pedagogy for implementing the regional component of educational content, particularly in mountainous areas, and for forming sustainable educational practices has been emphasized.

Keywords: museum pedagogy; school geography education; museum informational resources; didactic potential; educational environment; regional component; cultural landscapes; geographical competencies; integrated learning.

ІНФОРМАЦІЙНО-ДИДАКТИЧНІ АСПЕКТИ ВИКОРИСТАННЯ РЕСУРСІВ МУЗЕЙНОЇ ПЕДАГОГІКИ В ШКІЛЬНІЙ ГЕОГРАФІЧНІЙ ОСВІТІ

Анотація. У статті розкрито інформаційно-дидактичні аспекти використання ресурсів музейної педагогіки в системі шкільної географічної освіти. Мета дослідження полягає в теоретичному обґрунтуванні та визначенні інформаційно-дидактичних аспектів використання ресурсів музейної педагогіки в географічній освіті. Визначено завдання дослідження: проаналізувати наукові підходи до музейної педагогіки як складової сучасного освітнього простору, описати сутність та структуру інформаційно-дидактичних аспектів використання музейних ресурсів у навчанні географії, охарактеризувати дидактичний потенціал музейної інформації для формування географічної компетентності здобувачів шкільної освіти, обґрунтувати особливості ефективної інтеграції музейних ресурсів у шкільний курс географії.

Обґрунтовано дидактичний потенціал музеїв як особливого освітнього середовища, що поєднує предметно-експозиційні, інформаційні та цифрові ресурси для формування цілісних географічних уявлень. Проаналізовано теоретичні підходи до музейної педагогіки як міждисциплінарного напрямку, що ґрунтується на конструктивістській моделі навчання, діяльнісному та компетентнісному підходах. Визначено можливості інтеграції музейних ресурсів у зміст шкільних курсів географії з метою поглиблення знань про природні комплекси, культурні ландшафти, регіональні особливості та соціально-економічні процеси.

Особливу увагу приділено інформаційним ресурсам музеїв (експозиціям, колекціям, архівним матеріалам, мультимедійним і цифровим платформам) та їх дидактичній адаптації до вікових і пізнавальних особливостей учнів. Охарактеризовано дидактичні функції музейних ресурсів у географічній освіті: пізнавальну, мотиваційну, розвивальну, ціннісно-орієнтаційну та інтегративну. Запропоновано форми і методи використання музейної педагогіки в освітньому процесі (уроки-екскурсії, інтегровані заняття, навчальні проекти, дослідницька діяльність, віртуальні тури), що сприяють формуванню предметних і ключових компетентностей. Доведено, що системне використання музейних ресурсів у шкільній географічній освіті підвищує навчальну мотивацію, активізує пізнавальну діяльність, сприяє розвитку просторового мислення, екологічної культури та громадянської свідомості. Наголошено на значенні музейної педагогіки для реалізації регіонального компонента змісту освіти, зокрема в умовах гірських територій, та формування сталих освітніх практик.

Ключові слова: музейна педагогіка; шкільна географічна освіта; інформаційні ресурси музею; дидактичний потенціал; освітнє середовище; регіональний компонент; культурні ландшафти; географічні компетентності; інтегроване навчання.

INTRODUCTION

The problem formulation. In today's globalized world, there is a pressing need to identify sociocultural mechanisms capable of stabilizing the political, socio-economic, educational, and cultural spheres of society. Undoubtedly, the foundation of such mechanisms should be the universal cultural heritage, as culture ensures both the reproduction and transformation of social life in all its manifestations. Society has assigned libraries, museums, and other cultural and leisure institutions the task of affirming cultural heritage as a moral basis for politics, economics, and social institutions.

Sociocultural institutions are increasingly becoming cultural and information centers where visitors not only familiarize themselves with artifacts of historical, scientific, and aesthetic value, but also obtain necessary information on a wide range of issues, including social, legal, professional, and educational matters.

