

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

НАУКОВИЙ ВІСНИК

МУКАЧІВСЬКОГО ДЕРЖАВНОГО
УНІВЕРСИТЕТУ

СЕРІЯ
«ПЕДАГОГІКА ТА ПСИХОЛОГІЯ»

Науковий журнал

ТОМ 9, № 1
2023

МУКАЧЕВО
2023

ISSN 2413-3329
E-ISSN 2520-6788

*Рекомендовано до друку та поширення
через мережу Інтернет Вченою радою
Мукачівського державного університету
(протокол № 10 від 31 березня 2023 р.)*

**Свідоцтво про державну реєстрацію
друкованого засобу масової інформації**
Серія: KB № 24709-14649 ПР від 17.02.2021 р.

Свідоцтво суб'єкта видавничої справи
Серія: ДК № 6984 від 20.11.2019 р.

Журнал включено
до Переліку наукових фахових видань України (Категорія «Б»)
з педагогічних наук (наказ МОН України № 1643 від 28 грудня 2019 р.),
психологічних наук (наказ МОН України № 409 від 17 березня 2020 р.)

Журнал представлено
в таких наукометричних базах:
Research Bib (Японія), Index Copernicus (Польща), Cite Factor,
Infobase Index (Індія), Genamics JournalSeek, Academic Keys (США),
ACNP Catalogue (Італія)

Науковий вісник Мукачівського державного університету. Серія «Педагогіка та психологія» / Ред. кол.:
В. Й. Бочелюк та ін. Мукачево : Вид-во МДУ, 2023. Т. 9, № 1. 103 с.

Засновник і видавець:
Мукачівський державний університет
89600, вул. Ужгородська, 26, м. Мукачево
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<https://pp-msu.com.ua>

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SCIENTIFIC BULLETIN
OF MUKACHEVO STATE UNIVERSITY

**SERIES “PEDAGOGY
AND PSYCHOLOGY”**

Scientific Journal

VOL. 9 No. 1
2023

MUKACHEVO
2023

ISSN 2413-3329
E-ISSN 2520-6788

*Recommended for printing and distribution via the Internet
by the Academic Council of Mukachevo State University
(Minutes No. 10 of March 31, 2023)*

Certificate of state registration of the print media

Series: KV No. 24709-14649 PR dated 17.02.2021

Certificate of the publishing subject

Series: DK No. 6984 dated November 20, 2019

**Journal included in List of Professional Scientific
Publications of Ukraine (Category “B”)**

in pedagogical sciences (order of the Ministry of Education and Science
of Ukraine No. 1643 of December 28, 2019),
psychological sciences (order of the Ministry of Education and Science
of Ukraine No. 409 of March 17, 2020)

The journal is presented in the following scientometric databases:

Research Bib (Japan), Index Copernicus (Poland), Cite Factor,
Infobase Index (India), Genamics JournalSeek, Academic Keys (USA),
ACNP Catalog (Italy)

Scientific Bulletin of Mukachevo State University. Series “Pedagogy and Psychology” / Editorial Board:
V. Bocheliuk et al. Mukachevo : MSU Publishing House, 2023. Vol. 9, No. 1. 103 p.

Founder and Publisher:

Mukachevo State University
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UDC 372.881.111.1
DOI: 10.52534/msu-pp1.2023.09

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Using interactive teaching methods in English lessons

Article's History:

Received: 05.12.22

Revised: 02.03.23

Accepted: 31.03.23

Suggested Citation:

Karhina, N. (2023). Using interactive teaching methods in English lessons. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 9-15.
doi: 10.52534/msu-pp1.2023.09.

Abstract. Learning foreign languages, in particular English, which is widely spoken internationally, is an important and compulsory part of the educational process in all types of educational institutions. A particularly relevant issue is using modernised teaching tools that can improve the efficiency of the foreign language learning process. The purpose of the study was to identify effective approaches to implementing interactive methods of teaching English. The study uses several methodological tools, namely: analysis, synthesis, comparison, abstraction, and deduction. A survey was conducted among students in grades 2-11 to test the attitude of students to interactive forms of learning and the effectiveness of these new approaches. As a result, it was established that the interactive approach to organising the learning process is the most effective when compared to other methods, as it both accelerates the process of teaching a foreign language, including English and increases its effectiveness. It is proved that interactive teaching methods can be divided into several categories, depending on the actors who implement them and the ways they are used. The study identified that this approach to the learning process ensures the quality development of students' speaking, writing, reading and listening skills. It demonstrates the systematic nature of the interactive approach and the possibility of using it to teach various subjects. The survey identified the level of students' readiness and interest in interactive foreign language learning. The practical value of the research is that it can be used by teachers in preparation for English language classes, and the development of educational plans and programmes at schools

Keywords: educational process; school; game; students; educational interaction; foreign language learning

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INTRODUCTION

In the modern conditions of society's development, which are caused by the processes of informatisation, the need to learn foreign languages is pronounced. There is no doubt about the priority of mastering such skills and using them in everyday life. By acquiring and improving communicative competence, learners will be able to acquire a level of English that will enable them to use their knowledge in a variety of activities. Particularly relevant are studies based on the analysis of modern methods of organising the process of learning English, including the method of interactive learning (Shridhar *et al.*, 2020; Khan *et al.*, 2020).

The problem of this research is to establish the specific features of the educational process based on interactive tools. This issue is not new in the scientific doctrine, as it was caused by a sharp change in social relations, the spread of information technology and the reform of the educational environment (Quadir *et al.*, 2022). To this day, it remains relevant among scholars and practitioners. For example, N.V. Kirylenko (2022) proved in her study that learning a foreign language allows a person to meet a wide range of needs, including professional, personal and business ones. In addition, she emphasises the possibility of self-education based



on alternative learning tools. Thus, in her scientific work, she managed to identify the significance and practical value of the English language knowledge acquired by students.

J.M. Dewaele and L.M. Pavelescu (2021) identified the conditions under which the process of learning a foreign language can be effective. In their opinion, a logical combination of conventional methods of education and modernised interactive approaches is a mandatory factor in the educational process. The latter is focused on the effective interaction of students with both the teacher and each other. This conclusion is important as it allows identifying the advantages of using interactive learning in the educational process and demonstrating the dynamics of increasing the activity of the subjects learning activities. D. Djamas and V. Tinedi (2021) explored the importance of interactive learning. It means that the educational environment and process are implemented in a way that involves all students in the process of learning. In their opinion, the interactive method of teaching excludes the possibility of domination by a narrow circle of people or a teacher. This conclusion allows disclosing the nature of the interactive approach to the educational process, which is based on friendliness and mutual assistance.

In turn, S.F. Alattas *et al.* (2021) described one of the approaches to the implementation of an interactive teaching methodology. The researchers analysed the “Talk Show” method, which involves students working in groups of 3-5. The essence of the game is to organise a discussion exclusively in English, which allows students to use their knowledge of a foreign language to express their position. P. Chen (2022) explored the vectors influenced by interactive learning in her research. In her opinion, using this approach to learning English helps students to repeat the vocabulary they have learnt, expand their vocabulary on various subjects, effectively consolidate perfect articulation skills, develop attention and memory, and improve their speaking skills. The results obtained by the researcher will help to establish the specific features of the impact of foreign language skills on the learner’s consciousness through interactive tasks in the learning process.

Based on the above, the purpose of the study was to identify approaches that can be used to introduce interactive teaching methods into the process of teaching English to students. For this purpose, the study has set several tasks, namely: to define the meaning and essence of interactive learning; to describe common forms of interactive work; to provide examples of the implementation of interactive methods of learning English.

MATERIALS AND METHODS

The method of analysis was used to divide the general object of the study, namely the process of teaching English, into components for the purpose of their study. One of them is learning approaches, including interactive ones. This method was used to identify their essence and characteristic properties. The method of synthesis in this research allowed combining the separated parts, which allowed describing the ways of using interactive tools in conven-

tional teaching, in particular, teaching a foreign language.

The comparison method allowed comparing different types of interactive tools. Based on this, their significance and essence, and ways of implementation are disclosed. In addition, the comparison method allowed identifying the most effective ones and describing their practical value for students and teachers. The method of deduction led to the knowledge of the specific features of interactive methods based on knowledge of the general process of teaching and learning English. It involved an analysis of the general features of learning activities, which allowed exploring the specific content of interactive learning tools. The abstraction method allowed for a mental separation of the object from other elements. In this research, it was used to explore the category of “interactive learning” separately. This method allowed identifying certain features of this concept without considering the peculiarities of the process of teaching English in schools.

In addition, a survey was conducted with 50 respondents. They were students of grades 2-11 of Yaroslav Mudryi Specialised School No. 301 with in-depth study of English, namely 25 girls and 25 boys aged 7 to 16. The survey was conducted to assess the interest of schoolchildren in using interactive methods when learning English. The respondents were asked the following questions: “Do you like using games in your English classes?”; “Do interactive methods help you express your thoughts in English?”; “Do you actively participate in activities organised by your English teacher?”. In addition, the following question was asked: “Which interactive methods do you like the most?”, the answer options were: “changing fours”; “carousel”, “microphone”, “situational modelling”. The survey results were presented in percentage terms.

All procedures conducted in research involving people complied with ethical standards, did not violate the honour and dignity of respondents, and considered the age characteristics of the respondents. In the course of the survey, the interviewer followed the recommendations on the ethical aspect of conducting pedagogical research developed by reputable organisations, including the American Educational Research Association (2011) and the British Educational Research Association (2018). The results are published anonymously.

