












“The role of educational institutions in transformations to achieve sustainable development”

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SPECIAL ISSUE "UKRAINIAN UNIVERSITIES IN NEW REALITIES: 10 YEARS OF WAR"

Olha Kurylo (Ukraine), Olena Kryvylova (Ukraine), Viktoriiia Zhyhir (Ukraine),
Valentyna Peregudova (Ukraine), Yuliia Bielova-Oleynik (Ukraine),
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THE ROLE OF EDUCATIONAL INSTITUTIONS IN TRANSFORMATIONS TO ACHIEVE SUSTAINABLE DEVELOPMENT

Abstract

The study aims to assess the role of educational institutions in achieving sustainable development goals (SDGs) during wartime in Ukraine. The focus is on the education sector, namely, adapting educational strategies to contemporary challenges. The paper employs a content analysis of information published by ten leading pedagogical universities in Ukraine to assess their success in implementing sustainable development goals. Special attention is given to such sustainable development goals as quality education (SDG 4), gender equality (SDG 5), sustainable cities and communities (SDG 11), peace and justice (SDG 16), and partnerships for the goals (SDG 17). University strategies and publication activity on addressing global sustainable development challenges in the Scopus database were analyzed. The research results demonstrate the variability of university development strategies, which determines their uneven focus on certain aspects of sustainable development. The results highlight the need to improve management strategies, integrate sustainable development principles into educational programs, and strengthen international partnerships. Finally, the study offers recommendations for further adaptation of educational institutions to changing conditions to ensure the sustainable development of Ukrainian society.

Keywords

website, content analysis, educational strategy,
administrative management, student, stakeholder

JEL Classification

I23, I25, I29, O15

INTRODUCTION

Since 2015, Ukraine has initiated a series of reforms to implement socio-economic transformations and strengthen democratic governance in terms of the 2030 Agenda for Sustainable Development. The sustainable development goals (SDGs) were integrated into national policies under the principle of "leaving no one behind" (United Nations Ukraine, n.d.).

However, currently, due to the wartime conditions, Ukraine faces the loss of infrastructure and a brain drain; there is an urge to find new ways of financing education and science and adjust educational approaches and scientific activity to the new normal. The war necessitates transformations in economic, social, and environmental dimensions and effective management, particularly in education. New challenges require adaptation of the management system of pedagogical universities, which must promptly respond to crises. Flexibility and strategic planning are becoming important elements in the management of educational institutions in such challenging times. Within the social dimension, it is expedient to ensure quality education as the basis of human capital and a guarantee of sustainable development (Kurylo et al., 2024; Peregudova, 2023). Education should become the key to mobilizing resources and opportunities for the future, helping everyone find their place in new realities, which is related to executing sustainable development goals.

1. LITERATURE REVIEW

The success of pedagogical universities' impact on the SDGs depends on their mission and strategy in wartime (Sosnickaya & Kryvyleva, 2020). The art of management is based on correctly defining an educational institution's goal and developing a tactical plan for its implementation. Strategic plans are crucial in the management of modern universities, helping them to adapt to external challenges and needs of society (Taylor & Morphew, 2015; Lozano, 2006; Lawson, 2014; Rosli et al., 2020; Berchin et al., 2018; Govindan et al., 2013; Kozmenko et al., 2023). University administrators become change agents capable of making decisions on social, economic, and environmental issues, thereby supporting the development of society and turning universities into a driving force of social transformations (Purcell et al., 2019; Tomasella et al., 2023). However, while implementing changes, university leaders are faced with the question: How should universities ensure sustainable development as an integral part of university culture? The search for an answer becomes an incentive to ensure the quality of the institution's functioning.

Universities develop strategies that engage local and regional governance structures to implement the SDGs, fostering synergy through collaborative efforts. Despite the importance of these initiatives, information on how universities adapt SDGs into their strategies and actions remains insufficient. This raises concerns, as the number of universities reporting such activities is small, although those institutions that do implement SDGs become more transparent and visible to stakeholders (Nicolò et al., 2021; De Iorio et al., 2022). Therefore, resilience entails universities' ability to conduct research addressing societal needs and aligning with global SDGs.

Universities are forced to reconsider their development strategies to remain resilient and stable during wartime. There is a need for a qualitative analysis of emerged conditions through a three-step framework: initial response, decision-making, and planning for the future. The key is transparency in university governance to ensure that the academic community feels heard and safe in such complex situations. In addition, universities must enhance communication at all levels and support their staff and society as a whole via continuous interaction, dissemination of information, clarification efforts, and public

outreach. Through effective crisis management decisions, universities will be able to maintain autonomy, adapt to changes, and unite their communities (Lopatina et al., 2023; Suchikova et al., 2023).

Publications indexed by the Scopus database help monitor research dedicated to the SDGs and stimulate academic progress (Shibayama & Baba, 2015; Gurau, 2019). This, in turn, strengthens the knowledge base and ensures that educational practices align with global achievements, enabling universities to make significant SDG contributions (Hallinger & Nguyen, 2020).

Educational institutions are critical in achieving SDG 4 (quality education), which is the foundation for success in other SDGs (UNESCO, 2020; Fuchs et al., 2023). Quality education fosters the creation of new knowledge and skills necessary to address contemporary challenges (Leicht et al., 2018). Furthermore, universities contribute to gender equality (SDG 5). This goal emphasizes ensuring women's full participation in all spheres of decision-making, promoting a fairer and more inclusive society (Martínez-Huerta et al., 2024; Nações Unidas Brasil, n.d.). Studies show that women may be more responsive to sustainable development (Khatri, 2023; Liu, 2018) and exhibit heightened social responsibility, making them key participants in these changes.

Universities also play a critical role in achieving SDG 11, which promotes sustainable cities and communities. This goal is a priority for local authorities seeking to align urban development with governance practices necessary for sustainable growth (United Nations, n.d.). Thus, universities fulfill a triple mission: academic learning based on experience, applied research for the benefit of communities, and practical workforce training. These activities not only meet societal needs but also actively enhance global sustainability.