Analysis of Recent Research and Publications. Museum activities are studied within various fields of scientific knowledge, including history, sociology, cultural studies, museology, archaeology, psychology, and others. In Ukrainian pedagogical science, aspects of museum pedagogy and local history education have been explored by I. Chervinska, O. Karamanov, L. Masol, N. Filipchuk, and O. Savchenko, who emphasize the significance of the museum environment for the formation of students' value orientations and cognitive interests.

Certain aspects of the use of museum and local history resources in geographical education are addressed in the works of L. Dubyna, N. Kovalchuk, and T. Shyian, which focus on the regional component of educational content and the development of geographical competence. Issues related to the role of museums, museum typology, and the theoretical understanding of their social functions are examined in the studies of T. Belofastova, I. Dovzhuk, T. Lysenko, N. Terentyeva, and others.



Problems of museum pedagogy and the educational potential of museums are also discussed in the works of foreign scholars. The theoretical foundations of museum pedagogy are presented in the studies of E. Hooper-Greenhill, G. Hein, J. Falk, and L. Dierking, who substantiate the constructivist nature of museum learning and its importance for shaping the cognitive experience of school-age learners. At the same time, the information-didactic dimension of using museum resources in school geography remains insufficiently systematized and requires further theoretical consideration.

THE AIM AND RESEARCH TASKS

The aim of the research is to provide a theoretical substantiation and to identify the information-didactic aspects of using museum pedagogy resources within the system of school geographical education.

The research tasks include: analyzing scientific approaches to museum pedagogy as a component of the modern educational space; determining the essence and structure of the information-didactic aspects of using museum resources in geography teaching; characterizing the didactic potential of museum information for the formation of students' geographical competencies; and substantiating the features of effective integration of museum resources into school geographical education.

RESEARCH METHODS

To achieve the stated aim, a set of complementary research methods was employed: theoretical methods (analysis, synthesis, and generalization of scientific and pedagogical sources on museum pedagogy and geographical education); empirical methods (pedagogical observation, questionnaires, and analysis of educational practices related to the use of museum resources); and analytical-interpretative methods (systematization and generalization of the obtained results).

RESULTS OF THE RESEARCH

The resources of museums, as centers for preserving historical, cultural, and natural landscape exhibits of the Ukrainian Carpathian region and as genuine hubs of spirituality and culture, function as pedagogical tools for teaching and development in geography lessons.

The implementation of these objectives is facilitated by intensifying cooperation between educational institutions and regional museums, supporting and modernizing existing museums, and expanding the educational mission of school museums. These initiatives are supported by the Decree of the President of Ukraine "On the Preservation and Popularization of Hutsul Culture", which emphasizes the need to expand museum networks (museums of folk art and everyday life of Hutsulshchyna, house-museums, private museums, museums dedicated to prominent figures, etc.); to prepare thematic exhibitions devoted to traditions and folk crafts of Hutsulshchyna; to organize objects of the nature reserve fund and conduct restoration works on cultural heritage sites; to publish catalogs, booklets, and scholarly works on the spiritual and material culture of the Hutsuls; and to produce television, video, and audiovisual materials about traditions and folk crafts of Hutsulshchyna (Decree of the President of Ukraine "On the Preservation and Popularization of Hutsul Culture," 1995; 2009).

The dictionary-reference book on museology states that "museum pedagogy studies the educational aspects of museum communication." It should be noted that as a field of scientific knowledge, museum pedagogy is a relatively new and knowledge-intensive concept. Museum pedagogy as an innovative scientific field emerged at the intersection of art studies, local history studies, museology, geography, pedagogy, and psychology (Kliuchko, 2013).

Museum pedagogy focuses on researching innovative forms, methods, and technologies for leveraging the educational potential of museums to ensure the holistic development of the growing individual and to integrate museum resources with the educational content of school subjects (history, geography, biology, literature, etc.).

