



Theory and practice of education

UDC 378.014.5:502/504(73)

DOI <https://doi.org/10.5281/zenodo.17855055>

**The experience of the US higher education in the field of forming students'
ecological citizenship**

Liudmyla Matsuk

*Candidate of Pedagogical Sciences, Professor, Head of the Department of Theory
and Methods of Preschool and Special Education, Vasyl Stefanyk Carpathian*

National University, Ivano-Frankivsk, Ukraine

<https://orcid.org/0000-0003-0472-6813>

Tetiana Anoshkova

*Doctor of Philosophy in Educational and Pedagogical Sciences, Lecturer of the
Department of English for Engineering 1,
National Technical University of Ukraine*

“Igor Sikorsky Kyiv Polytechnic Institute, Kyiv, Ukraine

<https://orcid.org/0000-0002-9560-942X>

Mariia Horova

PhD student, University of Jaen, Jaen, Spain

<https://orcid.org/0009-0006-1632-4204>

Accepted: 14.11.2025 | Published: 30.11.2025

***Abstract:** The aim of the article is to analyze the features and components of the experience of higher education in the United States in the formation of students' ecological citizenship, as well as to determine the possibilities of adapting this*



experience in Ukraine. **Methods.** The study used comparative pedagogical analysis, critical analysis of scientific and pedagogical sources and practices of American universities, which provided a comprehensive study of theoretical foundations and educational models. **Results.** It was found that ecological citizenship in the context of the US higher education is considered as an integrated result of a combination of environmental knowledge, values, practical skills and civic participation. The key areas of its formation are outlined: interdisciplinary integration of environmental topics into educational programs, development of leadership and civic competencies of students, implementation of community service learning, environmental initiatives and a “green” campus policy. The effectiveness of such programs as Campus Sustainability Movement, Eco-Reps and Zero Waste Week, which combine academic training with practical activities and involve students in making environmentally significant decisions, is shown. Problems were also identified, including the fragmentation of the implementation of environmental practices, the lack of assessment tools, and the gap between theoretical approaches and real institutional capabilities. **Conclusions.** The experience of the US higher education in the formation of students’ ecological citizenship demonstrates a systematic, comprehensive, and multilevel approach that combines academic training, practical activities, and international cooperation. American pedagogical experience proves that the effective formation of students’ ecological citizenship is possible only under the condition of a systematic combination of educational reforms, practical activities, and the transformation of pedagogical culture. For Ukraine, the implementation of interdisciplinary educational components, the development of student environmental initiatives, the creation of “green campuses”, and the support of youth environmental leadership are promising.

Keywords: ecological citizenship, ecological values, ecological knowledge, interdisciplinarity, educational programs, service learning, US higher education institution.



Досвід вищої школи США у сфері формування екологічної громадянськості студентів

Людмила Олександрівна Мацук

кандидат педагогічних наук, професор, завідувачка кафедри теорії та методики дошкільної і спеціальної освіти, Карпатський національний університет імені Василя Стефаника, м. Івано-Франківськ, Україна

<https://orcid.org/0000-0003-0472-6813>

Тетяна Анатоліївна Аношкова

доктор філософії з освітніх і педагогічних наук, викладач кафедри англійської мови технічного спрямування 1, Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського», Київ, Україна

<https://orcid.org/0000-0002-9560-942X>

Горова Марія Павлівна

здобувачка ступеня доктор філософії,

Університет Хаєну, Хаєн, Іспанія

<https://orcid.org/0009-0006-1632-4204>

Анотація: *Метою статті є аналіз особливостей і складових досвіду вищої освіти США у формуванні екологічної громадянськості студентів, а також визначення можливостей адаптації цього досвіду в Україні. Методи.* У дослідженні застосовано порівняльно-педагогічний аналіз, критичний аналіз науково-педагогічних джерел і практик американських університетів, що забезпечило комплексне вивчення теоретичних засад і освітніх моделей. **Результати.** З'ясовано, що екологічна громадянськість у контексті американської вищої освіти розглядається як інтегрований результат поєднання екологічних знань, цінностей, практичних умінь і громадянської