RESULTS

Considering the current conditions underlying the development of Ukraine’s international relations with other countries, notably, they determine the urgent necessity of reforming approaches to learning foreign languages, including English. It is explained by the specific features of such spheres of social life as political, socio-economic and cultural, in each of which the role of English is constantly increasing. In the process of learning a foreign language, a person should rely on didactic and psychological methods. Such learning activities have four vectors, namely: practical, educational, educational, and developmental (Dewi *et al.*, 2022; Nengsih *et al.*, 2022).

Admittedly, for the effective implementation of the above-mentioned areas of educational and cognitive work, namely learning English, it is necessary to consider several objective and subjective factors. The former include changes in society that are largely driven by digitalisation and informatisation. The second is the reform of the role of the teacher in the educational environment and the attitude of students to a foreign language. It necessitates changing approaches to the process of learning English to improve its quality. And the interactive method of teaching is becoming the leading one, which is becoming especially relevant in the modern learning environment. Its implementation involves a logical combination of the process of communication between students and the acquisition of theoretical knowledge. Both the teacher and the students play an active role in the classroom. Thus, interactive learning is often referred to as dialogue learning, and its significance is disclosed in effective communication between the subjects of the learning process.

Based on this, it is possible to define the concept of “interactive learning” as a special approach to cognitive activity, which has clearly defined tasks that involve the development of high-quality conditions of the educational environment, in which each subject of the educational process can discover their individuality and intellectual capacity. Using an interactive approach in the English language classroom allows students to think independently about a certain range of issues related to the discipline, organise a discussion or suggest ways to solve a learning problem. For this purpose, various types of work are performed, such as individual, pair or group work. In addition, research projects are conducted on a specific subject, according to the curriculum. Role-playing games, interaction with documents and other types of information resources play an important role (Moro & Stromberga, 2020).

Based on this, it is possible to define the principles of an interactive teaching method. These include: simultaneous interaction of all pupils; rational allocation of time by the teacher to work with each child; and pupils completing individual tasks. Interactive teaching methods can be implemented in the form of discussions, simulation games, and press conference lessons. The approach allows for the simultaneous development of both personal and collective skills. It increases the level of socialisation of students and provides them with the opportunity to freely express their ideas and opinions, including in English.

The most common forms of interactive work in general secondary education institutions in Ukraine are the following: common for the whole class; targeted (in pairs); opposite (involves division into teams); interdependent (due to the interaction of the entire class); competitive. Their implementation involves using several training tools and organising special educational events. First of all, it is necessary to note interactive technologies of cooperative learning. They involve consolidating learning material in the course of pair or group work. They can be used both immediately after the teacher has presented new information, in particular,

at the beginning of the next lesson, and in a specially organised classroom session. Significantly, interactive cooperative learning technologies do not involve polling, and therefore can only be implemented in the form of discussions or debates (Amayri *et al.*, 2020; Cao & Brown, 2020).

The next method of interactive learning is using swapping fours. It involves dividing the class into groups of four, if possible. The teacher assigns the same task to all four-somes, usually on a new subject. Students analyse and evaluate new material in depth and collaboratively. The essence of grouping is that individuals first solve the proposed task and present their results to the other teams. The latter can ask questions, which generates discussion among the students. The role of the teacher in this process is extremely important, as the teacher must evaluate both the team's solution and their responses to counter-arguments, and their ability to defend their position using English language skills.

In addition, group methods of interactive foreign language learning include a carousel and a microphone. The first involves the synchronous involvement of all students in collaborative work. There is a simulation of a chain in which one student complements the thought of the previous one, thus using creative and logical thinking. The second method allows each student to express their position on a general question posed by the teacher to the class. In this process, the student uses English speaking skills, can engage in a dialogue with another student, and develop their question. The implementation of the described methods can be based on the teacher's templates, such as “During our lesson, the most important discovery for me was...” or “This decision was reached because...”. It allows students to learn to express themselves freely using their theoretical knowledge of English.

Another method of interactive learning is the technology of situational modelling. Its advantage is the ability of the teacher to develop different situations in which students will play a certain role. It is important that these newly established conditions should be completely different from the general features of conventional schooling. In the course of implementing this approach, students' intellectual activity is maximised. For example, schoolchildren can be transformed into doctors, policemen, instructors, cooks, waiters. It contributes to increasing the volume of vocabulary by learning special words that are specific to particular areas of activity. In addition, such games significantly increase students' interest in learning a foreign language and the learning process in general (Hanlin & Okemwa, 2021).

To explore the spread of the above-mentioned interactive methods in Ukrainian educational institutions, a survey was conducted among students in grades 2-11 of Yaroslav Mudryi Specialised School No. 301 with in-depth study of English. It involved determining the level of interest of schoolchildren of different ages, from 7 to 16, in using interactive learning tools when learning English. The first question asked of the respondents was: “Do you like using games in your English classes?” As a result, 47 pupils (94%) chose a positive answer, and 3 pupils (6%) – a negative answer.

The next question was about the practical significance of the interactive approach and its impact on the student's English language learning. The question was as follows: "Do interactive methods help you express your thoughts in English?". 45 students (90%) indicated a positive impact of this approach on their level of foreign language proficiency, while 5 students (10%) indicated no impact.

Next, the survey identified students' interest in completing interactive tasks in English classes. The respondents were asked the following question: "Do you actively participate in activities organised by your English teacher?"

41 students (82%) are active participants in the classroom, while 9 students (18%) are passive participants.

At the end of the survey, respondents were asked a question to identify the most common interactive methods for learning English. It was in the following form: "What interactive methods do you like the most?" 20 students (40%) prefer tasks that involve dividing the class into roles; 14 students (28%) expressed interest in organising discussions; 9 students (18%) chose group work; 7 students (14%) indicated interest in independent work, the results of which involve a joint discussion. The results are presented in Figure 1.

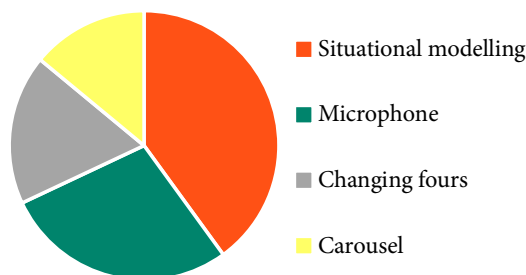


Figure 1. The most common interactive activities among students

The survey demonstrates that the number of people who want to use interactive methods when learning English is high. Therewith, their participation in such events is low, which affects the effectiveness of using an interactive approach to organising the learning environment. It indicates the priority of using the methods described in this paper, but with the condition that more students are involved in joint activities.

DISCUSSION

Particular attention is devoted to the organisation of educational activities in the scientific doctrine. The most common studies are those that focus on improving approaches to learning in the light of the modernisation of society. The positions of scholars have both common and distinctive features, which allows for a discussion of this issue. X. Xia (2021) paid attention to the specific features of the historical design and development of interactive learning. In her work, she explored the sources of such an interactive approach to the organisation of educational activities. She managed to prove that this form of education is not new. For example, Socrates taught classes with the purpose of students' self-determination of the "truth" by formulating special questions and answers. Plato was an advocate of this approach, which involved providing children with an education based on various games, fairy tales, dialogues or songs. The researcher proved that despite the lack of digital and information opportunities, students could choose the content of a lesson or a subject several centuries ago. They were able to study the material by category and section. The approach involved using auxiliary tools, cards and other graphic materials to help students complete written or oral tasks. It can be argued that the researcher's position is consistent with the results obtained in the course of this study.

It is reflected in the fact that despite certain risks, such as the development of rivalry in the learning environment, interactive learning remains a priority form of education. The development of individual traits and the ability to use free time rationally is ongoing. These findings indicate that interactive learning contributes to expanding the boundaries and meaning of the classroom.

Contrary to the previous researcher, G. Alvarez-Guerrero *et al.* (2021) analysed the importance of the interactive learning method in the current social context. They managed to prove that this approach is based on communication. Thus, the purpose of interactive learning is didactic. As a result of the successful organisation of this form of education, students are able to solve problems, including through communication. It enables them to find possible solutions to critical issues. The researchers emphasised that this type of training ensures not arbitrary communication, but rather a qualitative exchange of thoughts and ideas between students. As a result, students' intellectual activity develops, and they can put their theoretical knowledge into practice, i.e. in everyday life. Frequently, interactive learning makes it easier for students to master a particular subject. It is due to the combination of their knowledge and skills from other fields. The results of this study are similar, involving both the acquisition of new skills and their use, and the consolidation of the child's responsibility for the decisions they make.

S. Kiyko and V. Smaglii (2022) identified the challenges of interactive learning at school. In their research, they proved that the implementation of such teaching methods is based on three vectors, namely to teach, educate, and ensure the development of the individual's personality. They classified them into two categories, according to the way in which such training is conducted. The former includes

such methods as organising lectures with free discussion, developing discussions, and conducting question-and-answer sessions. The teacher plays a special role in this process, as they are responsible for organising such events. The second includes a round table, group projects, role-playing and didactic games. In this case, students play a key role, as their activities are used to implement interactive learning methods. Such a classification of approaches to interactive education is not common in scientific doctrine, therefore, it is somewhat inconsistent with the results of this study, as it involves their separate analysis.