In recent years, museum pedagogy has gained particular prominence, marking a new stage in realizing the educational and developmental potential of museums. It is increasingly viewed as a new branch of pedagogical science with an interdisciplinary nature, situated at the intersection of museology, social pedagogy, and leisure pedagogy.

Museum pedagogy is considered from two perspectives: as a theory that reflects the process of communication within the museum; and as an educational institution used to implement various mediating and educational tasks related to serving visitors (exhibition projects, information support, guided tours, creative workshops) (Law of Ukraine "On Museums and Museum Affairs," 1995). Thus, as a socio-scientific and applied discipline, museum pedagogy examines phenomena, facts, and processes through the prism of museum exhibits and museum activities.

As noted by O. Karamanov, it can be observed that "museum pedagogy is dynamically, albeit with considerable delay, spreading and developing in Ukraine: work with museum audiences of different ages is becoming more active, new interdisciplinary projects are being developed, engaging museum-pedagogical programs are being created, and general secondary schools, kindergartens, as well as higher education institutions are being involved in cooperation with museums" (Karamanov, 2010).

The current stage of general secondary education development in Ukraine is characterized by increased attention to the competency-based learning paradigm, the integration of formal and non-formal education, and the active use of the cultural and educational potential of the sociocultural environment. In this context, the issue of incorporating museum pedagogy resources into school geography education becomes particularly relevant as an effective means of forming subject-specific and key competencies in students.

By its nature, geographical education is interdisciplinary and practice-oriented, as it integrates knowledge about natural, socio-economic, cultural, and historical processes. Museum resources, natural science, historical-geographical,



ethnographic, and local history create conditions for the direct exploration of spatial phenomena and processes, the formation of a holistic worldview, and the development of research skills and spatial thinking in students.

At the same time, in school geography practice, the use of museum resources is often episodic and lacks systematic didactic justification. The information-didactic aspects of integrating museum pedagogy into the educational process remain insufficiently developed, particularly regarding the selection, structuring, interpretation, and pedagogically appropriate use of museum information in accordance with the goals and learning outcomes of geography education. This determines both the scientific and practical relevance of the chosen topic.

In contemporary scientific and educational discourse, museum pedagogy is regarded as an interdisciplinary field integrating pedagogy, cultural studies, museology, learning psychology, and communication theory. Its formation and development are driven by transformations in the educational space, including the shift from a knowledge-based to a competency-based paradigm, the expansion of formal education boundaries, and the strengthening role of non-formal educational institutions. An analysis of scientific approaches to museum pedagogy as a component of the modern educational space includes the cultural, competency-based, activity-oriented, constructivist, information and communication, and integrative approaches.

Within the cultural approach, museum pedagogy is viewed as a means of engaging students with cultural heritage and shaping value orientations. The museum is perceived as a sociocultural space where historical memory, regional identity, and cultural meanings are transmitted. The educational potential of museums lies in the opportunity for direct interaction with authentic cultural objects, which fosters an emotional and value-based attitude toward knowledge. In the context of geography education, the cultural approach facilitates understanding regional space as part of national and global cultural heritage, particularly through museums of the Ukrainian Carpathians that represent unique landscape and ethnocultural features.

The competency-based approach emphasizes developing students' ability to apply acquired knowledge in real-life situations. From this perspective, museum pedagogy serves as an effective tool for developing subject-specific and key competencies, including geographical, informational, civic, environmental, and cultural competencies. The museum environment creates conditions for active learning, research practices, project-based work, and interdisciplinary integration, thus organically fitting into the modern educational space as a resource for implementing the competency-based learning model.

According to the activity-oriented approach, learning is considered a process of active cognitive engagement. In museum pedagogy, this approach is realized through interactive forms of work: examining exhibits, solving problem-based tasks, participating in educational projects, and modeling geographical processes. The museum space functions as a learning and research environment where students not only perceive information but also independently construct knowledge. This is particularly important for geography education, as it enables the development of spatial thinking and research skills.