участі. Окреслено ключові напрями її формування: міждисциплінарна інтеграція екологічної тематики в освітні програми, розвиток лідерських та громадянських компетентностей студентів, упровадження навчання суспільно корисного служіння, екологічних ініціатив і політики «зеленого» кампусу. Показано ефективність таких програм, як *Campus Sustainability Movement*, *Eco-Reps* та *Zero Waste Week*, що поєднують академічну підготовку з практичною діяльністю і залученням студентів до ухвалення екологічно значущих рішень. Виявлено також проблеми, зокрема фрагментарність упровадження екологічних практик, недостатність інструментів оцінювання та розрив між теоретичними підходами й реальними інституційними можливостями.

Висновки. Досвід вищої школи США у формуванні екологічної громадянськості студентів демонструє системний, комплексний та багаторівневий підхід, що поєднує академічну підготовку, практичну діяльність та міжнародну співпрацю. Американський педагогічний досвід доводить, що ефективно формування екологічної громадянськості студентів можливе лише за умови системного поєднання освітніх реформ, практичної діяльності та трансформації педагогічної культури. Для України перспективним є впровадження міждисциплінарних освітніх компонентів, розвиток студентських екологічних ініціатив, створення «зелених» кампусів і підтримка екологічного лідерства молоді.

Ключові слова: екологічна громадянськість, екологічні цінності, екологічні знання, міждисциплінарність, освітні програми, навчання суспільно корисного служіння, заклад вищої освіти США.

Introduction. The current stage of development of the world community is characterized by the aggravation of environmental problems, which necessitates the need to rethink the role of education in the formation of a new paradigm of interaction between man and nature. Higher education is designed not only to provide professional training for specialists, but also to promote the formation of an environmentally



conscious, responsible individual capable of active participation in solving the problems of sustainable development. In this context, the phenomenon of ecological citizenship acquires special importance, which in modern scientific literature is interpreted as an integral characteristic of a person, combining environmental awareness, ethical responsibility and civic activity in the field of environmental protection [1; 2].

Modern Ukraine, like most countries in the world, faces acute environmental problems: degradation of natural ecosystems, environmental pollution, climate change, and a decrease in the quality of life of the population in large cities. At the same time, in the context of the military challenges of 2022–2025, there is a need to restore environmental safety, rational use of nature and environmental restoration, which is impossible without training a new generation of specialists - environmentally conscious, responsible and socially active citizens. Therefore, the formation of students' ecological citizenship in the higher education system should become a strategic task of state policy. The American experience of greening universities demonstrates that such a transformation is real if institutional reforms, pedagogical innovations and intersectoral cooperation are combined. In this context, the experience of the United States of America deserves special attention, since it was in the USA that a powerful system of environmental education was formed, focused on integrating the principles of sustainable development into all levels of the educational process.

Analysis of recent research and publications. The conceptual foundations of ecological citizenship are developed in the works of A. Dobson [1] and J. Barry [2], who consider it as a value-normative system that combines the environmental responsibility of the individual with his participation in democratic decision-making processes. In this context, ecological citizenship acts not only as an element of the educational process, but also as an important factor in socio-cultural transformation.

Recent decades have been marked by an intensification of scientific research aimed at understanding the role of higher education in the formation of environmental awareness and civic responsibility of young people. The problem of ecological



citizenship, as a component of social sustainability of society, has acquired interdisciplinary significance, combining research in the fields of pedagogy, sociology, philosophy, and environmental ethics. Modern research [3; 4] emphasizes that the successful implementation of the concept of ecological citizenship in the higher education system requires not only structural reforms, but also a transformation of pedagogical culture, which should be based on the principles of humanism, interdisciplinarity, and social responsibility.

