

UDC 372.881.1

DOI <https://doi.org/10.24919/2308-4863/72-4-10>

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SUSTAINABLE DEVELOPMENT AS AN INTERDISCIPLINARY APPROACH TO TEACHING A FOREIGN LANGUAGE FOR PROFESSIONAL PURPOSES IN HEIS

The article argues the relevance of teaching a foreign language for professional purposes in HEIs in the modern conditions of the globalized world and Ukraine's international policy. The problems faced by higher education institutions in the process of integrating this discipline into the curriculum are identified. The scientific publications devoted to the study of this issue are analyzed.

The study is aimed at finding effective approaches to foreign language teaching for professional purposes in the current conditions, taking into account the relevant trends in education, namely its focus on interdisciplinarity and permanent professional development, as well as the challenges facing universities. To achieve this goal, the article hypothesizes that sustainable development can be viewed as an interdisciplinary approach to teaching a foreign language for professional purposes in HEIs and provides for further testing of this hypothesis. Based on the theoretical analysis in the field of sustainable development and teaching experience, the arguments for sustainable development as an interdisciplinary approach to teaching a foreign language for professional purposes in HEIs are identified.

In order to confirm the validity of the hypothesis, the article analyzes the ability of sustainable development as an academic discipline to overcome the problems of teaching a foreign language for professional purposes in general: the problem of training personnel to teach the discipline, selection of relevant educational material for classes, selection of effective teaching methods, search for opportunities to improve and enhance the learning of a foreign language for professional purposes within the curriculum. The benefits of teaching the discipline for all participants in the educational process (student, teacher, university) are determined in order to assess the practical significance of using the proposed approach to teaching a foreign language for professional purposes.

Key words: sustainable development, interdisciplinary approach, elective discipline, permanent education.

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СТАЛИЙ РОЗВИТОК ЯК МІЖДИСЦИПЛІНАРНИЙ ПІДХІД ДО ВИВЧЕННЯ ІНОЗЕМНОЇ МОВИ ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ У ЗВО

У статті аргументовано актуальність викладання іноземної мови за професійним спрямуванням у ЗВО в сучасних умовах глобалізованого світу та зовнішньополітичного курсу України. Ідентифіковано проблеми, з якими стикаються ЗВО в процесі інтеграції даної дисципліни у навчальні плани. Проаналізовано наукові публікації, присвячені вивченню даної проблематики.

Дослідження спрямовано на пошук ефективних підходів до вивчення іноземної мови за професійним спрямуванням в умовах, що склалися, зважаючи на релевантні тенденції у сфері освіти, а саме її орієнтацію на міждисциплінарність та перманентне професійне самовдосконалення, а також виклики, які стоять перед університетами. З цією метою, висунуто гіпотезу, що сталий розвиток може розглядатися як міждисциплінарний підхід до вивчення іноземної мови за професійним спрямуванням у ЗВО та передбачено подальшу перевірку даної гіпотези. На основі теоретичного аналізу у сфері сталого розвитку та досвіду викладання визначено аргументи за сталий розвиток, як міждисциплінарний підхід до вивчення іноземної мови за професійним спрямуванням у ЗВО.

Задля підтвердження достовірності висунутої гіпотези проведено аналіз спроможності сталого розвитку, як навчальної дисципліни подолати проблеми викладання іноземної мови за професійним спрямуванням в цілому: проблему підготовки кадрів для викладання дисципліни, підбір релевантного навчального матеріалу для занять,

підбір ефективних методів викладання, пошук можливостей для поглиблення та посилення вивчення іноземної мови за професійним спрямуванням в рамках навчальних планів. Визначено вигоди в разі викладання дисципліни для усіх учасників навчального процесу (студента, викладача, університету) задля оцінки практичного значення використання запропонованого підходу до вивчення іноземної мови за професійним спрямуванням.

Ключові слова: сталий розвиток, міждисциплінарний підхід, вибіркова дисципліна, перманентна освіта.

Statement of the problem in a general form and its connection with important scientific or practical tasks. Studying a foreign language for professional purposes is especially relevant in the context of the globalization of the world economy and Ukraine's clearly defined international policy towards integration into the EU and NATO. The intensity of partner international contacts is growing within the framework of foreign economic activity and various international grant projects, etc. The current situation creates a demand for specialists in various fields of public life with professional foreign language skills, as they can not only communicate freely with foreign partners but also be comfortable in the international information space, and thus constantly improve their professional skills following the world's leading trends. Such specialists have excellent opportunities to adopt progressive world experience in their field, and thus have the best chance of creating a competitive product of their activity.