Furthermore, SDG 16 focuses on achieving peace and justice. It supports building a peaceful society capable of reducing violence and corruption in all forms, creating a foundation for sustainable development initiated within universities. Moreover, it is necessary to strengthen partnerships and coordination between universities and stakeholders, ensuring access to modern achievements in science and technology to support sustainable development (SDG 17).

Thus, education emerges as a vital tool in implementing sustainable development goals. Universities can foster societal changes by integrating sustainable development principles into both the educational process and practical activities. Coordinated action on two fronts – implementing sustainable education and applying it for the benefit of society – enables universities to influence the formation of values by directing the efforts of students, faculty, and the broader community toward achieving sustainable development goals, even amid changing conditions, including wars. There is a need to study the presence of clearly defined strategic objectives of universities toward achieving sustainable development goals.

Therefore, this study aims to determine the impact of pedagogical universities on the progress in achieving sustainable development goals (SDGs) in Ukraine amid war conditions.

2. METHOD

The study applied content analysis to analyze documents published on the websites of Ukrainian universities. The qualitative-quantitative document analysis assessed the information relevant to sustainable development goals (SDGs) disclosed by universities. The obtained data were analyzed to identify internal patterns within the research object and enable focus on the informational field that reflects the internal policies of universities and their integration with the external national policies of Ukraine to ensure sustainable development of the economy, society, and the country as a whole.

The population includes 200 universities in Ukraine. The research sample consists of the top pedagogical universities occupying the highest 10 positions in the consolidated ranking of Ukrainian universities for 2024. The consolidated ranking was compiled using data from the most authoritative national university rankings recognized by experts and the media: Top 200 Ukraine (Osvita.UA, 2024b), Scopus (Osvita.UA, 2024c), and NMT Score for Contract Admission (Osvita.UA, 2024d). Each ranking employs different criteria for university evaluation (Table 1).

The best pedagogical universities in Ukraine include Ternopil Volodymyr Hnatiuk National Pedagogical University (TNPU), Bohdan Khmelnytsky Melitopol State Pedagogical University (MSPU), Drohobych

Ivan Franko State Pedagogical University (DSPU), Kryvyi Rih State Pedagogical University (KSPU), Dragomanov Ukrainian State University (DUSU), H.S. Skovoroda Kharkiv National Pedagogical University (KNPU), Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University (VSPU), South Ukrainian K.D. Ushinsky National Pedagogical University (SUNPU), Berdyansk State Pedagogical University (BSPU), and Poltava V.G. Korolenko National Pedagogical University (PNPU) (Osvita.UA, 2024a).

The study focused on processing the content of textual datasets and communicative correspondence products, followed by interpreting the results to identify and measure facts and trends recorded in these documents. Content analysis allows for assessing the content of documents by identifying their internal logic, reliability, and validity and examining their formatting and placement among other materials.

The study sought to ensure objective, systematic, representative, and formalized assessments, determine repeatability of content elements, align the procedure with the formulated objectives, enhance statistical significance, and clearly define categories during the content analysis. To ensure objectivity, one of the core features of content analysis, detailed criteria and rules, were strictly followed during the research process.

Data collection was conducted concurrently across all research directions. Collaborative teamwork involved specific roles for each pair of researchers. Weekly discussions focused on interim results and adjustments to tactical research tasks. Documents reflecting university development strategies, focusing on content related to achieving the SDGs, were collected and analyzed. A comparative analysis followed to quantify the relevant information for forecasting the promotion of SDGs in university activities. The study worked on Scopus data to assess the level of publication of academic research results by university faculty in alignment with the SDGs. This task was conducted on a single day (September 17, 2024) to prevent inaccuracies. Next, the information was summarized in an Excel spreadsheet for comparative analysis across universities. The data were visualized using radar charts for the five selected SDGs: 4, 5, 11, 16, and 17.

During September and October 2024, information published on the official websites of Ukrainian pedagogical universities was collected. Websites were analyzed for strategic objectives related to sustainable development and the status of their implementation pathways.

Potential ethical risks of such a process include insufficient consideration of universities' efforts and a lack of invited representatives from the administrative or academic staff during the collection and analysis of data.

Using descriptive statistics, the paper processed empirical data, systematized the information, presented it in charts and tables, and quantified it using key statistical measures. The median was calculated as an average estimate for the statistical distribution of publications in the Scopus database for the specific SDGs of individual universities.

3. RESULTS

The study aimed to assess the website content of selected pedagogical universities. This analysis confirms their clear orientation toward achieving SDG 4. For example, universities are determined to ensure students obtain quality, competitive education that meets the labor market demands of a modern post-industrial information society. They focus on a health-preserving university environment and foster a valueological and ecological culture. Universities strive to improve the professionalism of university academic staff through systematic self-improvement, combining teaching and research, various forms of professional development, and internships at leading domestic and foreign universities and other institutions (TNPU). The issues of enhancing the quality assurance system for education (MSPU), preparing highly qualified, competitive professionals for all levels of the education sector and other fields, and generating and disseminating cutting-edge scientific knowledge at the global level (KSPU) are also vital. University leaders are also determined to ensure the development and constant improvement of the university's internal quality assurance system, encompassing management processes, educational and scientific activities, resource provision, and engaging university staff and students while aligning with

the university's mission and strategic objectives (KNPU). Finally, transforming scientific activities to address global and regional challenges, considering European and global trends in higher education development (VSPU), among others, is also worth mentioning.

Only four of ten pedagogical universities demonstrate a clear orientation toward achieving all global goals, aligning their activities with the Presidential Decree of Ukraine, "On the Sustainable Development Goals of Ukraine for the period up to 2030" (President of Ukraine, 2019). For example, they reflect the following tasks:

- introducing the concept of education for sustainable development into the training of highly competent specialists (DUSU);
- improving the qualifications of teaching staff necessary for the effective functioning and sustainable development of universities and the socio-cultural development of society (KNPU);
- developing professional and personal qualifications of students to ensure successful achievement of sustainable development goals in Ukraine (BSPU);
- generating knowledge of an innovative nature to form a patriotic, nationally conscious personality capable of acting responsibly in conditions of uncertainty for comprehensive self-realization and achieving SDGs (SUNPU).