The issue of greening education is the subject of a broad interdisciplinary discourse. According to the concept of Education for Sustainable Development, the formation of ecological citizenship should occur not only through the acquisition of knowledge, but primarily through the development of value orientations, practices of responsible behavior and civic leadership. [5; 6]. In turn, D. Orr [7], Professor of Practice at Arizona State University (USA) and Distinguished Professor of Environmental Studies and Politics at Emeritus Oberlin College (USA) emphasizes that environmental education in higher education should go beyond the cognitive dimension, becoming the basis for the formation of a new culture of thinking and action, oriented towards the principles of environmental ethics. A. Cortese [8] expresses a similar opinion, noting that US higher education institutions are one of the leading centers of reforming educational practices in the direction of sustainable development. The experience of American universities shows that the effective formation of ecological citizenship is ensured through systemic institutional transformations, the integration of ecological principles into curricula, and the development of the university's eco-cultural environment. Programs like "Campus Sustainability Movement", "Green Campus Initiative", and "Sustainability Across the Curriculum" demonstrate the effectiveness of approaches that combine academic, research, and civic engagement among students. [9].

According to the analysis conducted by M. Tafese and E. Kopp [10], the topic of education for sustainable development in higher education occupies a leading place among pedagogical research in recent years, which indicates its global relevance. At



the same time, the authors note that the issue of forming ecological citizenship as an integral result of the educational process remains insufficiently studied.

The study by A. Kinol, E. Miller, H. Axtell, I. Hirschfeld, S. Leggett, Y. Si and J. Stephens [11] highlights the role of universities in shaping the principles of climate justice and environmental ethics as the basis for social sustainability. In this context, an important trend is the integration of environmental competencies into curricula, the development of student initiatives and the expansion of university partnerships with local communities. D. Husic [12] notes that the rethinking of sustainability initiatives in higher education is increasingly influenced by student movements and public expectations, which gives these processes a civic content. At the same time, as shown by M. Vallée [13], the actual level of integration of environmental literacy into the curricula of American universities remains low: only about 5% of higher education institutions have mandatory courses on environmental topics for all majors. This indicates a gap between the declared values of sustainability and the practice of educational activities.

Recent study also emphasizes the need to revise the criteria for assessing the effectiveness of universities in the context of sustainable development. In particular, V. Urbano, M. Arena, G. Azzone and M. Mayeres [14] prove that modern rankings of higher education institutions (e.g., the Impact Rankings) only partially reflect the real contribution of universities to achieving the Sustainable Development Goals, and therefore require improvement of methodological principles.

Summarizing the results of foreign research, it can be stated that the reform of higher education in the direction of forming ecological citizenship involves not only the modernization of curricula, but also a change in educational philosophy. This is about the formation of a university as a social institution responsible for the formation of an environmentally oriented citizen, capable of acting in accordance with the principles of sustainable development at the global and local levels.

Identification of previously unresolved parts of the general problem. In the modern scientific discourse, despite the intensification of research related to the role of



higher education in the formation of ecological citizenship, there remain a number of unresolved problems that limit the holistic understanding of this phenomenon. The issue of integrating ecological citizenship into the educational process remains unresolved. Scholarly works emphasize the importance of interdisciplinarity and the transformation of pedagogical culture, however, the available research lacks clear models that would reflect how universities can systematically combine environmental knowledge, values, and practices of civic participation. Despite the development of the concept of education for sustainable development, there are no agreed-upon approaches to determining the optimal ratio between the cognitive, value, and behavioral components of ecological citizenship.

A significant problem remains the gap between the theoretical justification of ecological citizenship and the real possibilities of its implementation in higher education in the USA. Although the scientific literature actively analyzes successful institutional practices such as the “Campus Sustainability Movement” or “Sustainability Across the Curriculum”, researchers emphasize the uneven distribution and fragmentation of institutional transformations.

An important unresolved problem is the insufficiency of tools for assessing the results of the formation of ecological citizenship. Although recent studies draw attention to the need to improve the criteria for assessing university activities in the field of sustainable development, modern methodologies, including Impact Rankings, only partially reflect the real contribution of universities to achieving the Sustainable Development Goals. This limits the possibilities of comparative analysis, monitoring progress and identifying effective practices.

In addition, the scientific discourse still does not provide a coherent answer to the question of how much the formation of ecological citizenship should be based on institutional reforms and how much on student-centered approaches and civic activity of young people.