Special attention should be paid to the position of A.A. Amsal *et al.* (2021), who comprehensively examined the role and impact of interactive learning. They explored its implementation in the course of learning various academic disciplines, including mathematics, science, and language. As a result, they were able to conclude that using interactive learning methods can improve the quality of education and the level of knowledge of students. It is reflected in the fact that they acquire the skills to plan their activities effectively. Teamwork skills are developed, for example, when a group of schoolchildren completes a joint project. It is essential, particularly in the upper grades, to acquire knowledge and skills in evaluating the results obtained and the success of independent activities. Based on this, the student can identify existing problems and search for ways to solve them. Such conclusions are consistent with the results of this research work, as they disclose the process of personal development of schoolchildren based on interactive teaching methods.

S. Abumeeiz and M.W. Johnson (2022) and G. Cerchez *et al.* (2021) consider that interactive education is not universal. Researchers argue that it is impossible to use the same interactive learning approaches in teaching different disciplines. In their opinion, the specific features of the subject and the level of knowledge of a particular study group play an important role. Thus, using interactive methods should be done with the above features in mind. It allows avoiding problems during the teaching of the discipline and improving the level and quality of its learning by students. To a certain extent, this position overlaps with the findings of this study, as it implies individualisation of the learning process.

The discussion allows disclosing the specific features of an interactive approach to the organisation of educational activities. It is established that the scientific doctrine is not homogeneous, and therefore provides for different ways of using interactive methods for teaching English.

CONCLUSIONS

The study allows concluding that interactive methods of teaching English are a priority today. Their use in conjunction with traditional approaches to the organisation of educational activities is the key to the development of high-quality communication competence in students. The research disclosed the meaning of the concept of interactive learning. It allowed identifying its features and distinctive characteristics from other teaching methods. In addition, the study examined the general algorithm for implementing the English language learning process. It allowed establishing that it involves the achievement of four purposes, namely practical, educational, educational and developmental. The study disclosed their meaning and essence, which in turn allowed identifying the main stages and vectors of English language learning at school.

The study identified various methods of practical implementation of interactive learning. Attention was devoted to cooperative learning, variable fours, carousel, microphone, and situational modelling. Within the framework of the study, they were identified and described, which allowed the establishment of how they can be implemented in students' learning activities. In addition, the research was organised and conducted. The participants were students of Yaroslav Mudryi Specialised School No. 301 with in-depth study of English. Respondents answered various questions about using interactive methods of learning English. As a result, it was possible to describe the current level of implementation of this approach within the selected educational institution and to establish that students prefer situational modelling as the most popular method. Using this form of activity encourages children to develop, express themselves freely, and use their English language skills in different situations. Future research should establish the role of digital tools in the process of primary school students' acquisition of foreign language skills. In addition, since the study was limited to only one school and a relatively small number of respondents, it is advisable to conduct similar surveys with a larger number of students, including those from other educational institutions in different regions, and to disaggregate the results by age of respondents: primary, middle and high school.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Abumeeiz, S., & Johnson, M.W. (2022). Accessible access, universal design, and the limits of inclusion in open educational resource development: An interactive workshop. In *2022 Critical Librarianship and Pedagogy Symposium*. Tucson: University of Arizona. Retrieved from <http://hdl.handle.net/10150/667123>.
- [2] Alattas, S.F., Abdul, N.B., & Muhsin, M.A. (2021). The use of talk show technique to improve the students' speaking skill. *English Language Teaching Methodology*, 1(2), 99-109. Retrieved from <https://jurnal.fkip.unismuh.ac.id/index.php/eltm/article/view/255>.

- [3] Alvarez-Guerrero, G., de Aguilera, A.L., Racionero-Plaza, S., & Flores-Moncada, L.G. (2021). Beyond the school walls: Keeping interactive learning environments alive in confinement for students in special education. *Frontiers in Psychology*, 12, article number 662646. doi: [10.3389/fpsyg.2021.662646](https://doi.org/10.3389/fpsyg.2021.662646).
- [4] Amayri, M., Ploix, S., Bouguila, N., & Wurtz, F. (2020). Database quality assessment for interactive learning: Application to occupancy estimation. *Energy and Buildings*, 209, article number 109578. doi: [10.1016/j.enbuild.2019.109578](https://doi.org/10.1016/j.enbuild.2019.109578).
- [5] American Educational Research Association. (2011). *Code of ethics*. Retrieved from [https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics\(1\).pdf](https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics(1).pdf).
- [6] Amsal, A.A., Putri, S.L., Rahadi, F., & Fitri, M.E. (2021). Perceived satisfaction and perceived usefulness of e-learning: The role of interactive learning and social influence. In *Proceedings of the 3rd International conference on educational development and quality assurance* (pp. 535-541). Atlantis Press. doi: [10.2991/assehr.k.210202.092](https://doi.org/10.2991/assehr.k.210202.092).
- [7] British Educational Research Association. (2018). *Ethical guidelines for educational research* (4th ed.). London: BERA.
- [8] Cao, F., & Brown, E.T. (2020). DRIL: Descriptive rules by interactive learning. In *Proceedings of 2020 IEEE visualization conference* (pp. 256-260). Salt Lake City: IEEE Publishing. doi: [10.1109/VIS47514.2020.00058](https://doi.org/10.1109/VIS47514.2020.00058).
- [9] Cerchez, G., Petre, D.I., & Nedelcu, R.I. (2021). Training theory-interactive strategies in the educational process. In *Proceedings of the 15th International management conference "Managing people and organizations in a global crisis"* (pp. 980-987). Bucharest: Academy of Economic Studies. doi: [10.24818/IMC/2021/05.16](https://doi.org/10.24818/IMC/2021/05.16).
- [10] Chen, P. (2022). Design and construction of an interactive intelligent learning system for English learners in higher education institutions. *Advances in Multimedia*, 2022, article number 5651772. doi: [10.1155/2022/5651772](https://doi.org/10.1155/2022/5651772).
- [11] Dewaele, J.M., & Pavelescu, L.M. (2021). The relationship between incommensurable emotions and willingness to communicate in English as a foreign language: A multiple case study. *Innovation in Language Learning and Teaching*, 15(1), 66-80. doi: [10.1080/17501229.2019.1675667](https://doi.org/10.1080/17501229.2019.1675667).
- [12] Dewi, Y.N., Zaim, M., & Rozimela, Y. (2022). Interactive learning using e-learning module in learning English for senior high school: A review of related articles. *Journal of Education, Language Innovation, and Applied Linguistics*, 1(2), 125-134. doi: [10.37058/jelita.v1i2.5306](https://doi.org/10.37058/jelita.v1i2.5306).
- [13] Djamas, D., Tinedi, V., & Yohandri, A. (2021). Development of interactive multimedia learning materials for improving critical thinking skills. In Information Resources Management Association (Ed.), *Research anthology on developing critical thinking skills in students* (pp. 507-525). Hershey: IGI Global. doi: [10.4018/978-1-7998-3022-1.ch026](https://doi.org/10.4018/978-1-7998-3022-1.ch026).
- [14] Hanlin, R., & Okemwa, J.M. (2021). Interactive learning and capability-building in critical projects. In R. Lema, M.H. Andersen, R. Hanlin, & C. Nzila (Eds.), *Building innovation capabilities for sustainable industrialisation: Renewable electrification in developing economies* (pp. 138-159). London: Routledge. doi: [10.4324/9781003054665-710.4324/9781003054665-7](https://doi.org/10.4324/9781003054665-710.4324/9781003054665-7).
- [15] Khan, O.S., Jonsson, B.Th., Rudinac, S., Zahalka, J., Ragnarsdottir, H., Thorleiksdottir, Th., Gudmundsson, G.Th., Amsaleg, L., & Worrington, M. (2020). Interactive learning for multimedia at large. In Jose, J.M., Yilmaz, E., Magalhães, J., Castells, P., Ferro, N., Silva, M.J., & Martins, F. (Eds.), *Advances in Information Retrieval: proceedings 42nd European Conference on IR Research* (Part 1; pp. 495-510). Cham: Springer. doi: [10.1007/978-3-030-45439-5_33](https://doi.org/10.1007/978-3-030-45439-5_33).
- [16] Kiyko, S.V., & Smahlii, V.I. (2022). Interactive methods of foreign language teaching for upper-form students. *Bulletin of Science and Education*, 2(2), 140-156. doi: [10.52058/2786-6165-2022-2\(2\)-140-156](https://doi.org/10.52058/2786-6165-2022-2(2)-140-156).
- [17] Kyrylenko, N.V. (2022). Modern content of motivation of primary grades students to learn English. *Kyiv Scientific and Pedagogical Bulletin*, 26, 16-20. Retrieved from http://knopp.org.ua/file/26_2022.pdf.
- [18] Moro, C., & Stromberga, Z. (2020). Enhancing variety through gamified, interactive learning experiences. *Medical Education*, 54(12), 1180-1181. doi: [10.1111/medu.14251](https://doi.org/10.1111/medu.14251).
- [19] Nengsih, Y.K., Handrianto, C., Pernantah, P.S., Kenedi, A.K., & Tannoubi, A. (2022). The implementation of interactive learning strategy to formulating learning objectives in Package C program. *SPEKTRUM: Jurnal Pendidikan Luar Sekolah (PLS)*, 10(2), 311-317. doi: [10.24036/spektrumpls.v10i2.117215](https://doi.org/10.24036/spektrumpls.v10i2.117215).
- [20] Quadir, B., Yang, J.C., & Chen, N.S. (2022). The effects of interaction types on learning outcomes in a blog-based interactive learning environment. *Interactive Learning Environments*, 30(2), 293-306. doi: [10.1080/10494820.2019.1652835](https://doi.org/10.1080/10494820.2019.1652835).
- [21] Shridhar, M., Yuan, X., Cote, M.A., Bisk, Y., Trischler, A., & Hausknecht, M. (2020). ALFWorld: Aligning text and embodied environments for interactive learning. In *International Conference on Learning Representations*. doi: [10.48550/arXiv.2010.03768](https://doi.org/10.48550/arXiv.2010.03768).
- [22] Xia, X. (2021). Interaction recognition and intervention based on context feature fusion of learning behaviors in interactive learning environments. *Interactive Learning Environments*. doi: [10.1080/10494820.2021.1871632](https://doi.org/10.1080/10494820.2021.1871632).