Due to this conjuncture, universities have long practiced teaching a foreign language for professional purposes to their students and are trying to cope with the challenges they face: the problem of training personnel to teach the discipline, selecting relevant teaching material, finding effective teaching methods, and searching for opportunities to improve and enhance the learning of a foreign language for professional purposes within the curriculum. The unprecedented complexity of the systems around us (economic, social, environmental, managerial, etc.), the growing mobility and speed of transformations, as well as the deepening specialization of sciences (disciplines), as a consequence of recent trends in the division and cooperation of scientific work, make it difficult to integrate the discipline into the educational process in higher education institutions (HEIs) and encourage a focus on interdisciplinarity as a synergy of different sciences (disciplines), which involves the development of integration processes, growing interaction, mutual enrichment of methods and tools for obtaining new scientific knowledge (Kolot, 2014).

In other words, there is a need to select a comprehensive discipline for reading it in a foreign language, which, given its interdisciplinary nature, would belong to the professional sphere of students of most specialties, which in turn would help to level the existing problems in teaching a foreign language

for professional purposes in HEIs. We believe that such a discipline can be sustainable development due to its global and transversal nature.

Analysis of the latest research and publications in which the solution to this problem was initiated and on which the author relies. Many Ukrainian and foreign scholars have studied the problems of teaching a foreign language for professional purposes in HEIs. The issue of applying an interdisciplinary approach in teaching the discipline is partially mentioned by some scholars. Thus, Kostyk E. V. and Siliutina I. O. believe that: "Effective formation of student's professional qualities and a qualitative leap in the professional development of a future specialist can be provided by a university, using the principle of interdisciplinary interaction, where a foreign language is a necessary and mandatory component" (Kostyk et al, 2022).

In turn, in the context of studying the ways of presenting educational material in foreign language classes for professional purposes, Fedorenko S. and others emphasize the expediency of the humanistic orientation of the material and the interdisciplinary approach, which makes it more possible for students to have a deep understanding of the modern world as one of the imperatives of the integrated unity of knowledge from different fields (Fedorenko, 2020).

Castillo Quiñonez and Perlaza Rodriguez consider an interdisciplinary approach to foreign language teaching for professional purposes to be the most useful in terms of combining disciplinary knowledge and/or cognitive processes, as well as the most practical way to achieve optimal academic goals and help students master the terminology that is part of effective communication (Castillo et al, 2021).

In addition, Malynovska O. L. and Mason S. R. in their research objectively draw attention to the need to strengthen the learning of a foreign language for professional purposes by extending this process in time, that is, to study the discipline throughout the entire academic period, not just in the 1st and 2nd years (Malynovska et al, 2017).

In general, the analysis of publications on this topic proves the correctness and relevance of the chosen direction of scientific research, and also demonstrates the existence of a wide untapped sphere of research in the field of applying an interdisciplinary approach to teaching a foreign language for professional purposes in HEIs.

Formulation of the goals of the article, setting of tasks. The purpose of our study is to test the hypothesis that sustainable development can be seen as an interdisciplinary approach to teaching a foreign language for professional purposes in HEIs, as well as to analyze the ability of sustainable development as an academic discipline to overcome the problems of teaching a foreign language for professional purposes in general.

Presentation of the main material of the study with a full justification of the obtained scientific results. The theoretical analysis in the field of sustainable development, as well as the experience of teaching a foreign language for professional purposes, allows us to identify three arguments for sustainable development as an interdisciplinary approach to teaching a foreign language for professional purposes in HEIs.

1. Global nature of sustainable development. The activity of higher education institutions should be based on the concept of sustainable development in general and be guided by the Sustainable Development Goals. Since 2015, Ukraine, as a subject of international economic relations, has been on the path to achieving the Sustainable Development Goals by integrating them into the national strategy of socio-economic development, as the concept of sustainable development has become global as a result of the adoption of the final document of the UN Summit on Sustainable Development “Transforming our world: a sustainable agenda for development until 2030”. Korolchuk and Voitenko believe that: “One of the most important aspects of the effective implementation of the concept of sustainable development is appropriate quality education, which is the foundation for the transformation of the world economic system to a more sustainable and environmentally responsible model – a green, circular, closed economy, because such a transition requires special knowledge about the environment and its interaction with all areas of human life” (Korolchuk et al, 2023).