Thus, the scientific literature on ecological citizenship in the US higher education remains riddled with unresolved issues, from the lack of interdisciplinary



models to the difficulties of practical implementation, to the inadequacy of assessment mechanisms and coordination of institutional and student initiatives. The combination of these problems indicates the need for further systematic research aimed at developing a holistic theory and effective educational approaches to the formation of students' ecological citizenship.

Formulation of the objectives of article (setting the task). The purpose of the article is to highlight features and components of the US higher education experience in shaping students' ecological citizenship. The set goal presupposes the realization of the following objectives: 1) characterize the educational and institutional approaches of the US universities to the issue of shaping students' ecological citizenship; 2) provide some examples of implementing environmental programs and student initiatives; 3) identify opportunities for adapting the US pedagogical experience in the area under study in Ukraine.

Presentation of the main research material. The formation of ecological citizenship in higher education in the United States is a key direction of modern educational policy aimed at preparing students for life in a global environment experiencing significant environmental challenges. Ecological citizenship involves a combination of knowledge, values, practical skills and motivation to actively participate in solving environmental problems. As A. Cortese [8] emphasizes, it is universities that can become the engine of social change, forming in students the ability to think critically and act responsibly. American universities actively apply an interdisciplinary approach to environmental education, integrating knowledge about sustainable development into the curricula of various faculties [15; 5]. For example, the University of California at Berkeley offers an Environmental Justice course that combines ecology, sociology, and human rights, and Stanford University has introduced an Earth Systems Program where students from various departments work on practical projects analyzing climate change [16]. The University of Colorado and a number of Massachusetts institutions have introduced mandatory courses in



sustainability for all freshmen, which form basic competencies in the field of ecology and social responsibility [17].

Student engagement is an integral part of the American model of environmental education. The University of Michigan's Planet Blue program involves students in measuring their carbon footprint, conducting energy audits, and organizing awareness campaigns on campus [18]. The University of Portland supports student projects to restore urban gardens and clean up water bodies, and Arizona State University holds an annual Zero Waste Week event that teaches students about responsible waste management [16]. Green campus policies are essential to ensure the sustainable development of university infrastructure. Harvard University is implementing the Harvard Climate Action Plan, which aims to achieve net zero emissions by 2050, including through student participation in energy audits and the development of practical solutions [19]. Columbia University has introduced the Green2Go program, which allows students to use reusable containers, reducing the use of single-use plastics. Other universities have equipped "green roofs" and laboratories for modeling ecosystems, which are actively used in the educational process [20; 21].

Service learning is an effective tool for developing civic responsibility and practical competencies. The University of Oregon organizes student participation in projects to monitor natural areas and develop environmental strategies [16]. Tulane University implements projects to restore ecosystems after Hurricane Katrina, where students are engaged in cleaning reservoirs, restoring wetlands, and monitoring water quality [22].

The development of environmental leadership in students is another key component in the US higher education, which to some extent ensures the formation of students' environmental citizenship [23]. The University of Vermont's Eco-Reps program (<https://www.uvm.edu/>) prepares students to organize environmental initiatives on campuses and in dormitories, developing skills in communication, strategic planning, and environmental campaigning. Eco-Reps are university students who help their peers make more sustainable choices on campus and build a lasting ethic



of environmental justice. They work in outreach and education in key areas such as waste, food, and transportation. Through the program, students develop leadership skills and an understanding of campus operations, making Eco-Reps highly effective innovators and problem solvers. They often help implement pilot initiatives to promote or increase access to sustainability. [24].

American universities actively integrate students into international environmental initiatives. MIT and Yale students participate in UN and IPCC projects, and California universities use the STARS system to assess the effectiveness of environmental practices and develop recommendations for improving campus sustainability. This allows students to form a global vision of environmental problems and develop skills in intercultural cooperation. Additionally, students are actively involved in public movements and volunteer environmental initiatives. Participation in climate coalitions, public projects on sustainable development, and information campaigns for local communities is a common practice, which forms real competencies and values of ecological citizenship. [25].