Next, the study checked the publication activities of academic staff of selected universities in the Scopus database. Namely, the reflection of SDGs in scientific articles published by the top ten pedagogical universities of Ukraine was assessed. Table 1 presents the results, including data on the number of relevant articles, the total number of publications, and other statistical indicators per university.

Table 1 reflects the overall level of publication activity of the selected ten pedagogical universities registered in the Scopus database. This indicator allows one to evaluate and compare each university's research activities related to sustainable development with their overall publication activity.

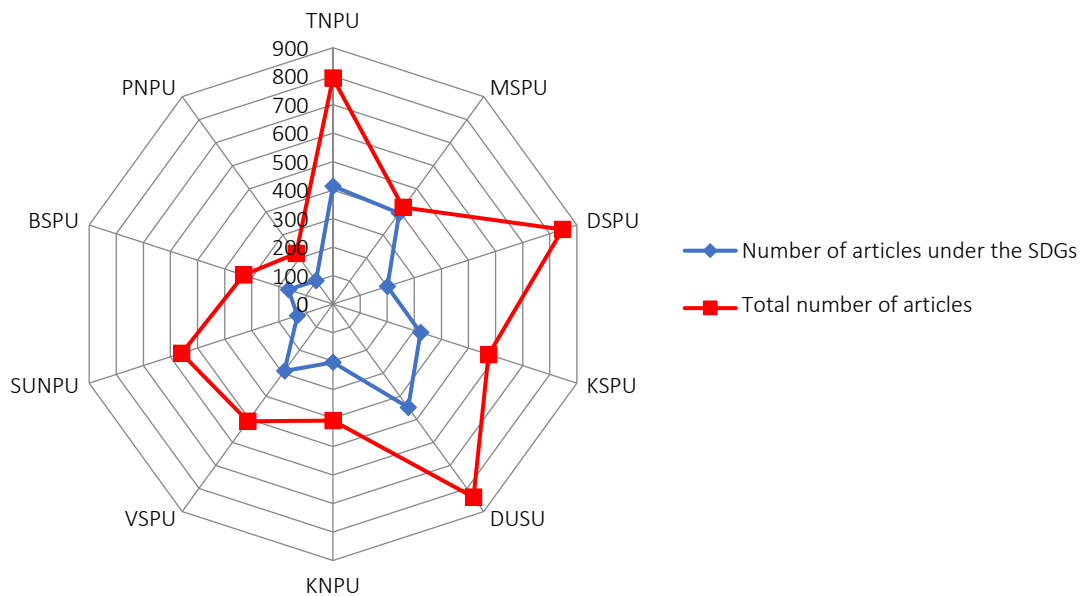
Table 1. Publication performance in the Scopus database

No.	University	Sustainable Development Goals																	Number of articles on the SDGs	Total number of articles	Specific gravity %	Median
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17				
1	TNPU	2	5	48	76	6	14	39	17	16	10	17	17	5	17	11	6	108	414	793	52	16
2	MSPU	4	14	12	47	3	10	27	29	14	8	36	12	11	17	34	9	108	395	419	97	14
3	DSPU	1	0	31	27	1	10	22	8	12	5	9	5	2	0	4	5	59	201	847	24	5
4	KSPU	0	0	12	116	0	6	9	19	18	7	11	6	3	2	9	6	99	323	574	56	7
5	DUSU	2	5	24	112	8	1	12	37	28	23	6	15	8	2	6	33	126	448	838	53	12
6	KNPU	2	1	16	43	5	5	5	11	4	6	15	5	0	1	9	3	73	204	409	50	5
7	VSPU	1	4	31	63	4	15	1	18	15	11	7	15	1	1	6	9	88	290	509	57	9
8	SUNPU	1	2	17	22	3	2	8	4	11	5	2	3	2	1	2	5	41	131	559	23	3
9	BSPU	1	0	4	41	0	0	31	14	6	9	1	5	2	0	1	6	43	164	330	50	4
10	PNPU	1	3	5	21	3	4	3	6	5	2	2	3	2	0	2	4	35	101	220	46	3
Total		15	34	200	568	33	67	157	163	129	86	106	86	36	41	84	86	780	2671	5498	508	78
Pearson																			0.56			

Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskiy State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Figure 1 shows the relationship between the number of publications dedicated to SDGs and the total number of articles published by university members.

The calculated correlation between the number of articles on sustainable development and the total number of publications equals 0.56. This indicates a moderate positive correlation, sug-



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Figure 1. Total number of scientific publications vs. publications on SDGs

gesting a trend: universities with higher overall scientific activity generally pay more attention to sustainable development topics.

This correlation demonstrates that while sustainable development research constitutes a significant part of scientific activity, institutions with higher levels of general publication activity tend to dedicate more attention to SDGs. This highlights the integration of global sustainable development priorities into universities' research agendas and their active participation in shaping relevant scientific practices.

A high level of sustainable development research inclusion is observed at South Ukrainian K.D. Ushinsky National Pedagogical University (38.2%) and H.S. Skovoroda Kharkiv National Pedagogical University (35.8%).

The medium level of integration of sustainable development topics is observed at the Dragomanov Ukrainian State University, Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, and Kryvyi Rih State Pedagogical University, where the share of SDG-oriented articles is approximately 30%.

A lower level of sustainable development focus is seen at Ternopil Volodymyr Hnatiuk National Pedagogical University (13.6%), which may indicate other research priorities within this institution.

Thus, the level of focus on SDG-related research varies significantly between universities, reflecting their different contributions to sustainable development research.