The constructivist approach is based on the idea that students actively construct knowledge based on their own experiences. In this context, museum pedagogy is viewed as an environment that stimulates individual comprehension and interpretation of information. Museum exhibits act as open texts allowing multiple levels of interpretation depending on students' cognitive experiences. This ensures personalized learning, the development of critical thinking and reflection, and meets the requirements of the modern educational space.

The information and communication approach focuses on the use of digital technologies in museum pedagogy. Modern museums actively employ virtual tours, multimedia exhibitions, and digital archives, expanding access to museum resources and integrating the museum environment into the school's digital educational space. In geography education, this enables the integration of museum materials with cartographic services, geographic information systems, and interactive models, enhancing visualization and cognitive value.

The integrative approach involves combining formal, non-formal, and informal education. In this aspect, museum pedagogy acts as a bridge between school education and the sociocultural environment, promoting interdisciplinary integration, particularly between geography and history, biology, ecology, and cultural studies. For implementing regional approaches, integration allows museums to be viewed as comprehensive educational resources reflecting natural, social, and cultural dimensions of regional development.

Thus, the analysis of scientific approaches to museum pedagogy confirms its multidimensional nature and significant potential as a component of the modern educational space. The integration of cultural, competency-based, activity-oriented, constructivist, information and communication, and integrative approaches ensures systematic use of museum resources in school geography education and contributes to the formation of a holistic worldview in students.

The Essence and Structure of the Information-Didactic Aspects of Using Museum Resources in Geography Teaching. In the context of modern school geography education, the use of museum resources becomes particularly significant as a means of implementing regional development objectives. However, the effectiveness of such use depends not only on the availability of museum materials but also on their pedagogically grounded integration into the educational process, which necessitates defining the essence and structure of the information-didactic aspects of museum pedagogy.

The essence of the information-didactic aspects of using museum resources in geography teaching lies in the purposeful organization of educational interaction between students, teachers, and the museum environment in order to transform museum information into educational content aligned with the goals, objectives, and learning outcomes of geography education. In this context, museum resources are regarded not as auxiliary illustrative materials but as full-fledged sources



of geographical knowledge that ensure the concretization of theoretical concepts through real objects and contribute to the formation of spatial representations and geographical thinking. The use of museum resources in geography lessons and local history excursions facilitates the integration of natural, socio-economic, and cultural knowledge, significantly influencing the development of students' research skills and cognitive independence. Thus, information-didactic aspects serve as a system-forming factor in integrating museum pedagogy into geography education.

The structure of the information-didactic aspects of using museum resources in geography teaching is multi-component and includes the informational, didactic, interpretative, and technological components, each performing a specific pedagogical function.

The informational component is associated with the selection and use of museum information as a source of geographical knowledge. It includes material (exhibits, collections, models), documentary (maps, archives, photographs), and digital resources (virtual exhibitions, multimedia databases). In geography education, this component supports the study of natural conditions, resources, population, and economic activities based on regional material, particularly within museum environments characterized by high levels of natural and cultural representativeness.

The didactic component defines the pedagogical conditions and principles for integrating museum resources into the learning process. It involves aligning museum information with curricula, lesson topics, students' age characteristics, and expected learning outcomes. This component is implemented through defining learning objectives and tasks, selecting teaching methods and forms (excursion lessons, inquiry-based lessons, project-based learning), and using museum materials as the basis for educational situations and problem-solving tasks.

The interpretative component ensures the comprehension and pedagogical interpretation of museum information. It is oriented toward active cognitive engagement, analytical work with exhibits, establishing cause-and-effect relationships, and formulating generalized conclusions. In geography education, this component is realized through problem-based questions, research tasks, and interdisciplinary connections with history, biology, and ecology. Through interpretation, museum objects acquire didactic meaning and become tools for forming geographical concepts and patterns.