Therefore, the aforementioned experience of US higher education in the formation of students' ecological citizenship is complex and multi-level. It includes the integration of environmental topics into curricula, active practical activities of students, the policy of "green" campuses, the development of leadership competencies and international cooperation. The model of American universities demonstrates the effectiveness of combining academic training, practical experience and institutional support for sustainable development, and can be a reference point for reforming the higher education system of other countries.

The possibilities of adapting the pedagogical experience of the US in the field of forming students' ecological citizenship in Ukraine are significant, because the American higher education system has developed a wide range of effective models of environmental education and practices of civic activity. First of all, the experience of integrating environmental topics into all educational programs, regardless of the specialty, is valuable. Such an interdisciplinary approach can be successfully



implemented in Ukraine by updating educational standards, creating selective educational modules, as well as strengthening the environmental component in mandatory disciplines. An important component of the American model is the combination of theoretical environmental training with practical activities – volunteer projects, service-learning, participation in public environmental campaigns. In Ukraine, these elements can be adapted by intensifying cooperation between universities with local communities, environmental organizations and government bodies, as well as by creating conditions for student initiatives aimed at improving the environment.

The American experience of developing an environmentally friendly campus is also useful for Ukrainian universities: energy-saving infrastructure, waste sorting systems, and involving students in environmental management processes. Similar approaches can be implemented by introducing environmental audits of universities, creating “green campuses” and encouraging students to participate in making eco-management decisions. An equally important aspect is the formation of leadership competencies and environmental advocacy skills in students – areas in which American higher education has rich experience. Ukrainian universities can borrow such practices by developing student eco-clubs, training in civic participation, and supporting youth initiatives aimed at influencing environmental policy at the local and national levels.

Conclusions. The experience of the US higher education in the formation of students’ ecological citizenship demonstrates a systematic, comprehensive and multi-level approach that combines academic training, practical activities, development of leadership competencies and international cooperation. The integration of ecological knowledge into the curricula of various faculties allows students to form critical thinking, become aware of global environmental problems and develop readiness for active participation in their solution. Practical initiatives, such as “green campuses”, Planet Blue programs, Zero Waste Week and service learning, create opportunities for the application of knowledge in practice, forming real competencies and environmental responsibility in students. At the same time, environmental leadership programs, in



particular Eco-Reps and the Environmental Leadership Program, contribute to the development of strategic planning, project organization and communication skills, preparing students for the role of active and responsible citizens.

Thus, the American model of environmental education successfully combines systematicity, interdisciplinarity, practical experience, and institutional support for sustainable development, ensuring the preparation of students for responsible environmental behavior at the local, national, and global levels. The adaptation of the US pedagogical experience is possible through the purposeful integration of environmental topics into curricula, the development of practically oriented student activities, the greening of the university environment, and support for the civic activity of youth. The introduction of such elements will contribute to the formation in Ukraine of a generation of students who are able to responsibly treat the environment, actively protect environmental values, and participate in solving environmental problems of society.

The scope for further research in this sphere can be aimed at developing holistic theoretical and methodological models of the formation of students' ecological citizenship, which would harmonize the cognitive, value, and behavioral components of this phenomenon.

References:

1. Dobson A. Environmental citizenship: Towards sustainable development. *Sustainable Development*. 2007. Vol. 15, № 4. P. 276–285.
2. Barry J. *Environment and Social Theory*. London: Routledge, 2007. 368 p.
3. Hopkins C., McKeown R. Education for Sustainable Development: past experience, present action, and future Prospects. *Educational Philosophy and Theory*. 2001. Vol. 33, № 2. P. 231–244. DOI: <https://doi.org/10.1111/j.1469-5812.2001.tb00265.x>.



4. Sterling S. Learning for resilience, or the resilient learner? Towards a necessary reconciliation in a paradigm of sustainable education. *Environmental Education Research*. 2010. Vol. 16, № 5–6, P. 511–528.

5. Tilbury D. Higher Education for Sustainability: A Global Overview of Commitment and Progress. *Higher Education in the World 4. Higher Education's Commitment to Sustainability: from Understanding to Action* / GUNI (Ed.). Palgrave: Barcelona, 2011. P. 18–28.