The impact of higher education on the basic attitudes of society and the economic systems within which it exists has long been a subject of intense debate. It is believed, rightly so, that the reason for the current state of the planet is related to who comes out of the world’s best colleges and universities (Cortese, 2003). According to David Orr, our current education systems are essentially preparing people to become more effective vandals of the Earth (David Orr, 2004). In fact, many universities keep promoting a type of vision that does not lead to a sustainable socio-economic system (Wals, 2010). Instead, there are many scientific papers dedicated

to assessing the impact of higher education on sustainable development, where: “higher education institutions are seen as change agents and catalogs in the development of issues related to sustainable development” (Shields, 2019). Universities have a crucial influence on mentality formation (Inga Zalenienea et al, 2021). It is higher education institutions that are responsible for raising public awareness of the ideas of sustainable development, and are called upon to form the conceptual knowledge, skills and values necessary to ensure the harmony of the economic, social and environmental dimensions of sustainable development (Cortese, 2003).

Thus, universities have a great deal to do with implementing education for sustainable development: can be a source of employees who will be guided by the Sustainable Development Goals in all spheres of public life; help graduates to have well-paid jobs, which is the key to a sustainable and prosperous society, and produce new ideas and innovative technologies that are the foundation of sustainable development (Fehlner, 2019); have the capacity to design, develop and implement sustainability education; can cultivate a corporate culture of sustainability that will have a demonstration effect, as well as conduct active educational activities; are able to establish campus sustainability practices (e.g., reducing greenhouse gas emissions, promoting biodiversity, efficient use of energy and reducing ecological footprint) (Inga Zalenienea et al, 2021).

2. The interdisciplinary nature of sustainable development, characterized by cross-disciplinary links with various sciences. Awareness of the necessity of introducing the sustainable development paradigm into public life has led to the emergence of a new field of interdisciplinary sustainability science (Brandt et al, 2013), as well as the deployment of a large number of interdisciplinary sustainable development projects around the world (Lang et al, 2012).

It is known that sustainable development is measured in three dimensions: economic, social and environmental, which proves that it borders on many sciences. The complexity of sustainable development cannot be adequately addressed by research approaches restricted to single scientific disciplines (Ostrom, 2007). Also, interdisciplinary research in the natural and technical sciences (ecology, energy, urban planning, agronomy, chemistry, etc.) prevails in the world practice of sustainable development (Salashenko et al, 2023).

In turn, the possibility of applying an inclusive approach to the implementation of the concept of sustainable development (Korolchuk, 2021) confirms the interdisciplinary nature of sustainable

development, as it involves ensuring equal participation of representatives of all professions and all social classes in socio-economic activities at all levels, on the basis of justice and stability, in order to improve the quality of human life in both urban and rural areas.

Sustainable development can be achieved by combining the efforts of specialists from different industries to accomplish the main goal of ensuring harmony between people, the economy and nature. Only cross-sectoral cooperation can contribute to the emergence of creative innovative solutions that will have a decisive impact. International cooperation within joint research projects and the exchange of successful experience in greening the economy is also relevant. Adding to the above the factor of the imperative of global documents in the field of sustainable development, it becomes obvious that teaching the discipline of sustainable development in English is appropriate and relevant, which will allow students studying in various specialties to develop a stable, relevant conceptual apparatus that they will use in their international professional activities.

3. Possibility of permanent education. As part of the Sustainable Development discipline, a foreign language for professional purposes can be taught throughout the entire academic period at the university, as well as in non-formal education. Koreneva I. M. fairly emphasizes the continuous nature of education for sustainable development, which provides the

possibility of constant updating of knowledge, development of skills, intelligence, and formation of value orientations throughout a person's life. Due to the emergence of a social need to form a new type of consciousness and culture of society, the demand for permanent education is increasing, which, in turn, necessitates the formation and regulation of a system of educational structures that integrate sustainable development into their curricula (Koreneva, 2018).

In addition, education for sustainable development is also characterized by its anticipatory nature, i.e., it involves the acquisition of knowledge and the development of skills in students in accordance with the actual and potential problems of the current century. These sustainable development features allow such a discipline to be taught in a foreign language in different courses throughout the entire academic period as a general student elective and a professional training elective. Students will be able to choose this subject in parallel with a foreign language course for professional purposes, or in their senior year to ensure the permanence of foreign language learning.