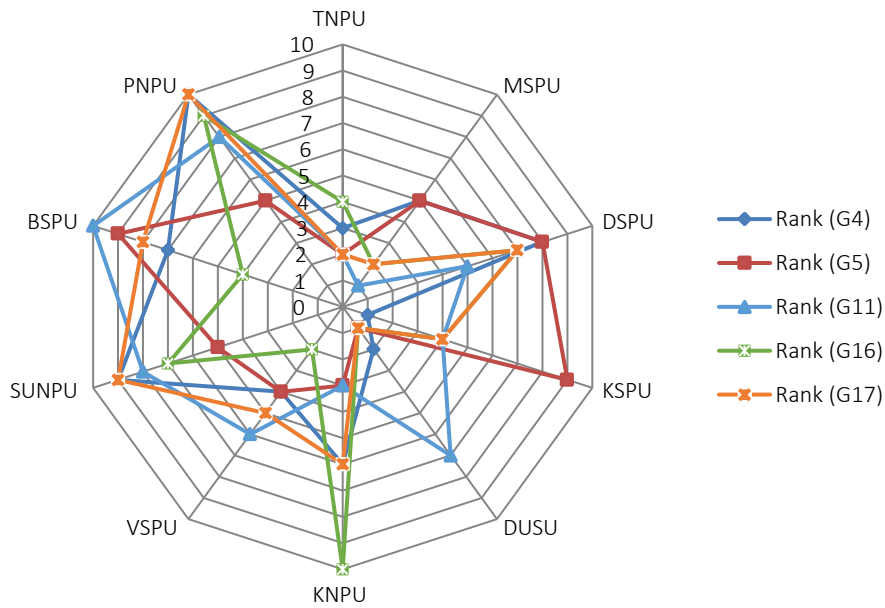
The specific weight represents the share of SDG-related articles in the total number of scientific publications for each university. This indicator ranges from 23% to 97%, showing substantial differences in the scientific orientation of universities regarding sustainable development. The specific weight indicator in Table 1 allows for understanding the level of each university's engagement in research emphasizing sustainable development. High values of specific weight indicate a strategic focus on addressing global challenges such as quality education, health and well-being, clean energy, environmental issues, and more.

Comparing specific weights among universities highlights differences in scientific priorities. For

Table 2. Ranking positions of universities by selected SDGs

No.	University	G4: Quality education	Rank (G4)	G5: Gender equality	Rank (G5)	G11: Sustainable cities and communities	Rank (G11)	G16: Peace, justice and strong institutions	Rank (G16)	G17: Partnerships for the goals	Rank (G17)
1	TNPU	76	3	6	2	17	2	6	4	108	2
2	MSPU	47	5	3	5	36	1	9	2	108	2
3	DSPU	27	8	1	8	9	5	5	7	59	7
4	KSPU	116	1	0	9	11	4	6	4	99	4
5	DUSU	112	2	8	1	6	7	33	1	126	1
6	KNPU	43	6	5	3	15	3	3	10	73	6
7	VSPU	63	4	4	4	7	6	9	2	88	5
8	SUNPU	22	9	3	5	2	8	5	7	41	9
9	BSPU	41	7	0	9	1	10	6	4	43	8
10	PNPU	21	10	3	5	2	8	4	9	35	10
Total		568		33		106		86		780	

Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.



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Figure 2. Ranking positions of universities by selected sustainable development goals

instance, universities (7 out of 10) with a specific weight above 50% (TNPU, MSPU, KSPU, DUSU, KNPU, VSPU, and BSPU) demonstrate significant orientation toward SDG research. This suggests that most of their scientific publications contribute to solving socially important problems. Universities with a specific weight below 50% (DSPU, SUNPU, and PNPU) are less active in integrating SDG topics into their scientific work, which may be due to other scientific or educational priorities.

The specific weight provides insights into the contribution of these pedagogical universities to achieving SDGs and allows conclusions about their role in addressing important socio-economic and environmental issues. It also helps understand their scientific and strategic priorities within the framework of sustainable development.

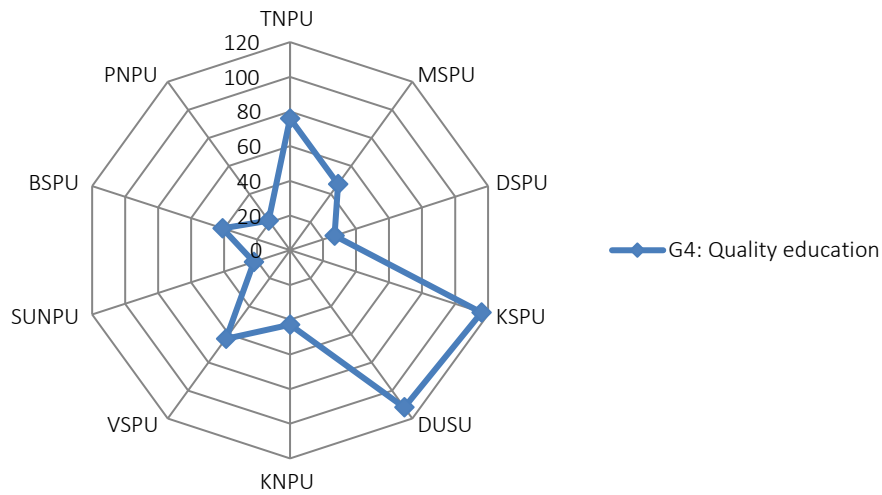
Furthermore, the study considers the rankings of each institution in selected SDGs (Table 2). This provides a more comprehensive understanding of research priorities and university achievements in the context of sustainable development. The ranking positions of each university by selected goals are visually represented in Figure 2. The distribution by Goal 4 is shown in Figure 3.

The leaders in the number of articles on quality education are Kryvyi Rih State Pedagogical University (116 articles) and Dragomanov Ukrainian State University (112 articles), highlighting a strong focus and significant achievements in these institutions in research aimed at improving education quality (Figure 3). Their ranks for G4 are 1 and 2, respectively, confirming a high level of activity and the greatest commitment to quality education research.

The lowest indicator for G4 is 21 articles, and Poltava V.G. Korolenko National Pedagogical University holds the 10th ranking position.

Figure 4 shows the distribution by Goal 5. In this category, Dragomanov Ukrainian State University holds the highest rank (1) with eight articles, reflecting its activity in the field of gender equality (Figure 4). It is worth noting the absence of gender equality research at Kryvyi Rih State Pedagogical University and Berdyansk State Pedagogical University. Overall, the number of publications on G5 is relatively small, suggesting that gender equality is not yet a central focus of research for most pedagogical institutions.