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Використання інтерактивних методів навчання на уроках англійської мови

Анотація. Вивчення іноземних мов, зокрема англійської, яка має інтернаціональне поширення, – важлива та обов’язкова складова частина навчального процесу в усіх видах навчальних закладів. Особливої актуальності набуває питання щодо використання модернізованих навчальних інструментів, які здатні підвищити ефективність процесу вивчення іноземної мови. Мета дослідження полягала у встановленні ефективних підходів до реалізації інтерактивних методів навчання англійської мови. У роботі використано низку методологічних інструментів, а саме: метод аналізу, синтезу, порівняння, абстрагування, дедукції. Для того щоб перевірити ставлення школярів до інтерактивних форм навчання та результативність цих новітніх підходів, проведено відповідне опитування серед учнів 2-11 класів. У результаті вдалося встановити, що інтерактивний підхід до організації навчального процесу має найбільшу ефективність, якщо порівнювати з іншими методиками, оскільки він дає змогу не лише пришвидшити процес викладання іноземної мови, зокрема англійської, а й також підвищити його ефективність. Доведено, що інтерактивні методи навчання можуть поділятися на кілька категорій, залежно від суб’єктів, які їх реалізують, а також способів їх використання. У дослідження вдалося встановити, що такий підхід до навчального процесу забезпечує якісний розвиток в учнів навичок говоріння, письма, читання та слухання. Це свідчить про системність інтерактивного підходу та можливість використовувати його для засвоєння різних навчальних тем. За підсумками проведеного опитування з’ясовано рівень готовності та зацікавленості учнів долучатися до інтерактивного вивчення іноземної. Практична цінність наукової роботи полягає в тому, що її можуть використати викладачі, готуючись до проведення навчальних занять з англійської мови, а також під час розробки освітніх планів та програм у школах

Ключові слова: освітній процес; школа; гра; учні; освітня взаємодія; вивчення іноземних мов

UDC 37.04

DOI: 10.52534/msu-pp1.2023.16

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Clip thinking as a consequence of virtual communication: Pedagogical methods of neutralisation in foreign language lessons

Article's History:

Received: 27.11.22

Revised: 24.02.23

Accepted: 31.03.23

Suggested Citation:

Boiko, O. (2023). Clip thinking as a consequence of virtual communication: Pedagogical methods of neutralisation in foreign language lessons. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 16-22. 10.52534/msu-pp1.2023.16.

Abstract. The development of modern information and communication technologies has led to the fact that online communication has become almost the only means of feedback between teachers and students, but the clip thinking that results from virtual communication reduces attention, performance and quality of knowledge. The purpose of this research is to consider the specific features of virtual communication and clip thinking, to identify the challenges caused by the interaction of the phenomena of online communication and clip thinking, and to suggest ways to improve the effectiveness of the pedagogical process, in particular in foreign language lessons. The main research methods – analysis of new literary sources on the chosen subject, generalisation, specification and description of the results obtained. The research proves that the active interaction of Internet communication and clip thinking determines the need to mitigate the adverse effects and successfully transform their interaction into a positive one, in particular, by pedagogical methods. For the first time, the synthesis of clip thinking and virtual communication is considered, and specific ideas are presented to neutralise its certain adverse effects. It is established that the mediation of communication by electronic means of communication leads to quick thinking. It was identified that anonymity, the voluntariness of contacts and uncertainty of linguistic and social provisions - are the causes of linguistic minimalism and linguistic poverty, while convenience, synchronicity and asynchrony lead to the fact that learners have to do several things at once, and polyphony can cause any sign of clip thinking. It has been established that the replacement of non-verbal means of communication with emoticons leads to linguistic minimalism and poverty due to the inability to correctly describe one's own emotions or inaccuracies in the emoticon. It is proved that the global intercultural nature of electronic communication due to the lack of knowledge of a foreign language can cause linguistic minimalism and poverty, and Internet communication with all its features leads to students' preference for particular thinking. The study allows considering all the features discussed in the organisation of the pedagogical process and more carefully selecting methods of developing logical-conceptual and systemic thinking of adolescents, in particular, in foreign language lessons

Keywords: Internet communication; online communication; adolescents; virtual addiction; logical and conceptual thinking

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INTRODUCTION

Communication has always been one of the most pressing issues in science, and with the rapid development of society, the relevance of the communication problem is only growing. Personal qualities, the possibility of their realisation, time constraints, health and lack of real communication have become the main reasons for preferring Internet communication, which in turn has led to the interest of the Ukrainian and global community of scientists in exploring issues related to the virtualisation of society and changes in the features of communication. Ukrainian scientists (Karapetyan, 2021; Morozova & Rozhnenko, 2021) pay special attention to the comparison of online communication with conventional communication, philosophical, communicative, sociological, gender, psychological and linguistic aspects of virtual communication. In particular, researchers pay considerable attention to the socialisation and establishment of personality in the virtual context (Ivanova, 2017), opportunities and risks posed by online communication (Pantelieieva, 2019). Since adolescents are most affected by online communication (Laghi *et al.*, 2013), who will constitute the core of society in the future, much attention is paid to psychological forecasts of provisions and rules of communication on the Internet among adolescents (Soldatova *et al.*, 2019), and the phenomenon of clip thinking, which has emerged and continues to design with the continuous development of modern information and communication technologies (Gych, 2016; Pantelieieva, 2019; Kolobaev & Sinitsyna, 2021). In addition, foreign scholars have not ignored the issue of linguistic and normative features of virtual communication (Ajabshir, 2018; Dürscheid, 2018), the interaction of Internet communication and non-verbal communication (Paradisi *et al.*, 2021). While Ukrainian researchers have paid more attention to using information and communication technologies (ICTs) in teaching younger students and adolescents, foreign researchers have explored the impact of online communication on various learners' competences, including linguistic and pragmatic ones, in learning English as a foreign language (Ajabshir, 2018; Schlobinski & Siever, 2018). When exploring the specific features of adolescents' network interaction, foreign scholars have described the influence of the screen on adolescents' personalities (Chen *et al.*, 2017; Bowman-Smith *et al.*, 2021), modelled the written form of virtual communication of adolescents with certain lexical patterns (Vorobel & Kim, 2017; Hilte *et al.*, 2020), demonstrated how the age of the interlocutor affects the style of online writing of adolescents (Hilte *et al.*, 2021), and described the methodological possibilities of social networks for the development of English-language written communication skills. The scientific originality of the study is that it is the first to describe how virtual communication of adolescents leads to the emergence of a specific feature of clip thinking and its growth with the age of students. The purpose of this research is to examine the specifics of these two phenomena, identify pedagogical problems that arise in the interaction of online communication and clip thinking,

and find ways to solve them to improve the quality of education, in particular in foreign language classes.

LITERATURE REVIEW

According to recent studies (Karapetyan, 2021; Morozova & Rozhnenko, 2021), the main features of online communication are mediation – without modern communication technologies, communication is not virtual, but conventional; anonymity – allows a person to change their “real self” and construct personal and social identity; voluntariness of contacts – all contacts can be terminated at any time; synchronicity and asynchronicity – interaction occurs in real-time or with the possibility of a delayed response, respectively; polyphonicity – a large number of language practices become available; convenience – supports the greatest comfort in communication for each person; global intercultural character – allows establishing contacts with people who are distant from the user in reality; uncertainty of language normativity – there are no clear and strict rules of language in social networks, everyone can write and change words or syntactic structure as they like; underdevelopment of social provisions, including moral and legal ones; an expanded vocabulary compared to conventional communication – lexical new developments, including borrowings, occur in the online space; replacement of non-verbal means of communication with emoticons.

A. Karapetyan (2021) notes that online communication during a pandemic has become a guarantee of health, although it was previously considered unnatural. Ya. Morozova and O. Rozhenko (2021) explored the linguistic features of virtual communication and demonstrated, using the example of young people, that Internet communication, unlike conventional communication, is characterised by such language forms as jargon, slang, abbreviations and shortened words and phrases. In addition, they provide a list of typical lexical and graphical changes using English as an example, and they call virtual English itself “*Weblish*” (Morozova & Rozhnenko, 2021). W. Chen *et al.* (2017) state that excessive virtual communication has resulted in a decrease in real communication with family or friends. G. Soldatova *et al.* (2019) in their study prove that adolescents are the most vulnerable group to impolite and rude communication both as they are more frequently breaking rules and as the difference between online and offline is the greatest for them, and difficulties in regulating emotions are a predictor of their rudeness and impoliteness.

