

UNIVERSITY AND TERRITORIAL COMMUNITY COOPERATION IN THE CONTEXT OF WAR AND RECOVERY: THE PRACTICE OF IMPLEMENTING SERVICE-LEARNING FOR THE STUDENTS OF ENERGY SPECIALTIES

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In the context of the full-scale invasion of Ukraine, a number of challenges have emerged for the population, communities, and higher educational institutions, including the need to enhance energy awareness, ensure energy security, strengthen infrastructure resilience, and promote sustainable development. The implementation of service-learning in higher education institutions not only helps bridge the gap between theoretical instruction and the practical application of acquired knowledge, but also contributes to addressing a range of pressing community challenges.

The shortage of specialists in the energy sector, along with their critical role in ensuring the resilience of community-level critical infrastructure, creates preconditions for the early engagement of higher education students in practical activities. The introduction of service-learning facilitates the integration of students into community contexts and broadens their perspectives with regard to both core energy-related tasks and adjacent challenges encountered in real-world settings. This contributes to the enhancement of students' qualifications, fosters collaboration with representatives of territorial communities, and supports the transfer of advanced educational and research-based expertise to local contexts.

Within the framework of the international project "Service-Learning for Ukraine's Recovery (ServU)," a course entitled "Energy

Management Systems” was developed and implemented at Dnipro University of Technology for second-cycle (Master’s level) students majoring in G3 Electrical Engineering. The course delivery is based on service-learning approaches, which involve the integration of the educational process with the solution of real-world community problems. A total of 42 Master’s students were engaged in the course implementation.

The Chumaky Rural Territorial Community acted as a partner in the implementation of the service-learning course. Within the framework of the discipline, students were involved in developing selected sections of the Sustainable Energy and Climate Action Plan (SECAP), particularly those related to climate change projections, associated risk assessment, and the development of measures to address potential challenges.

During practical sessions, students were provided with opportunities to:

- conduct field visits to the territorial community;
- carry out on-site assessments of community infrastructure facilities;
- collect and analyse data related to community development planning and the organisation of energy management processes;
- identify key challenges in energy consumption and the adaptation of the community’s energy sector to climate change;
- work in teams with task allocation across different sections of the document;
- engage in communication with representatives of local self-government bodies and community residents;
- present their findings.

The implementation of the service-learning project within the educational process yielded a number of significant outcomes for all participants. First, students were able to apply their knowledge in practice and developed the ability to identify urgent societal needs, as well as to assess the responses of different population groups to proposed solutions. Direct interaction with the community enabled a deeper understanding of real-world challenges, particularly in crisis conditions.

Second, teamwork, communication, and decision-making processes contributed to the development of so-called “soft skills.”

Collaborative work on individual sections of the SECAP ensured an interdisciplinary approach and fostered individual responsibility for the final project outcomes.

Third, tangible practical outcomes were achieved for the community. Selected sections of a strategic planning document—the Sustainable Energy and Climate Action Plan—were developed to enhance energy efficiency, resilience, and security.

At the same time, several limitations were identified. In particular, the data collection process was complicated by restricted access to certain information and the heterogeneity of baseline data. Additionally, the limited timeframe of the course, as well as the online format of lectures and working meetings for some students, affected the depth of elaboration of certain sections.

The results were validated through students' participation in the international forum “Safe, Comfortable and Capable Territorial Community – 2025” and the International Scientific and Technical Conference of Students, Postgraduates, and Young Scientists “Youth: Science and Innovation – 2025,” which enabled external evaluation of the outcomes.

The results of implementing the service-learning course indicate an increase in students' motivation to generate their own outputs and to master the core learning material. An additional effect is achieved through the strengthening of partnership-based interaction between the university and the community, as well as through opportunities to engage the most motivated students in community governance processes.

For higher education institutions, the adoption of service-learning approaches represents one of the possible pathways for attracting students from partner communities, as well as an additional mechanism for shaping individual educational trajectories.

The results obtained by students, with the support of academic mentors and community partners, demonstrate the potential of universities as institutional actors supporting territorial communities in strategic planning processes.

In the context of post-war recovery, the scaling up of such practices may contribute to the development of local expertise, the enhancement of energy, climate, and societal resilience, and the implementation of sustainable development principles both at the level of individual communities and across the country as a whole.

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