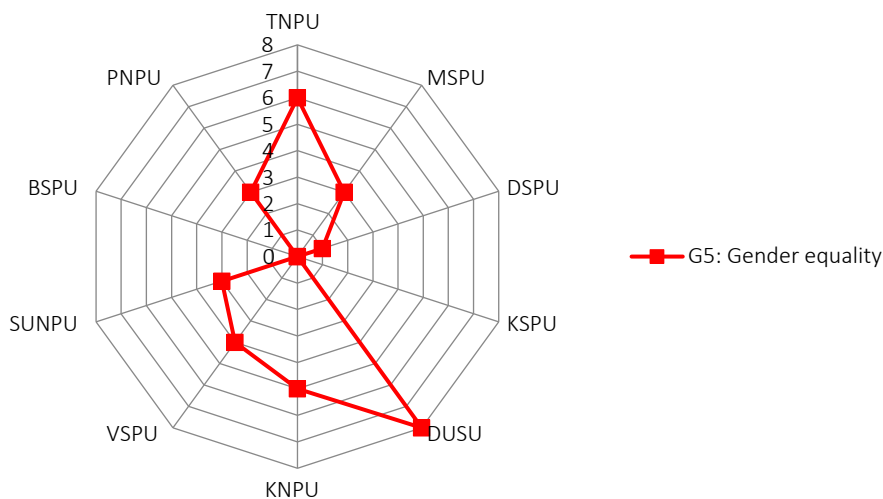
G4: Quality education



Note: TNP = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSP = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSP = Drohobych Ivan Franko State Pedagogical University; KSP = Kryvyi Rih State Pedagogical University; DUS = Dragomanov Ukrainian State University; KNP = H.S. Skovoroda Kharkiv National Pedagogical University; VSP = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUN = South Ukrainian K.D. Ushinsky National Pedagogical University; BSP = Berdyansk State Pedagogical University; PNP = Poltava V.G. Korolenko National Pedagogical University.

Figure 3. Distribution of universities by G4

G5: Gender equality



Note: TNP = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSP = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSP = Drohobych Ivan Franko State Pedagogical University; KSP = Kryvyi Rih State Pedagogical University; DUS = Dragomanov Ukrainian State University; KNP = H.S. Skovoroda Kharkiv National Pedagogical University; VSP = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUN = South Ukrainian K.D. Ushinsky National Pedagogical University; BSP = Berdyansk State Pedagogical University; PNP = Poltava V.G. Korolenko National Pedagogical University.

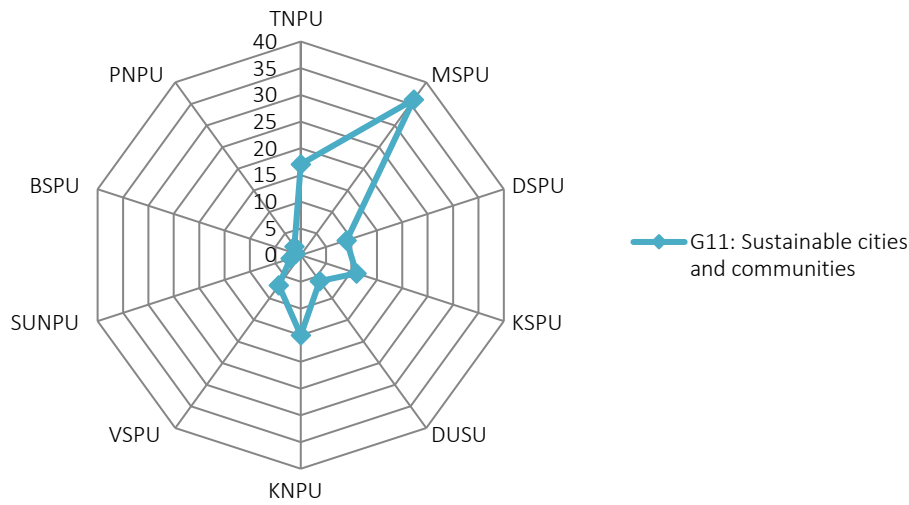
Figure 4. Distribution of universities by G5

Figure 5 shows the distribution by Goal 11. Bohdan Khmelnytsky Melitopol State Pedagogical University ranks first for G11 with 36 articles, the highest in this category, reflecting a strong focus on research related to sustainable community development (Figure 5). In contrast, Berdyansk

State Pedagogical University, with just one article (ranked 10th), demonstrates significantly lower activity in this area.

The distribution by Goal G16 is shown in Figure 6. Ternopil Volodymyr Hnatiuk National Pedagogical

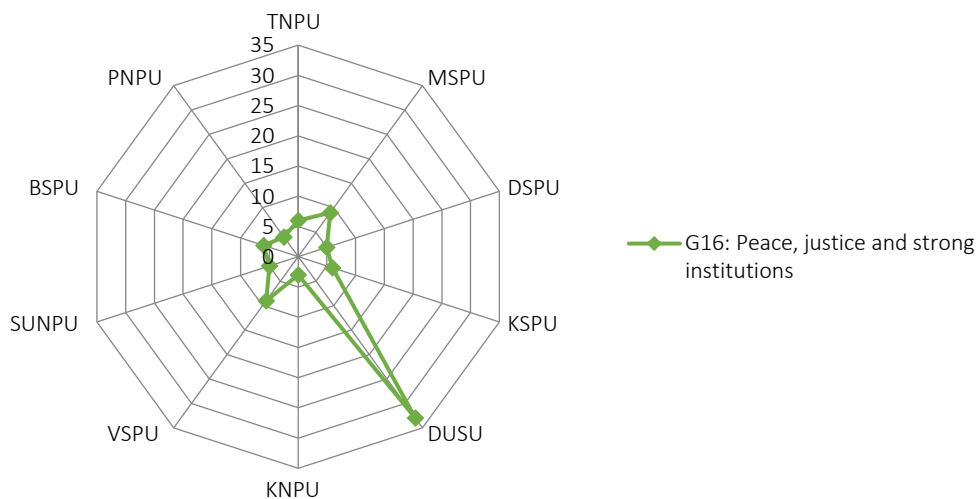
G11: Sustainable cities and communities



Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Figure 5. Distribution of universities by G11