When exploring the freedom provided by virtual reality, Kh. Ivanova (2017) concludes that the real image of a person is frequently replaced by a virtual image, and, as a result, a person may do nothing in the real world as they believe that it is impossible to translate the virtual image into the real world, or the virtual image motivates a person to work on themselves in reality to achieve their online image. In addition, the researcher notes that from an adverse standpoint, the virtualisation of society leads to a decline in morality, the fading of traditions into the background and their replacement by virtuality, a transition to polar consciousness and a decrease in the value of knowledge, and from a positive standpoint to

a desire to improve oneself, a change in worldview and the development of logical thinking.

Researchers of clip thinking (Gych, 2016; Pantelieieva, 2019; Kolobaev & Sinitsyna, 2021) unanimously agree that the main features of such thinking are: high speed, multitasking, superficiality, linguistic minimalism and linguistic poverty, distraction, hyperactivity, attention deficit, and the secondary importance of abstract thinking compared to specific thinking.

V.K. Kolobaev and T.A. Sinitsyna (2021) in their study compared logical-conceptual thinking and clip thinking and concluded that people who are characterised by clip thinking cannot abstract from one specific element and generalise a subject, as the predominance of a specific feature of the subject obscures the full picture of this subject. I.M. Zalyaletdinova (2020) describes the pedagogical challenges of clip thinking and concludes that it is not necessary to simplify information and adapt the means of presenting information but to purposefully develop logical and conceptual thinking through the means of their subject. In examining clip thinking among adolescents, V. Pantelieieva (2019) concluded that by applying the right teaching methods, it is possible to reduce the adverse effects of clip thinking, which already contradicts the study by I.M. Zalyaletdinova (2020). G. Gych (2016) argues that the most effective way to counteract clip thinking is to read, and the main problem is that “people-books” (teachers) and “people-screens” (students) cannot communicate with each other and, therefore, cannot understand each other.

Thus, when considering virtual communication, most scholars concentrate on the specifics of this communication only within their own country or are limited to their field of study, among which there is no pedagogy. When exploring clip thinking, researchers are unanimous in the connection between clip and virtuality, the signs and manifestations of clip thinking, and the need to address this problem, in particular through pedagogical methods. However, there are no specific methods for transforming clip thinking from adverse to positive, and there are no studies on the interaction of Internet communication and clip thinking and their cumulative effect on pedagogy.

MATERIALS AND METHODS

The materials for the research are actual works of researchers in various scientific fields, which address several important aspects of virtual communication, and the author's observations of the process of communication among adolescents on the Internet. When teaching foreign languages, providing psychological assistance to adolescent students, and in the process of tutoring, the author used the social networks *Telegram*, *Viber*, and *Zoom* for communication. When observing the communication process, the author paid attention to the lexical, grammatical, spelling and emotional features of texting or voice messaging without violating the ethical standards and privacy policies of these networks. Communication remained private within the framework of a dialogue with a particular student or a polylogue in groups. Every action taken in the course of the

study complied with the ethical standards for using digital technologies in educational research adopted by the American Educational Research Association (2011) and all recommendations of the British Educational Research Association (2018). The research was conducted with the consent of parents and considering the psychological characteristics of children of different ages. All principles of morality were observed, the rights of each research participant were not violated, honour and dignity were not humiliated, discrimination did not occur, and the health of research participants was not harmed.

In the process of writing the study, the following theoretical methods were used: search for scientific sources on the subject, analysis of the works of scientists and the results of own pedagogical observation, synthesis of data obtained from various sources, generalisation and specification of the results of research by Ukrainian and foreign scientists, and empirical methods – study of information sources on Internet communication and clip thinking and the author's observations during his pedagogical activity. Each of these methods was used to study the positive and adverse effects of virtual communication and clip thinking in the process of learning and a person's future life. The work is structured as follows: each of the key features of virtual communication – its causes, consequences and possible ways out of the situation – is considered in turn. These methods are proposed based on the conclusions from the analysed scientific literature and the author's observations during a long period of teaching.

RESULTS AND DISCUSSION

As a result of the study, the main features of the interaction between online communication and clip thinking are highlighted, and it is described how each of these features of online communication leads to the emergence of a certain feature of clip thinking, and the cumulative pedagogical effect of the characteristics of both phenomena, in which virtual communication and clip thinking in their interaction enhance some or all of their features and lead to new consequences.

Mediation. With the technological progress of society, there has been a certain retreat from conventional face-to-face communication, the amount of information received has increased, and, as a result, modern adolescents need to either protect themselves from unnecessary information or make the pace of their perception of information equal to the amount of incoming information (Vedmediev, 2021; Umanets, 2021). The way out of this situation – to think very quickly, and speed is the first sign of clip thinking. In turn, this leads to the fact that the teacher has to present the initial material in a shorter time frame but still achieve the purpose. Instead of focusing on each detail individually and covering it slowly but deeply, the teacher should cover the entire material in one or two lessons. In foreign language classes, this problem can be solved by teaching *skimming* and *scanning* techniques in appropriate types of lessons, which will allow the teacher to concentrate more on the desired points of the subject. In a grammar and

vocabulary lesson, the pace can be slowed down by using *concept-checking questions* (CCQs) to check for understanding.

Anonymity, voluntary contacts and uncertainty of linguistic and social provisions. In the online space, a person can build a completely new personality, not tell what they do not want to, and contact anyone and everyone whenever they want (Ivanova, 2017). It means that, in particular, adolescents become more relaxed and independent in their expressions, which in turn leads to the fact that the lexical content of adolescent communication is reduced to the level of, for example, favourite phrases, i.e. their speech becomes poor and the number of words used decreases – another sign of clip thinking. For the teacher, this means that, if they know how to use social media, they do not know for sure whether the interests of a particular student, their positive and adverse traits, and psychological problems that can be identified through posts in the profile or the comments are real. In addition, the student may not want to make contact or may break contact and block the teacher. Therefore, it becomes more difficult to implement differentiated and individual approaches to teaching and to forecast the development of students' knowledge, skills and abilities, and the educational process of students, including in the context of foreign language teaching. The teacher, for their part, can provide examples of texts or audio with violations of the normative speech and analyse these violations in more detail with the students while conducting educational work in a vocabulary or grammar lesson.

Convenience, synchronicity and asynchronicity. On the one hand, adolescent communicates in the conditions they like and uses the means of communication they want, and on the other hand, they perform several activities at once: they communicate, play or listen to music and perhaps sit in class or do homework, as they have the freedom to do what they like and when they want. It leads to the fact that a teenager is forced to always be in multitasking mode (Umanets, 2021), as teachers ask too much, in their opinion, and they want to spend more free time with friends. In addition, if a teenager is having a synchronous lesson or doing homework while interacting with peers online, they can send messages asynchronously, it is difficult for a child to concentrate on one thing for a long time, and the clips should always be changing, like in a kaleidoscope. It leads to distraction, most likely in class, hyperactivity and attention deficit when learning a new subject or performing specific tasks – these are two signs of clip thinking. For the teacher, in turn, it leads to the fact that the teacher has less influence on the student than communication in messengers, and the student trusts the teacher less than information on the Internet. To reverse this trend in foreign language classes, teachers should use authentic textbooks and supplementary materials with content that is primarily interesting to the relevant group of adolescents, and that corresponds to the current model foreign language curriculum of the New Ukrainian School (NUS).

Polyphonicity. If the dialogue was the priority form of communication in conventional communication, Internet

communication makes monologue and polylogue more important language practices. It leads to the fact that in the online interaction of students, for example, when working in groups in a foreign language class, teenagers lack any authorship, as with the availability of the Internet, they can find a fragment on the subject and present it as their own opinion if it is a monologue, and a polylogue is a group product, therefore, it becomes impossible to identify in which part a particular teenager has contributed their opinion and whether the student has made any effort at all (Zalyaletdinova, 2020; Morozova & Rozhnenko, 2021). If a test is given in class, the student is more likely to quickly find the answer on the Internet than to think about it. It means that any or all of the signs of clip thinking can manifest themselves due to the polyphonic nature of virtual communication. On the other hand, the teacher can combine the four main communication skills – listening, reading, writing and speaking – and apply a systematic approach to one exercise. Such an exercise can even extend over an entire lesson, with the focus on the interests of the students, not just the textbook and the desire to complete the lesson plan.

Replacing non-verbal communication tools with emoticons. Thus, there is a degradation of language forms (Dürscheid, 2018; Morozova & Rozhnenko, 2021), and instead of writing and describing the corresponding emotion, the student replaces it with an emoji, sticker, or changes the colour or size of letters in the text. It is where linguistic minimalism comes into play, and where the learner may ask the question: “why do I need to learn the names of these emotions if a smiley face or sticker is enough to convey information”. It results in the teacher paying more attention to grammatical aspects in the foreign language classroom due to the degradation of language forms on the Internet. In addition, the issue of developing students' emotional intelligence in foreign language lessons is becoming more relevant due to the degradation of emotional culture in virtual communication.

Global intercultural character. This feature of Internet communication, unlike others, provides students with the opportunity to expand the boundaries of their communication and meet their peers from other countries. Due to the lack of knowledge of a foreign language, the student may again manifest linguistic minimalism and poverty. A foreign language teacher, in turn, can use this fact as a motivation to learn a foreign language and ask students to do a written assignment in the form of an SMS message to a native speaker.