In the context of determining the feasibility of using sustainable development as an effective approach to teaching a foreign language for professional purposes, it is important to assess its ability as an academic discipline to overcome the problems of teaching a foreign language for professional purposes in general. Our logical analysis of this issue allows us to draw the following conclusions, presented in Table 1.

Table 1

A logical analysis of the ability of sustainable development to tackle the problems of teaching a foreign language for professional purposes in HEIs

1. The problem of training personnel to teach the discipline	2. The problem of selecting relevant educational material for teaching the discipline
+ is significantly leveled in the case of using sustainable development as a general elective discipline, since teaching such an academic subject does not require specialization of the teacher, but rather interdisciplinary knowledge and proficiency in a foreign language. At the same time, such a discipline meets the demand for intensive study of a foreign language for professional purposes of students of most specialties of HEIs.	+ is easy to solve, in our opinion, since sustainable development is now the focus of the entire world community, and there is a wide range of theoretical and analytical material on the topic. The teacher can freely choose the content of his or her course, constantly supplementing and updating it with relevant information. In addition, a wide variety of information on the topic will allow students to develop research skills and independent work.
3. The problem of selecting effective teaching methods	4. The problem of finding opportunities to deepen and strengthen the study of a foreign language for professional purposes within the curriculum
+ is solved, as the high level of discussion of the topic allows for interactive classes that meet the requirements of teaching a foreign language, as well as the use of the method of subject- and language-based integrated learning (CLIL), i.e., studying sustainable development through a foreign language. This means that all the planned competencies within the discipline will be formed in students, and at the same time, reading, writing, listening and speaking skills in a foreign language will be developed.	+ is leveled, because teaching sustainable development in a foreign language as an elective in courses where a foreign language is no longer taught for professional purposes allows students to learn a foreign language throughout the entire academic period. In addition, this interdisciplinary course in a foreign language can be included in the catalog of elective courses in the 2nd year of study so that students can strengthen their professional foreign language learning.

Conclusions from this study and prospects for further research in this direction.

As we can see from the above, the hypothesis put forward at the beginning of the study can be considered valid. To increase the reliability of this conclusion, it is necessary to further test it in practice. The integration of sustainable development as an elective discipline into the curriculum of higher education institutions should be beneficial for all participants in the process: student, teacher, and university. The student should gain additional knowledge of a foreign language for professional purposes and sustainable development as a cross-disciplinary subject relevant to all specialties, as it teaches about current and potential problems of humanity and ways to overcome them; at least has the freedom to choose whether to strengthen his foreign language with the subsequent review of such a decision in the senior years; The prospects for employment of students are expanding, they can find their purpose not just within the specialty they are

studying, but in the field of greening of such an area. In turn, the teacher should be relieved of additional preparation for classes in elective disciplines for learning a foreign language for professional purposes for students of various specialties and instead develop a work program only on sustainable development. This should have a positive impact on its work. There is also a benefit from this approach for the HEI, which thus implements sustainable development education, joins the greening of the country's economy, conducts relevant research in the field of sustainable development, and thus increases its importance at the national and international level, as it strengthens international project activities.

The presence of the above benefits for all participants in the educational process, during which sustainable development is used as an interdisciplinary approach to learning a foreign language for professional purposes, will indicate the effectiveness of such an approach.