G16: Peace, justice and strong institutions



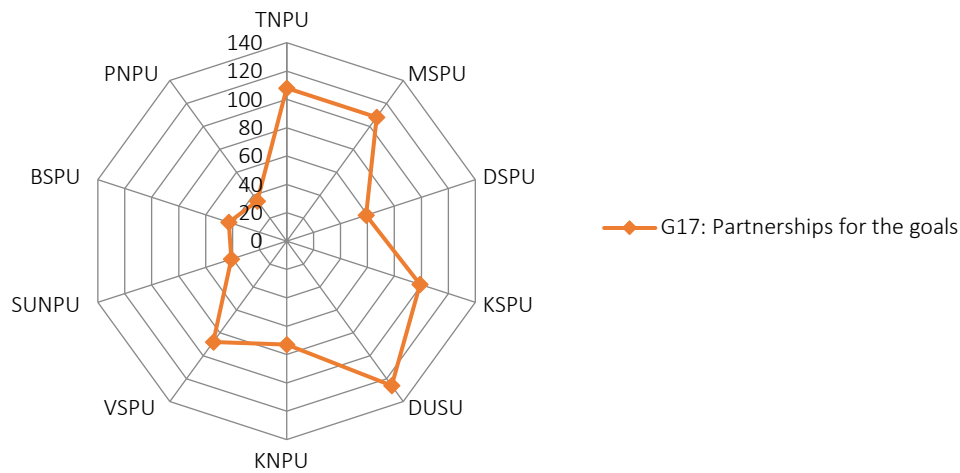
Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Figure 6. Distribution of universities by G16

University holds the highest indicator for G16 with 17 articles, significantly surpassing other universities and ranking first in this category. This highlights its focus and high level of interest in this topic (Figure 6). Meanwhile, with three articles, H.S. Skovoroda Kharkiv National Pedagogical University ranks 10th.

Figure 7 shows the distribution by Goal 17. The leader in the number of publications for G17 is the Dragomanov Ukrainian State University, with 126 articles ranking first and demonstrating the greatest attention to research in the field of partnerships (Figure 7). Other universities, such as Poltava V.G.

G17: Partnerships for the goals



Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Figure 7. Distribution of universities by G17

Korolenko National Pedagogical University, contributed 32 articles in this category, corresponding to the 10th rank.

The analysis indicates that each of the ten pedagogical universities has unique research priorities related to sustainable development, focusing on different SDGs. Thus, Table 2 reflects the quantitative coverage of each SDG studied and highlights the diversity of research focuses and rankings among the universities. This allows an assessment of the contribution of each of the top ten universities to achieving SDGs in Ukraine and reveals their strategic directions in the context of global sustainable development challenges.

Scholars from the top ten pedagogical universities in Ukraine concentrate on two key goals: Goal 4, quality education, and Goal 17, partnerships for the goals. Goal 4 is represented by 568 articles (21.3%), highlighting their high level of interest in improving educational processes, teaching methodologies, and access to education. Goal 17 is the most covered, with 780 articles (29.2%). This high level of attention to Goal 17 reflects the researchers' understanding of the importance of collaboration among universities, public and private institutions, and international organizations to achieve long-term sus-

tainable development outcomes. This priority indicates a strategic approach by Ukrainian scholars to expanding academic and educational networks, which is a critical condition for ensuring sustainable and harmonious societal development.

Next, the study aimed to reveal the coverage of ways to solve the problems of sustainable development and the results of activities focused on SDGs 4, 5, 11, 16, and 17 on university websites.

Taking into account the focus of pedagogical universities on implementing innovations in the training of educational professionals, the achievement of SDG 4 appears natural. University websites prominently feature legislative and regulatory documents reflecting the assurance of internal quality systems in education.

SDG 5 is represented through documents related to gender equality, such as the Strategy for Ensuring Gender Equality at TNPU for 2024–2030 (TNPU), the Regulation on the Gender Education Center (KSPU), and the Gender Equality Plan (KNPU). According to the information provided on the websites, two universities have established centers for the implementation of gender policy: the Center for Gender Studies and Implementation of

Table 3. Gender composition of pedagogical university administration

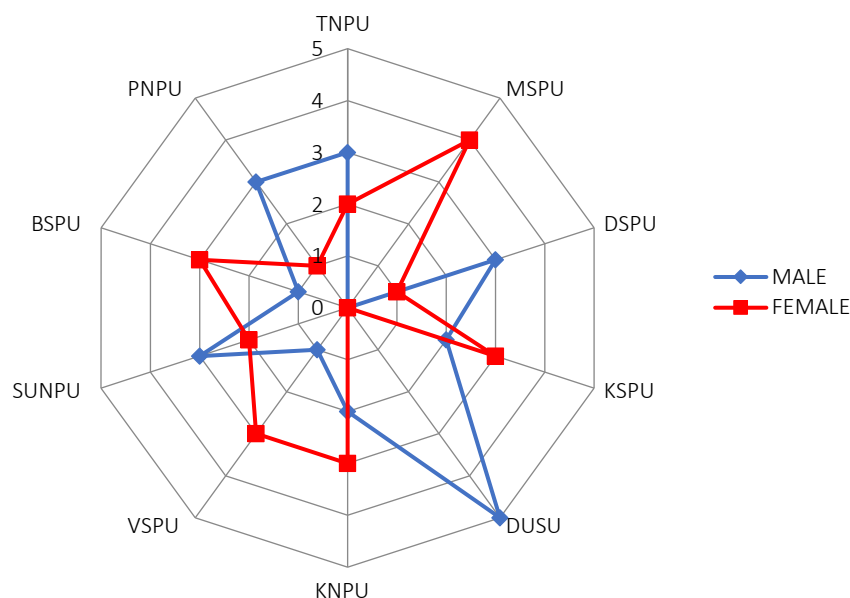
No.	University Administration					
	University	Total number	Male	Male (%)	Female	Female (%)
1	TNPU	5	3	60	2	40
2	MSPU	4	0	0	4	100
3	DSPU	4	3	75	1	25
4	KSPU	5	2	40	3	60
5	DUSU	5	5	100	0	0
6	KNPU	5	2	40	3	60
7	VSPU	4	1	25	3	75
8	SUNPU	5	3	60	2	40
9	BSPU	4	1	25	3	75
10	PNPU	4	3	75	1	25
	Total	45	23		22	

Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Equal Rights and Opportunities Policy at TNPU named after V. Hnatiuk (TNPU) and the Centre for Gender Education (KSPU). The KSPU website mentions agreements with other countries to address gender issues, such as the Cooperation Agreement with the Society of Azerbaijani Women of Kharkiv, and features a separate section on gender-based violence. Additionally, universities organize various events dedicated to gender equality, such as the webinar Gender and Digital

Technologies in Science (SUNPU), the round table Women in Science, the lecture-discussion Gender Aspects and the Role of Women in Conflict Resolution, and meetings held within the framework of the All-Ukrainian Campaign, 16 Days Against Violence (BSPU), among others.

The gender composition of the administration of the represented pedagogical universities has been analyzed (Table 3 and Figure 8).



Note: TNPU = Ternopil Volodymyr Hnatiuk National Pedagogical University; MSPU = Bohdan Khmelnytsky Melitopol State Pedagogical University; DSPU = Drohobych Ivan Franko State Pedagogical University; KSPU = Kryvyi Rih State Pedagogical University; DUSU = Dragomanov Ukrainian State University; KNPU = H.S. Skovoroda Kharkiv National Pedagogical University; VSPU = Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University; SUNPU = South Ukrainian K.D. Ushinsky National Pedagogical University; BSPU = Berdyansk State Pedagogical University; PNPU = Poltava V.G. Korolenko National Pedagogical University.

Figure 8. Gender composition of pedagogical university administration

Table 3, which reflects the gender composition of the administration in ten pedagogical universities of Ukraine, shows significant differences in the representation of men and women in leadership positions. Of the total number of administrative roles in these institutions, 51% are held by men and 49% by women. This analysis highlights diverse approaches to ensuring gender equality in university leadership, directly linked to SDG 5.

For example, the administration of Bohdan Khmelnytsky Melitopol State Pedagogical University consists entirely of women. At Berdyansk State Pedagogical University, women hold 75% of leadership positions. This demonstrates significant progress toward ensuring equal opportunities for women in leadership roles. On the other hand, at Drohobych Ivan Franko State Pedagogical University, only 25% of administrative positions are held by women, and at the Dragomanov Ukrainian State University, all leadership positions are held by men. Such a distribution suggests the need for further efforts to achieve a more balanced gender representation in leadership.

The achievement of SDG 11 is reflected through the presence of relevant documents, centers, museums, and outreach activities. They include:

- documents on orienting scientific and innovative activities toward the needs of the community and business (MSPU);
- embracing modern trends and intercultural interaction in a multicultural society (KSPU);
- the Scientific Center for Environmental Innovations of TNPU named after V. Hnatyuk (TNPU);
- the Scientific and Educational Center “Biodiversity” (MSPU);
- the Museum of Science History “FMF OPEN SPACE” and the Museum of Ethno-Design (KNPU);
- the Museum-Educational Center (VSPU);
- specialized courses and schools for the general public (SUNPU);

- Family and Children’s Space, Child-Friendly Space, Parent Club;
- psychological support for community residents; social and humanitarian support for vulnerable families (PNPU);
- the Social and Psychological Service of the Department of Youth Policy and Social Work (VSPU); and
- events such as Our South: Identity in the Context of War, Youth of Berdyansk Region: De-Occupation and Partnership for Sustainable Development, and Youth of Berdyansk Region: Challenges of Occupation (BSPU), among others.

The achievement of SDG 16 is reflected through the presence of relevant documents addressing conflict resolution, responses to bullying incidents, prevention and detection of academic plagiarism in scientific, educational, and qualification works, as well as measures to prevent and address corruption and sexual harassment (available in all universities). There are sections titled On Anti-Corruption Activities (TNPU, MSPU, KSPU, DUSU), Anti-Corruption Program, Academic Integrity, Conflict Monitoring and Resolution, Prevention and Counteraction to Bullying (TNPU), Counteracting Bullying, Discrimination, and Sexual Harassment (MSPU), Social and Civic Activities, Societal Issues (KSPU), and methodological guidelines on preventing and detecting corruption; a systematic approach to counteracting bullying in educational institutions (TNPU). All universities also operate psychological services and integrity commissions.

Achievements of SDG 17 are embedded in the development strategies of all pedagogical universities, particularly regarding cooperation with universities and stakeholders in Ukraine, the European Union, and other countries based on international agreements. Such cooperation is highlighted through documents on internationalization aimed at enhancing academic mobility for researchers, lecturers, and students, as well as fostering joint research and educational programs with foreign partners. In addition, there are the Technology and Innovation Support

Center, the Educational and Research Center for Project and Scientific-Technical Activities, the Educational and Research Center for International Education and Cooperation (TNPU), the Center for Public Administration and Management Innovations Research, the Notbox Hub, the Center for Economic and Legal Issues of Public Administration, the Scientific-Practical Center for Mediation and Law, the Scientific-Practical Center for European Studies (VSPU). Projects and grant programs like the MilClimATech Project, Erasmus+ MultiEd (KA2), the international DeDiMaMo project, and Progressive University Management (TNPU) are noteworthy. Other projects include Learn to Discern: Info-Media Literacy, Ukrainians Support Chain, PISA (KNPU), TURBO, PAGOSTE, MoPED (SUNPU), Erasmus+ MultiEd, ERASMUS+ KA2 BOOST (PNPU), EU Open4UA and Short-Term Scientific Missions (BSPU), among others.