Virtual communication in general. To process information received as a result of online communication, an adolescent generally needs little effort, they are only interested in what is important here and now, the student is not able to process information, critically evaluating it from different angles, in particular, due to their age, i.e. adolescents lack analytical, critical, divergent and convergent thinking, which are components of abstract thinking (Soldatova *et al.*, 2019; Umanets, 2021; Karapetyan, 2021). Thus, the last sign of clip thinking is manifested. Notably, without ICTs, there would be no virtual communication, and therefore the abil-

ity to think abstractly would be higher, adolescents would concentrate less on the specifics of a particular thing and would only receive information straight from parents and teachers, although the question “why?” would not disappear. For teachers, it means a challenge to develop so-called soft skills or 21st-century skills, including critical thinking and emotional intelligence, both within their subject and in general, as required by the NUS model programmes.

Kh. Ivanova (2017) argues that virtual freedom is a source of a new type of communication, which is “characterised not by interpersonal contact, but by so-called distance communication, which is devoid of personal emotions and feelings. Such communication has both adverse and positive consequences”. In addition, she argues that: “one of the consequences of virtual communication and access to information is the development of a clip-type of thinking” and justifies this in terms of sociology and philosophy. The results of her research coincide with the results of this study in terms of anonymity, voluntary contact and the replacement of non-verbal means of communication. V. Pantelieieva (2019) explored the level of knowledge acquisition by students with clip thinking and concluded that “by using the right teaching methods, it is possible to reduce the adverse effects of typicality and enhance the positive ones”, which coincides with the main findings of this study. G. Gych (2016) explored the specifics of the manifestation of clip thinking in the learning process and says that “conceptual thinking has ceased to play an important role in the modern world, today a completely different thinking has been developed, as it is based mainly on the images of the worldwide computer network”. He and the researchers he relies on believe that “the most accessible method of minimising the adverse effects of ‘clip’ thinking is reading”. In this study, when considering the mediation and polyphony of virtual communication, it is said about the specific features of teaching reading to clip-thinking carriers. Ya. Morozova & O. Rozhnenko (2021) considered the uncertainty of language provisions, language minimalism and language poverty of virtual communication in the example of English, and N. Umanets (2021) called the manifestations of language minimalism and language poverty “communicative risks”. In addition, she outlined the latent risks of online communication, among which she described cognitive risks: distraction, and difficulty in remembering, which in turn are signs of clip thinking.

Thus, this study does not contradict the results of most other studies of the phenomena of clip thinking and virtual communication. On the contrary, the findings of this study complement and expand the knowledge and understanding of the phenomena considered. It is impossible to delete or block online communication today, thus, the only thing left for a teacher to do with online communication is to

accept the new form of communication, understand the motives for its use by adolescents and use it to their advantage in the educational process within the NUS concept.

CONCLUSIONS

In the course of the study, it is established that in modern conditions, when virtual communication and clip thinking has become the provisions of human life, which continue to transform and expand their boundaries, the development of virtual communication leads to the emergence and strengthening of the features of clip thinking. The study attempts to characterise the process of the emergence of clip-thinking features under the influence of virtual communication. The research has demonstrated that quick thinking comes from the mere presence of electronic means of communication. Multitasking, hyperactivity and attention deficit are caused by the ability to exchange SMS messages instantly, without waiting for a response, and in a comfortable environment. The anonymity, voluntariness of contacts and the uncertainty of linguistic and social provisions of online communication allow adolescents to use any vocabulary with minimal content. In addition, language poverty and language minimalism can arise from the lack of non-verbal means of communication in Internet communication and its global intercultural nature. The predominance of monologue and polylogue in virtual communication can lead to the emergence or intensification of any sign of clip thinking.

The author of this study proves that the cooperation of the phenomena of virtual communication and clip thinking has more adverse features than positive ones, therefore, it is important both to level the adverse impact of the interaction of online communication and clip thinking and to find methods of transforming the cumulative effect of these phenomena into a positive one. The greatest prospects for this are in pedagogy. A foreign language teacher can use the interaction of clip thinking and online communication to their advantage to develop students’ logical, conceptual and systemic thinking.

This study will help to organise the pedagogical process and more carefully select methods of working with carriers of clip thinking, considering all the described features of the interaction of the phenomena examined. Further search and research of the effective use of clip thinking and virtual communication in its pedagogical aspect are seen in the study of *student-centred* teaching methods within the field.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Ajabshir, Z.F. (2018). The effect of synchronous and asynchronous computer-mediated communication (CMC) on EFL learners' pragmatic competence. *Computers in Human Behavior*, 92, 169-177. doi: 10.1016/j.chb.2018.11.015.
- [2] American Educational Research Association. (2011). *Code of ethics*. Retrieved from [https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics\(1\).pdf](https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics(1).pdf).
- [3] Bowman-Smith, C.K., Sosa-Hernandez, L., & Nilsen, E.S. (2021). The other side of the screen: The impact of perspective-taking on adolescents' online communication. *Journal of Adolescence*, 92, 46-56. doi: 10.1016/j.adolescence.2021.08.006.
- [4] British Educational Research Association. (2018). *Ethical guidelines for educational research* (4th ed.). London. Retrieved from <https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018>.
- [5] Chen, W., Xie, X.-C., Ping, F., & Wang, M.-Z. (2017). Personality differences in online and offline self-disclosure preference among adolescents: A person-oriented approach. *Personality and Individual Differences*, 105, 175-178. doi: 10.1016/j.paid.2016.09.048.
- [6] Dürscheid, C. (2018). Von der Mündlichkeit zur Schriftlichkeit. Normen in der Internetkommunikation. *Informationen zur Deutschdidaktik*, 42(4), 93-100. Retrieved from https://www.researchgate.net/publication/330260205_Von_der_Mundlichkeit_zur_Schriftlichkeit_Normen_in_der_Internetkommunikation.
- [7] Gych, G. (2016). The "clip" consciousness youth: Friend or foe training? *Scientific Works. Series: Pedagogy*. 269(257), 38-42. Retrieved from <https://lib.chmnu.edu.ua/pdf/naukpraci/pedagogika/2016/269-257-5.pdf>.
- [8] Hilte, L., Daelemans, W., & Vandekerckhove, R. (2020). Lexical patterns in adolescents' online writing: the impact of age, gender, and education. *Written Communication*, 37(3), 365-400. doi: 10.1177/0741088320917921.
- [9] Hilte, L., Daelemans, W., & Vandekerckhove, R. (2021). Interlocutors' age impacts teenagers' online writing style: accommodation in intra- and intergenerational online conversations. *Frontiers in Artificial Intelligence*, 4, article number 738278. doi: 10.3389/frai.2021.738278.
- [10] Ivanova, Kh. (2017). The influence of virtual freedom on the personality's formation. *Sociological Studies*, 2, 16-20. Retrieved from https://evnuir.vnu.edu.ua/bitstream/123456789/16128/1/socst_2017_2_5.pdf.
- [11] Karapetyan, A.A. (2021). Communication features in online and offline spaces. *Historical and Social-Educational Ideas*, 13(3), 105-112. doi: 10.17748/2075-9908-2021-13-3-105-112.
- [12] Kolobaev, V.K., & Sinitsyna, T.A. (2021). Conceptual and logical thinking vs clip thinking. *Innovation. Science. Education*, 26, 1159-1164.
- [13] Laghi, F., Schneider, B.H., Vitoroulis, I., Coplan, R.J., Baiocco, R., Amichai-Hamburger, Y., Hudek, N., Koszycki, D., Miller, S., & Flament, M. (2013). Knowing when not to use the Internet: Shyness and adolescents' on-line and off-line interactions with friends. *Computers in Human Behavior*, 29(1), 51-57. doi: 10.1016/j.chb.2012.07.015.
- [14] Morozova, Ya., & Rozhnenko, O. (2021). Features of virtual communication as a new field of communication. *E3S Web of Conferences*, 273(3), article number 10053. doi: 10.1051/e3sconf/202127310053.
- [15] Pantelieieva, V. (2019). Clip thinking in adolescence. *Actual Problems of Psychology in Educational Institutions*, 9, 116-120. Retrieved from <https://kdpu.edu.ua/zahalnoi-ta-vikovoi-psykholohii/naukova-robota/vydannia-kafedry/9601-aktualni-problemy-psykholohii-v-zakladakh-osvity-3.html>.
- [16] Paradisi, P., Raglianti, M., & Sebastiani, L. (2021). Online communication and body language. *Frontiers in Behavioral Neuroscience*, 15, article number 709365. doi: 10.3389/fnbeh.2021.709365.
- [17] Schlobinski, P., & Siever, T. (Hrsg.). (2018). *Sprachliche Kommunikation in der digitalen Welt: Eine repräsentative Umfrage, durchgeführt von forsa*. Hannover: Gottfried Wilhelm Leibniz Universität. Abgerufen von <https://www.mediensprache.net/de/networx/networx-80.aspx>.
- [18] Shahzadi, A., & Kausar, G. (2020). Using social media to improve students' English writing skills: A mixed method study. *Journal of Research in Social Sciences*, 8(1), 124-140. doi: 10.52015/jrss.8i1.71.
- [19] Soldatova, G., Rasskazova, E., & Emelin, V. (2019). Psychological predictors of online and offline communication rules in adolescents. In S. Sheridan, & N. Veraksa (Eds.), *Early childhood care and education: Proceedings of the 7th International conference* (pp. 618-625). doi: 10.15405/epsbs.2018.07.82.
- [20] Umanets, N. (2021). On-line-communication: Communicative possibilities and risks for personality. *Spirituality of a Personality: Methodology, Theory and Practice*, 2(2), 200-210. doi: 10.33216/2220-6310-2021-101-2_2-200-210.
- [21] Vedmediev, M. (2021). The phenomenon of clip thinking in the discussion space of modern science. *Sciences of Europe*, 70 (Vol. 3), 41-45. doi: 10.24412/3162-2364-2021-70-3-41-45.
- [22] Vorobel, O., & Kim, D. (2017). Adolescent ELLs' collaborative writing practices in face-to-face and online contexts: From perceptions to action. *System*, 65, 78-89. doi: 10.1016/j.system.2017.01.008.
- [23] Zalyaletdinova, I.M. (2020). Clip thinking as a pedagogical problem: Solution vector. In *Modern science and its resources: Innovative paradigm: Collection of articles of the 2nd International scientific and practical conference* (pp. 61-64). Petrozavodsk: International Center for Scientific Space "New Science".