Under these conditions, modern museum pedagogy reaches a broader level of research and methodological development, addressing forms, methods, and techniques intended not only for students but for all categories of museum audiences. This is evidenced by the research of N. Filipchuk "Formation and Development of the Educational and Enlightenment Activities of Museums of Ukraine (Late 19th – Early 21st Century)" (Filipchuk, 2020).

The technological component is related to the use of digital tools and modern educational technologies to expand the possibilities of museum pedagogy. It includes virtual tours, interactive exhibitions, multimedia presentations, digital maps, and geographic information services. In geography education, this component ensures accessibility to museum resources regardless of spatial constraints, promotes individualized learning, and integrates the museum environment into the school's digital educational space.

The informational, didactic, interpretative, and technological components function in close interaction, forming an integrated system of information-didactic aspects of using museum resources in geography education. Their comprehensive implementation ensures a transition from passive perception of museum information to active construction of geographical knowledge and competencies.

Thus, defining the essence and structure of the information-didactic aspects of using museum resources in geography teaching allows museum pedagogy to be viewed as a systemic educational resource integrated into the modern educational space. This provides a theoretical foundation for further methodological justification and practical implementation of museum-oriented geography education.

The didactic potential of museum information and resources in forming students' geographical competencies is significant. In modern school geography education, museum resources are considered a multifunctional educational environment that integrates cognitive, value-based, and activity-oriented components of learning. The didactic potential of museum information is determined by its authenticity, visual nature, interdisciplinarity, and regional orientation, creating favorable conditions for effective formation of students' geographical competencies. The didactic aspect is conditioned by the need for pedagogical selection and structuring of museum materials in accordance with the goals, content, and expected learning outcomes of geography education. This involves the purposeful integration of museum resources into curricula, thematic planning, and the system of learning tasks.

In studying the geography of the Ukrainian Carpathian region, museum exhibitions can be used to address didactic tasks such as forming concepts of physical-geographical regions, natural resources, environmental problems of mountainous areas, settlement patterns, and traditional economic activities. For example, when studying the topic "Mountainous Countries of Europe," materials from regional museums help concretize abstract concepts through local examples.

A special role in this process is played by the principle of visualization, realized through authentic museum objects, and the principle of connecting learning with real life, actualized through the regional context. Thus, the museum environment becomes a didactic space where educational objectives are combined with students' real geographical experience.

The informational aspect of using museum pedagogy resources in school geography education involves engaging museum exhibits, collections, archival materials, and digital resources as multidimensional sources of geographical information. The museum environment of the Ukrainian Carpathians represents unique examples of natural and cultural heritage, enabling the disclosure of geographical knowledge in spatial, temporal, and regional dimensions.

Natural science exhibitions (mineralogical collections, herbariums, zoological collections) facilitate the study of the physical-geographical features of the Carpathian region, including mountain system structures, altitudinal zonation, climatic conditions, and biodiversity. Ethnographic and local history museums (such as the Museum of Folk Art of



Hutsulshchyna and Pokuttia, and museums of Boikivshchyna and Lemkivshchyna) contain information resources illustrating the interaction between the natural environment and human economic activity, as well as the formation of traditional nature management practices (Velykochyi, 2013).

Thus, museum information functions not as fragmentary illustrative material but as a full-fledged source of geographical knowledge that ensures the regionalization of educational content and contributes to the development of students' spatial thinking.

The substantive potential of museum information includes material, documentary, and digital resources reflecting natural, socio-economic, and cultural characteristics of territories. In geography education, these resources serve as sources of empirical geographical knowledge that complement and concretize textbook material. Natural collections (rock, soil, flora, and fauna samples), cartographic materials, statistical data, and photographic documents enable students to directly engage with the spatial features of geographical objects and processes. This contributes to a deeper understanding of physical-geographical patterns and the formation of concepts about regional natural complexes and their dynamics.