BIBLIOGRAPHY

1. Колот А. М. Міждисциплінарний підхід як домінанта розвитку економічної науки та освітньої діяльності. *Соціальна економіка*. 2014. № 1–2. С. 76–83. URL: http://nbuv.gov.ua/UJRN/se_2014_1-2_15
2. Костик Є. В., Сілютіна І. О. Особливості викладання іноземної мови професійного спрямування для студентів немовних спеціальностей. *Актуальні проблеми філології та перекладознавства*. Випуск 23, 2022. С. 38–43. URL: <http://apfp.khnu.km.ua/?p=468>
3. Fedorenko, S., Kolomiets, S., Tikan, Y., & Tsepka, O. Interdisciplinary Approach to Modeling in Teaching English for Specific Purposes in the Ukrainian Context. *Arab World English Journal: Special Issue on English in Ukrainian Context*. November, 2020. P. 124–131. DOI: <https://dx.doi.org/10.24093/awej/elt3.11>
4. Castillo Quiñonez, Perlaza Rodriguez. The Use of an Interdisciplinary Approach to Teach English for Nursing Specific Purposes. *Journal for Research Scholars and Professionals of English Language Teaching, JRSP-ELT*. Volume 5, Issue 26, July 2021. URL: <https://ssrn.com/abstract=3896774>
5. Малиновська О. Л., Масон С. Р. Іноземна мова за професійним спрямуванням як інтегрована навчальна дисципліна в оволодінні іншомовною компетенцією з фаху. *Науковий вісник НЛТУ України*. 2017, 27(5). С. 175–178. DOI: <https://doi.org/10.15421/40270533>
6. Korolchuk L., Voitenko I. Integration of education for sustainable development into the curricula of foreign language studies for professional purposes in HEIs of Ukraine. *Актуальні питання гуманітарних наук*. Педагогіка. Вип. 60, Том 5. 2023. С. 126–132. DOI: <https://doi.org/10.24919/2308-4863/60-5-22>
7. Cortese, D. The Critical Role of Higher Education in Creating a Sustainable Future. *Planning for Higher Education*, 2003. Vol. 31, Iss: 3, pp. 15–22.
8. David W. Orr. *Earth in Mind: On Education, Environment, and the Human Prospect*. Washington, DC: Island Press, 1994. 224 p. URL: https://uwosh.edu/sirt/wp-content/uploads/sites/86/2017/08/Orr_Earth-in-Mind.pdf
9. Wals, A. Between knowing what is right and knowing that is it wrong to tell others what is right: on relativism, uncertainty and democracy in environmental and sustainability education. *Environmental Education Research*. Vol.16. No. 1, 2010. P. 143–151.
10. Shields, R. The sustainability of international higher education: Student mobility and global climate change. *J. Clean. Prod.* Vol. 217, 2019. P. 594–602.
11. Inga Zalenienca, Paulo Pereira. Higher Education For Sustainability: A Global Perspective. *Geography and Sustainability*. 2 (2021). P. 99–106.
12. Fehlnr, W. Educating for sustainability: The crucial role of the tertiary sector. *J. Sustain. Dev.* 12 (2), 2019. P. 18–28. URL: <https://www.ccsenet.org/journal/index.php/jsd/article/view/0/38984>
13. Brandt P. et al. A review of transdisciplinary research in sustainability science. *Ecological economics*. 2013. Vol. 92. P. 1–15.
14. Lang D. J. et al. Transdisciplinary research in sustainability science: practice, principles, and challenges. *Sustainability science*. Vol. 7. 2012. P. 25–43.
15. Ostrom E. A. Diagnostic approach going beyond panaceas. *PNAS*. September 25, 2007. DOI: <https://doi.org/10.1073/pnas.0702288104>.

16. Салашенко Т. І., Самойленко В. С. Роль і місце парадигми сталого розвитку у наукових дослідженнях. *Проблеми економіки*. № 1 (55), 2023. С. 151–160.
17. Korolchuk L. Implementation of the concept of sustainable development based on subsidiarity in response to current global challenges. *SHS Web of Conferences* 126, 06004 (2021). SDPPP-2021. Tallin, Estonia. URL: https://www.shs-conferences.org/articles/shsconf/abs/2021/37/shsconf_sdppp2021_06004/shsconf_sdppp2021_06004.html
18. Коренева І. М. Феномен «освіта для сталого розвитку»: сутність та сучасні особливості концепту. *Український педагогічний журнал*. 2018. № 2. С. 113–123. URL: http://nbuv.gov.ua/UJRN/ukrpj_2018_2_16