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Кліпове мислення як наслідок віртуальної комунікації: педагогічні методи нейтралізації на уроках іноземної мови

Анотація. Розвиток сучасних інформаційно-комунікаційних технологій призвів до того, що онлайн-комунікація стала чи не єдиним засобом зворотного зв'язку між учителем та учнями, однак кліпове мислення, яке є наслідком віртуальної комунікації, знижує увагу, успішність та якість знань. Мета цієї роботи – розглянути особливості віртуальної комунікації та кліпового мислення, визначити виклики, зумовлені взаємодією феноменів онлайн-комунікації та кліпового мислення, і запропонувати шляхи підвищення ефективності педагогічного процесу, зокрема на уроках іноземної мови. Основні методи дослідження – аналіз нових літературних джерел з обраної теми, узагальнення, конкретизація та опис отриманих результатів. У роботі обґрунтовано, що активна взаємодія інтернет-комунікації та кліпового мислення визначає необхідність ослаблення негативного впливу та успішне перетворення їхньої взаємодії на позитивну, зокрема педагогічними методами. Уперше розглянуто синтез кліпового мислення та віртуальної комунікації і наведено конкретні ідеї щодо нейтралізації його певних негативних наслідків. Розкрито, що опосередкованість комунікації електронними засобами спілкування призводить до швидкого мислення. Виявлено, що анонімність, добровільність контактів та невизначеність мовно-соціальних норм – причини мовного мінімалізму та мовної бідності, а зручність, синхронність та асинхронність призводять до того, що учні повинні робити кілька справ одночасно, а поліфонічність може викликати будь-яку ознаку кліпового мислення. З'ясовано, що заміна невербальних засобів спілкування емотиконами призводить до мовного мінімалізму та бідності через невміння правильно описати власні емоції або неточності емотикона. Доведено, що глобальний міжкультурний характер електронної комунікації через незнання іноземної мови також може стати причиною мовного мінімалізму та бідності, а інтернет-комунікація з усіма її властивостями призводить до того, що учні надають перевагу конкретному мисленню. Дослідження в подальшому дає змогу врахувати всі розглянуті особливості в організації педагогічного процесу та більш ретельно підібрати методи розвитку логіко-понятійного та системного мислення підлітків, зокрема на уроках іноземної мови

Ключові слова: інтернет-комунікація; онлайн-комунікація; підлітки; віртуальна залежність; логіко-понятійне мислення

UDC 37.033

DOI: 10.52534/msu-pp1.2023.23

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Structural components of adolescent's environmental awareness in a general education institution

Article's History:

Received: 08.12.22

Revised: 05.03.23

Accepted: 31.03.23

Suggested Citation:

Moshura, V. (2023). Structural components of adolescent's environmental awareness in a general education institution. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 23-30. doi: 10.52534/msu-pp1.2023.23.

Abstract. The relevance of the problem of developing adolescents' environmental awareness is conditioned upon the need to instil in students the concepts of nature management and nature conservation in a general education institution to develop healthy behaviour towards nature and its resources, and an appropriate level of value attitude towards natural and cultural monuments. The purpose of the research is to identify the main structural components, factors and conditions for the development of environmental awareness of adolescents in educational institutions, and to identify opportunities for using the latest information technologies for the development and promotion of environmental awareness. To comprehensively explore the subject of environmental awareness, the research uses analytical, statistical and comprehensive research methods. The main results of the study are to identify the types and specific features of the development of environmental awareness in adolescents. The research presents the criteria of environmental competence: cognitive, value and activity-practice. The structure of the ecological consciousness of pupils of general educational institutions based on cognitive, connotative, axiological and perceptual-emotional levels is determined. The research considers the possibilities of using information technologies that will help to develop a new programme of adolescent consciousness-raising, namely, modern systems for displaying and disseminating information, social networks, and online conferences and online courses. The practical significance of the research work lies in the establishment of a new programme for the development of a healthy attitude of adolescents towards the environment and the establishment of basic values that should be used to preserve existing natural and cultural monuments, and in classes on environmental awareness in secondary schools, training courses and out-of-school education

Keywords: attitude to ecology; psychological influence; educational process; information technology; nature conservation

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INTRODUCTION

Every year, the Earth's ecological situation is getting worse, mainly due to man-made factors, while the specifics of people's attitudes towards the environment and human interaction with the environment are changing (Chu & Karr, 2017). These changes and the decline in humanity's desire to care about the environment and the state of nature together necessitate a change in people's attitudes to the current situation by reviewing the specifics

of human interaction with nature. It means that it is necessary to develop environmental awareness in people, in particular in children and adolescents, who will be able to form more appropriate relationships with nature in their later life. Such environmental education is important for the development of healthy values and respect for the environment, which can influence changes in the state of the environment in the future. Therefore, the study of the



specific features of environmental awareness education is mandatory for the public desire to preserve nature and the environment and improve their condition, primarily as humanity is part of nature.

The source base of authors who have explored this issue includes the following: L. Chawla (2020), who in her work analysed the specifics of adolescent understanding and empathy for nature, and considered the importance of establishing their own opinion and a stable position on the subject of ecology in children through psychological development; I.O. Syaska (2010), who explored the importance of establishing curricula for high school students to help educate adolescents' environmental awareness, and examined a specific structure that helps young people to properly research and study the current issue, based on which to develop environmental awareness; A.M. Liovochkina (2013), exploring the psychological aspects of the ecological culture of student youth, emphasised the need to develop continuous environmental education, which should include, in particular, formal, non-formal and informal education of adolescents; L. Darling-Hammond *et al.* (2019) identified important points in the learning process that may be needed and rooted in the future, which is quite necessary in the context of the environmental problem; K.A. Grimmette (2014) described the features of the curriculum for adolescents and their environmental education, where the main results were the vision of the need for regular practices with young people to obtain the desired result by teachers; A. Fernandez *et al.* (2019) in their research paper explored the subject of information technology in the modern educational process, and identified specific tools that should be used in general education institutions.

The main purpose of this research is to examine the structure of adolescents' environmental awareness, to identify the features that shape people's attitudes towards the environment, and to establish possible regulatory features of children's attitudes towards nature and the environment by introducing the subject of environmental awareness into the curricula of educational institutions. In addition, the main objectives of the research work were to determine the types and criteria of the developed adolescent environmental awareness at the present stage; to establish standards of appropriate psychological behaviour towards the environment, nature and ecology; to develop a holistic educational programme for the development of children's environmental awareness in educational institutions based on modern information technologies. The originality of the study lies in highlighting the specific features of adolescents' psychological behaviour towards ecology and the environment, defining a normative model of the behaviour of modern youth, considering current environmental problems, and establishing a specific standard educational programme for the development of children's environmental awareness, which will be used in educational institutions on an ongoing basis to root the basic concepts and positive behaviour towards ecology and nature.

MATERIALS AND METHODS

In the course of the study, the features and types of structures of environmental awareness of young people, which is most common among all students of secondary schools, were thoroughly examined, the main characteristics of the regulatory model of adolescents' behaviour towards nature and ecology were identified, and a framework for use in educational institutions to teach the basics of environmental awareness to students was developed. In addition, analytical, statistical and comprehensive research methods were used.

The analytical method is based on the specific features of teaching the subject of environmental awareness in educational institutions, the main types and structures of youth attitudes towards ecology and the environment are identified, and the literature is analysed to understand different types of opinions and research of scientists, which helped to develop common generalised standards of adolescents' behavioural model concerning the environment. In addition, it provided an opportunity to learn about the psychological characteristics of people's modern attitudes towards the environment, identify the main criteria for caring for and protecting nature, and define the previously established standards for the development of environmental awareness among secondary school students and the specifics of their observance. The statistical method was used to establish visual indicators of adolescents' current attitudes towards ecology, which were used to conduct an additional analysis of the indicators for further use in establishing a regulatory educational programme to develop respect for ecology and the environment. The integration method has become the foundation for the development of a general educational programme, based on modern information technologies, which can be used in educational institutions for a more in-depth study of the problem of environmental awareness by adolescents and the development of normal behaviour towards the environment.

The combination of all these methods allows for a comprehensive study of the subject of environmental awareness of young people and specific conclusions on how to improve the current situation and restore respect for nature to preserve it and establish the main criteria for the development of adolescents' environmental awareness, identify factors that influence the development of environmental competence, and establish the structural components of a sufficiently developed environmental awareness of adolescents.