Work with museum exhibits contributes to the development of geographical thinking, the ability to identify cause-and-effect relationships, and the capacity to make generalizations based on empirical observations, thereby fostering geographical competence.

Subject-specific geographical competence implies students' ability to operate with geographical concepts, patterns, and spatial representations. Work with museum resources ensures its formation through:

- visualization of complex geographical processes by means of exhibitions and models;
- concretization of abstract concepts on the basis of real objects;
- opportunities for spatial analysis of natural and socio-economic phenomena.

Museum resources contain a substantial amount of cartographic material (historical maps, diagrams, territorial plans), which creates favorable conditions for the development of cartographic literacy. Students learn to read and analyze different types of maps, correlate cartographic representations with real objects, and trace spatial changes in natural and social processes over time. This is particularly important for geographical education, as spatial thinking constitutes its core component.

The formation of research and information competencies can be effectively achieved through the study of museum resources, which create favorable conditions for organizing students' research activities. Analysis of exhibits, work with archival materials, statistical data, and digital museum resources promote the development of skills in information search and selection, critical evaluation of sources, interpretation of obtained data, and formulation of conclusions. In the course of such activities, information competence necessary for working with various types of geographical information is formed.

Museum information, particularly exhibitions with an environmental focus, contributes to the awareness of regional environmental problems and human responsibility for environmental preservation. In geography education, this ensures the formation of environmental competence, which includes understanding interconnections within natural systems, awareness of the consequences of economic activity, and readiness for environmentally responsible behavior. At the same time, museum resources contribute to the formation of civic competence through comprehension of the spatial organization of society, regional identity, and cultural heritage. An important component of the didactic potential of museum information is its ability to enhance students' learning motivation. The authenticity of museum exhibits, the possibility of direct contact with objects of study, and engagement in active cognitive activity foster a positive attitude toward learning geography.

The museum environment promotes the development of a value-based attitude toward natural and cultural heritage, the formation of environmental culture, and regional self-awareness. As noted, "more than 120 museums of Prykarpattia possess significant potential for the artistic-aesthetic, moral-spiritual, socio-cultural, and axiological development of students from remote and hard-to-reach mountainous areas. Research activities in museums and students' familiarization with museum exhibitions and collections contribute to the formation of a holistic understanding of the surrounding world through interaction with monuments of history and culture, as well as to the development of a value-laden, emotionally colored attitude toward national heritage" (Chervinska & Chervinskyi, 2019).

CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

As a result of the theoretical analysis and the generalization of empirical examples of using museum resources in school geography education, it has been established that museum pedagogy is an important component of the modern educational space and is capable of significantly enhancing the quality of students' geographical competence formation. Under conditions of competency-oriented learning, the museum environment functions as an effective information-didactic resource that ensures the integration of educational content with real objects of natural and cultural heritage. It has been demonstrated that the information-didactic aspects of using museum resources in geography education are comprehensive in nature and include informational, didactic, interpretative, and technological components. Their interaction ensures the systematic acquisition of geographical knowledge, the development of spatial thinking, the formation of research skills, and the cultivation of a value-based attitude toward the environment. Museum information presented in the form of exhibits, collections, archival materials, and digital resources expands the learning context and promotes understanding of geographical phenomena in their natural and socio-cultural conditioning.



The analysis of the didactic potential of museums in the Carpathian region has shown that natural science, local history, ethnographic, and environmental education museums create favorable conditions for the formation of subject-specific, interdisciplinary, and key competencies in students. In particular, work with museum resources contributes to the development of physical-geographical, socio-geographical, regional, environmental, and information-digital competencies, which correspond to the requirements of the State Standard of Basic Secondary Education.

Further scholarly reflection is required on the issue of the digital transformation of museum pedagogy, particularly regarding the use of virtual museums, augmented and blended reality, and interactive cartographic services in geography education. It is also advisable to study the impact of digital museum resources on students' motivation, the level of formation of geographical and digital competencies, as well as on the development of critical and spatial thinking.

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