REFERENCES

1. Kolot A.M. (2014). Mizhdystyplinaryni pidkhd yak dominanta rozvytku ekonomichnoi nauky ta osvithoi diialnosti. [Interdisciplinary approach as a dominant factor in the development of economic science and educational activities]. *Sotsialna ekonomika*. № 1-2. S. 76–83. URL: http://nbuv.gov.ua/UJRN/se_2014_1-2_15 [in Ukrainian].
2. Kostyk Ye. V., Siliutina I. O. (2022). Osoblyvosti vykladannia inozemnoi movy profesiinoho spriamuvannia dlia studentiv nemovnykh spetsialnosti. [Peculiarities of ESP teaching for students of non-linguistic specialties]. *Aktualni problemy filologii ta perekladoznavstva*. Vypusk 23, S. 38–43. URL: <http://apfp.khnu.km.ua/?p=468> [in Ukrainian].
3. Fedorenko, S., Kolomiets, S., Tikan, Y., & Tsepka, O. (2020). Interdisciplinary Approach to Modeling in Teaching English for Specific Purposes in the Ukrainian Context. *Arab World English Journal: Special Issue on English in Ukrainian Context*. November. P. 124–131. DOI: <https://dx.doi.org/10.24093/awej/elt3.11>
4. Castillo Quiñonez, Perlaza Rodriguez (2021). The Use of an Interdisciplinary Approach to Teach English for Nursing Specific Purposes. *Journal for Research Scholars and Professionals of English Language Teaching, JRSP-ELT*. Volume 5, Issue 26, July. URL: <https://ssrn.com/abstract=3896774>
5. Malynovska, O. L., & Mason, S. R. (2017). Inozemna mova za profesiinym spriamuvanniam yak intehrovana navchalna dystyplina v ovolodinni inshomovnoiu kompetentsiieu z fakhu. [Foreign language for professional purposes as an integrated academic discipline in mastering foreign language competence in the specialty]. *Naukovyi visnyk NLTU Ukrainy*. 27(5). S. 175–178. DOI: <https://doi.org/10.15421/40270533> [in Ukrainian].
6. Korolchuk L., Voitenko I. (2023). Integration of education for sustainable development into the curricula of foreign language studies for professional purposes in HEIs of Ukraine. *Aktualni pyttannia humanitarnykh nauk*. Pedagogika. Vyp. 60, Tom 5. С. 126–132. DOI: <https://doi.org/10.24919/2308-4863/60-5-22>
7. Cortese, D. (2003). The Critical Role of Higher Education in Creating a Sustainable Future. *Planning for Higher Education*, Vol. 31, Iss: 3, pp. 15–22.
8. David W. Orr. (1994). *Earth in Mind: On Education, Environment, and the Human Prospect*. Washington, DC: Island Press, 224 p. URL: https://uwosh.edu/sirt/wp-content/uploads/sites/86/2017/08/Orr_Earth-in-Mind.pdf
9. Wals, A. (2010). Between knowing what is right and knowing that is it wrong to tell others what is right: on relativism, uncertainty and democracy in environmental and sustainability education. *Environmental Education Research*. Vol. 16. No. 1. P. 143–151.
10. Shields, R. (2019). The sustainability of international higher education: Student mobility and global climate change. *J. Clean. Prod.* Vol. 217. P. 594–602.
11. Inga Zalenienca, Paulo Pereira. (2021). Higher Education For Sustainability: A Global Perspective. *Geography and Sustainability*. No 2. P. 99–106.
12. Fehlner, W. (2019). Educating for sustainability: The crucial role of the tertiary sector. *J. Sustain. Dev.* 12 (2). P. 18–28. URL: <https://www.ccsenet.org/journal/index.php/jsd/article/view/0/38984>
13. Brandt P. et al. (2013). A review of transdisciplinary research in sustainability science. *Ecological economics*. Vol. 92. P. 1–15.
14. Lang D. J. et al. (2012). Transdisciplinary research in sustainability science: practice, principles, and challenges. *Sustainability science*. Vol. 7. P. 25–43.
15. Ostrom E. A. (2007). Diagnostic approach going beyond panaceas. *PNAS*. September 25. DOI: <https://doi.org/10.1073/pnas.0702288104>.
16. Salashenko T. I., Samoilenko V. S. (2023). Rol i mistse paradyhmy staloho rozvytku u naukovykh doslidzhenniakh. [The role and place of the sustainable development paradigm in scientific research]. *Problemy ekonomiky*. № 1 (55). S. 151–160. [in Ukrainian].
17. Korolchuk L. (2021). Implementation of the concept of sustainable development based on subsidiarity in response to current global challenges. *SHS Web of Conferences* 126, 06004. SDPPP-2021. Tallin, Estonia. URL: https://www.shs-conferences.org/articles/shsconf/abs/2021/37/shsconf_sdppp2021_06004/shsconf_sdppp2021_06004.html
18. Koreneva I. M. (2018). Fenomen “osvita dlia staloho rozvytku”: sutnist ta suchasni osoblyvosti kontseptu. [The Phenomenon of “Education for Sustainable Development”: the Essence and Modern Features of the Concept]. *Ukrainskyi pedahohichnyi zhurnal*. № 2. S. 113–123. URL: http://nbuv.gov.ua/UJRN/ukrpj_2018_2_16 [in Ukrainian].