6. Tilbury D. Education for sustainable development: an expert review of processes and learning. Paris: UNESCO, 2011. 132 p.

7. Orr D. Education and the great transition? *The Ecological Citizen*. 2024. Vol. 7, № 1. P. 3–7.

8. Cortese A. D. The critical role of higher education in creating a sustainable future. *Planning for Higher Education*. 2003. Vol. 31, № 3. P. 15–22.

9. Barth M., Michelsen G., Rieckmann M., Thomas I. Routledge handbook of higher education for sustainable development. London: Routledge, 2018. 480 p.

10. Tafese M. B., Kopp E. Education for sustainable development: Analyzing research trends in higher education for sustainable development goals through bibliometric analysis. *Discover Sustainability*. 2025. Vol. 6. Article number 51. DOI: <https://doi.org/10.1007/s43621-024-00711-7>

11. Kinol A., Miller E., Axtell H., Hirschfeld I., Leggett S., Si Y., Stephens J. C. Climate justice in higher education: a proposed paradigm shift towards a transformative role for colleges and universities. *Climatic change*. 2023. Vol. 176, № 2. Article number 15. DOI: <https://doi.org/10.1007/s10584-023-03486-4>

12. Husic D. W. Reframing sustainability initiatives in higher education. *Sustain Earth Reviews*. 2024. Vol. 7, № 1. Article number 5. DOI: <https://doi.org/10.1186/s42055-024-00076-9>

13. Vallée M. How and why US universities fail to impart environmental literacy to all students. *International Journal of Sustainability in Higher Education*. 2024. Vol. 25 №9. P. 60–77. DOI: <https://doi.org/10.1108/IJSHE-07-2022-0241>



14. Urbano V., Arena M., Azzone G., Mayeres M. Sustainable development in higher education: An in-depth analysis of Times Higher Education Impact Rankings. *Journal of Cleaner Production*. 2025. Vol. 501. 145302. DOI: <https://doi.org/10.1016/j.jclepro.2025.145302>
15. Orr D. W. *Earth in mind: On education, environment, and the human prospect*. Washington: Island Press, 1994. 213 p.
16. Brundiers K., Wiek A., Redman C.L. Real-world learning opportunities in sustainability: from classroom into the real world. *International Journal of Sustainability in Higher Education*. 2010. Vol. 11. P. 308–324.
17. Shephard K. Higher Education for Sustainability: Seeking Affective Learning Outcomes. *International Journal of Sustainability in Higher Education*. 2008. Vol. 9. P. 87–98. DOI: <https://doi.org/10.1108/14676370810842201>
18. University of Michigan. Planet Blue Sustainability Initiative. 2022. URL: <https://planetblue.umich.edu/>
19. Harvard University. Harvard's Sustainability Action Plan. URL: <https://sustainable.harvard.edu/our-plan/>
20. Lozano R., Lukman R., Lozano F. J., Huisingh D., Lambrechts W. Declarations for sustainability in higher education: Becoming better leaders, through addressing the university system. *Journal of Cleaner Production*. 2013. Vol. 48. P. 10–19.
21. Barth M., Michelsen G. Learning for change: an educational contribution to sustainability science. *Sustainability Science*. 2012. Vol. 8. P. 103–119.
22. Tulane University. Rankings in public service fail to tell the full story. URL: <https://tulanehullabaloo.com/51520/views/rankings-in-public-service-fail-to-tell-the-full-story/>
23. Barth, M., Rieckmann, M. Academic staff development as a catalyst for curriculum change towards education for sustainable development: An output perspective. *Journal of Cleaner Production*. 2012. Vol. 26. P. 28–36.



24. University of Vermont. UVM Eco-Reps. URL:
<https://www.uvm.edu/sustainabilityoffice/uvm-eco-reps>

25. Leal W., Manolas E., Pace P. The future we want: Key issues on sustainable development in higher education after Rio and the UN decade of education for sustainable development. *International Journal of Sustainability in Higher Education*. 2015. Vol. 16, № 1. P. 112–129.