4. DISCUSSION

This study addressed a significant issue that remains insufficiently resolved within the scientific community: the vital role of educational institutions in driving transformations to achieve sustainable development during the war. Lawson (2014), Rosli et al. (2020), Berchin et al. (2018), and Govindan et al. (2013) concentrated on general aspects of SDG implementation without considering specific barriers that arise in this process. In particular, these barriers are related to the mismatch between society's need for achieving SDGs and the actual contribution of universities. Ukrainian pedagogical universities have yet to sufficiently adapt to fulfilling SDG tasks under wartime conditions, as evidenced by a gap between existing legislative documents and the imperfect strategies of educational institutions. Although the state has developed regulatory documents to support SDG implementation, they often fail to be reflected in universities' strategic programs. This indicates a need for closer integration of national goals with the strategies of educational institutions, particularly through scientific research and educational programs. Furthermore, there is a gap between societal expectations regarding the accessibility of research on sustainable development and the actual dissemination of its results. Many universi-

ties conduct important research, but the findings often remain within a narrow academic community, limiting access of stakeholders such as civil society organizations, businesses, or government entities. To address this issue, it is necessary to support the principles of open science and disseminate research results in accessible formats that would be useful for a wide range of stakeholders. This can assist in overcoming existing barriers and significantly enhance the role of universities in achieving sustainable development.

The results show that it is necessary to further update development strategies that would take into account both national priorities and global challenges. This update will facilitate the more effective involvement of educational institutions in combating social, economic, and environmental challenges. Although sustainable development issues have already become a central component of universities' scientific activities, only a small proportion of them demonstrate high publication activity. By integrating global sustainable development priorities into their research, such universities confirm their role in shaping modern scientific practices.

Legislative and regulatory documents reflecting the functioning of internal quality assurance systems in education are widely presented on university websites. The focus of pedagogical universities on innovations in the preparation of teaching staff naturally contributes to achieving SDG 4. Relevant provisions and regulations regarding SDG 5 have also been posted. However, not all universities highlight its implementation through the functioning of special centers. Ensuring human rights, gender equality, and equal personal development opportunities for staff and students should become one of the universities' priority tasks. This includes ensuring the right to hold positions, participate in decision-making processes, career development, equal access to scientific research and educational processes, as well as implementing corporate policies against violence and sexual harassment. SDG 11 is reflected through documents regulating the orientation of scientific and innovative activities toward the needs of the community and business, as well as fostering communication with the local community. Most pedagogical universities studied actively organize educational

events and engage in public initiatives. SDG 16 is supported by documents aimed at conflict resolution, combating bullying, preventing academic plagiarism and corruption, as well as counteracting sexual harassment. The achievement of SDG 17 is enshrined in the development strategies of all pedagogical universities. This includes collaboration with Ukrainian and international educational institutions based on international agreements, reflected on the websites through relevant documents, centers, projects, and grant programs.

At the same time, only two universities (PNPU and BDPU) have dedicated sections on their websites focusing on sustainable development goals and their implementation, highlighting the differences in approaches among institutions to popularizing and integrating SDGs.

This study has several limitations. First, information on the official websites of pedagogical universities may not fully capture the actual state due to subjective factors, potentially affecting the accuracy of understanding the research elements. Second, legislative changes that have not yet been reflected in the activities of universities could also have in-

fluenced the results. Third, the geographical dispersion of the research team and their psycho-emotional and physical condition, deteriorated by prolonged instability and stressful conditions caused by the war in Ukraine, may have affected the study.

Further research is needed on educational programs for training experts in the context of SDGs. Pedagogical universities must recognize that publishing activities are critical to promote sustainable education and ensure further improvements of educational programs and university strategies inspired by innovative global approaches. Constant knowledge-sharing and updates guarantee that academic programs remain up-to-date and consider actual academic and industrial gains, thus equipping students with the modern knowledge and skills necessary to achieve sustainable development goals. The introduction of research innovations into educational procedures secures academic relevance and supports the long-term sustainable development of universities. Additionally, future research should target the effect of gender equality in university administrative bodies on achieving SDGs. Strategies and initiatives must be included to reduce this inequality.

CONCLUSION

The study aimed to highlight the role of educational institutions in achieving sustainable development goals (SDGs) in Ukraine, focusing on selected pedagogical universities. The results stress that universities still need to integrate sustainable development objectives into their activities, which is critical for national educational policy. Educational institutions insufficiently promote the development of open science in the context of sustainable development goals and do not fully ensure the accessibility of research results in formats useful for various groups of stakeholders, particularly through publications in the Scopus database. The ways to implement SDGs are inadequately covered on university websites, which affects students, faculty, and the public awareness about key aspects of sustainable development, the presence of these goals in educational programs and research, as well as the engagement of a broader range of stakeholders in addressing global challenges.

AUTHOR CONTRIBUTIONS

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Formal analysis: Olena Kryvylova, Viktoriia Zhyhir, Valentyna Peregudova.

Investigation: Olha Kurylo, Olena Kryvylova, Viktoriia Zhyhir, Valentyna Peregudova.

Methodology: Olena Kryvylova, Valentyna Peregudova.

Project administration: Olha Kurylo, Olena Kryvylova.

Resources: Olha Kurylo, Olena Kryvylova, Viktoriia Zhyhir, Valentyna Peregudova, Yuliia Bielova-Oleynik, Serhii Onyshchenko, Olena Revutska.

Software: Olha Kurylo, Valentyna Peregudova.

Supervision: Olena Kryvylova.

Validation: Olha Kurylo, Olena Kryvylova, Viktoriia Zhyhir, Valentyna Peregudova, Yuliia Bielova-Oleynik, Serhii Onyshchenko, Olena Revutska.

Visualization: Olha Kurylo, Valentyna Peregudova.

Writing – original draft: Olha Kurylo, Olena Kryvylova, Valentyna Peregudova.

Writing – review & editing: Olha Kurylo, Olena Kryvylova, Yuliia Bielova-Oleynik, Serhii Onyshchenko, Olena Revutska.

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