The problem of determining the structural components of the development of adolescent environmental awareness within educational institutions is becoming increasingly important to explore, as over the years the planet's ecology has become increasingly adverse, which may threaten the ecological state of the Earth in the future. To establish a clear framework for the research and a more structured study of the subject, the research work was divided into two main parts, namely: identifying the types and structures of adolescents' environmental awareness, which will help to develop a modern picture of youth's relationship with the environment, analysing the types of psychological

manifestations regarding environmental conservation and nature protection, and establishing a normative model of adolescent environmental awareness that discloses the specific features of the necessary attitude of young people to nature for the sake of its conservation and possible restoration; designing an educational programme for the development of children's environmental awareness, including information technology, to increase children's interest and facilitate the programme within educational institutions.

RESULTS

The structure of youth environmental awareness and its standard model

The development of society today is gaining momentum every year, leading to an increase in the number of industries and factories, which in turn causes a deterioration in the state of the Earth's environment. It means the need to acquire a certain level of environmental awareness of the planet's population to preserve it, which primarily concerns adolescents who will determine the specifics of the work of enterprises and other aspects of life that interact with natural

factors and resources in the future. In addition, considering that during adolescence, a certain system of beliefs is established and personal opinions develop, which together can influence a person's needs and aspirations, it is necessary to establish certain standards to develop environmental awareness from an early age (Esquer *et al.*, 2022). In the modern sense, the concept of environmental awareness is a solution to the problem of ecology and the environment through systematic decision-making, along with the development of compassion and a desire to protect nature and awareness of the consequences of human activity. In addition, the concept is based on an understanding of the ecological aspect and cause-and-effect relationships in human interaction with nature. In addition, a person can listen to the opinions of adults from an early age, which can foster certain attitudes and environmental practices, including caring for nature or lack thereof (Trask-Kerr *et al.*, 2019). The acquisition of these aspects by a person, and especially by adolescents, depends on many factors that can radically change the adolescent's personal opinion, which ultimately leads to neglect of the environmental situation (Table 1).

Table 1. Factors that adversely affect the development of environmental awareness

Category	Factors
Personal factors	Lack of sufficient knowledge: lack of understanding of concepts related to ecology, ecosystems, adverse factors affecting nature, and the concept of nature conservation
	Passive attitude to the problem: lack of empathy and desire to improve the situation
	Ignoring the situation: reducing the importance of the current environmental situation under the influence of tasks and circumstances that adversely affect the environment
	Fear of irreversibility: the impossibility of reversing the changes made in the past in the future, and the fear of unfamiliarity with the idea and rapid change in the specific circumstances of the environmental situation
Social factors	Standards of acceptability: specific behavioural features of the environment that may hinder a person's initiative to take measures to preserve the environment and nature
	Territorial location: lack of desire to change the environment due to the usual circumstances in a particular area of residence (presence of industries, factories and other institutions that adversely affect the environment and nature)
Organisational factors	Decision-making by another party: the presence of possible influence from management or older people whose decisions cannot be changed (due to specific features of child-rearing, when the child's opinion is not considered)
	Restrictive rules: the inability to perform certain actions due to special regulations, rules and other policies that to some extent put personal opinion on the back burner
	Identity and the desire to follow the opinions of others: the need to adapt to the opinions and actions of others for personal social contact with peers
	Lack of resources: lack of additional sources of information that could better demonstrate the specific features of the current state of the environment, possible alternative resources from unconventional sources and nature protection

Source: compiled by the author based on data from M. Shen and J. Wang (2022)

Notably, the study of the environmental aspect in adolescence can lead to a certain understanding of one's involvement in the current state of the environment and the problems caused by humans, and can positively influence the development of an appropriate perception of natural problems and the development of an environmentally competent person (Zsoka *et al.*, 2013). In addition, the criteria

for assessing the level of environmental awareness of a person can be seen, which develops an understanding of the need to support and protect the environment in various aspects (taking independent steps and actions to improve the ecological state of the planet, expressing one's opinion to society and encouraging others to collectively fight against modern environmental problems, etc.) (Table 2).

Table 2. Environmental competence criteria

Criterion	Characteristic features
Cognitive	• understanding of the concepts of development and existence of ecosystems that are related to production and human health; • the ability to analyse situations and their cause-and-effect relationships with possible environmental problems; • understanding and projecting the possible consequences of human activity on the environment, considering the current production characteristics.
Value-based	• an opportunity to express compassion and a desire to protect nature; • understanding the necessity to care about the state of nature and the environment on a daily basis in everyday life and educational activities; • demonstrating interest in the world's natural and environmental problems; • demonstrating interest in learning new material on ecology and methods of its protection.
Action-practical	• having a steadfast stance in the face of environmental vandalism in all areas of life; • the possibility of supporting environmental standards and consciousness in life, taking the initiative in addressing environmental issues in educational institutions.

Source: compiled by the author based on data from T. Dzhenigiz & E. Niesten (2020)

Notably, the development of a clear environmental awareness among adolescents is a special way to harmonise the trends in the development of society, which is mainly designed to improve the situation of nature and its ecosystems and to preserve resources to continue a stable life on the planet. Considering that the consciousness and environmental competence of most people do not meet the criteria of competence concerning ecology and nature, certain disputes arise in society, leading to an aggravation of the environmental situation and the lack of certain collective impulses to improve it (Amran *et al.*, 2019). In addition, notably, the development of a child's environmental awareness depends on culturally specific features, namely, different manifestations of human attitudes towards nature. Environmental awareness can be considered a certain cross-cultural phenomenon that needs to be normalised for the global work of humanity to restore the environment and protect nature in general (Padalka, 2018).

It means that by using the regulatory framework for human behaviour with nature, and the public desire to solve the problem and comply with the established provisions, certain results can be achieved, which in turn can have positive consequences in the future (Hosany *et al.*, 2019). First of all, adolescents should work on activating self-awareness processes, the ability to correctly develop and communicate their thoughts about certain situations, and encourage others to develop environmental awareness, demonstrate compassion for and care for nature, which is closely related to the child's self-esteem and social stereotypes on this subject (Balundé *et al.*, 2020). It once again demonstrates the need to bring public opinion to the development of environmental competence. Below is a certain model of normalisation of adolescents' environmental awareness, which can further become an impetus for personality development, and an opportunity to reinforce the necessity to explore and observe the basics of environmental awareness of their environment and peers (Table 3).

Table 3. The structure of adolescent environmental awareness

Cognitive level	Conative level
• Environmental knowledge and erudition • Awareness of the relationship between man and nature, as well as man, nature and culture • A meaningful assessment of the ecological situation • Understanding the environmental situation • Recognizing sources of threats to nature • Formation of a personal opinion and the ability to defend it • Control and management of own actions • Formation of ecological position	• The ability to self-regulate in the environment, think critically and defend one's own opinion • Practical experience of interaction with the environment • Compliance with norms regarding behavior in the process of interacting with nature • Desire and ability to protect nature • Willingness to act on the basis of ecological imperatives of consciousness
Axiological level	Perceptual-emotional level
• Acceptance and understanding of ecological and natural values • The formation of opinions regarding the preservation of ecology and the nature of the environment • Conducting a moral and ethical assessment of social aspects of environmental reality • Ecological stereotypes • Taking into account the value of the environment and ecology of the planet	• Environmental perception (desire to learn the necessary information regarding the existing problem) • Formation of reflection on the attitude of people to natural resources and ecosystems • An emotional and adequate assessment of the environmental situation • Awareness of connections between man and nature • A sense of responsibility and empathy for nature and ecology

Source: compiled by the author based on data from I.M. Muñoz-García *et al.* (2022)

Therefore, notably, specific factors influence the structure of adolescents' environmental awareness, namely individual and social factors that develop their thoughts and attitudes towards the environment (T. Loughland *et al.*, 2002). If the normative structure that can develop children's environmental competence is observed and constantly reinforced, it is possible to promote this aspect and to educate individuals with a clear position on the preservation of the environment and nature.

Educational programme for the design and development of environmental awareness in children

It can be stated that it is almost impossible to achieve the above provisions of environmental awareness in adolescents when they learn the material on their own due to possible social stimuli and already entrenched ideas about human behaviour and interaction with nature. A possible solution to this situation is to use a specific curriculum for children in educational institutions to develop environmental awareness (Hrybiuk, 2019). Such a course helps to make the subject of ecology and nature conservation compulsory, which can affect the change in the nature of adolescents' environmental competence, and to learn the basics of environmental care in practice.

In general, the course can consist of four main modules that will help to gradually introduce students to the basics of environmental awareness and develop new ideas about this aspect (Nabochuk, 2015). In addition, contemporary information technologies should be used to make the material more modern and interesting. Possible tools for the IT classroom include the following: using interactive whiteboards, working with presentation software, taking online courses, watching videos, taking computer tests to test knowledge, designing projects, using games on the required subjects, holding online conferences, examining the material in electronic resources, disseminating the necessary information about the course programme, etc (Tomchuk *et al.*, 2022). Modules can be as follows:

1. Introduction to the subject and exploration of basic concepts related to ecology, environmental awareness, ecosystem, nature and related subjects.
2. Analysing literature, films, blogs and other information sources to consider the specifics of the development of environmental awareness in adolescents.
3. Conducting conversations, conferences and other events to discuss the problem and develop a common opinion in groups (classes).
4. Conducting psychological trainings, and preparing presentations, reports, and creative projects based on the material examined.

In the current Ukrainian realities of distance learning, caused by quarantine measures during the COVID-19 pandemic and later by the situation of military operations, and considering the age specifics of the teenage audience, both established forms and approaches to environmental education and modern media formats have proven themselves well: webinars, online master classes, online trainings and online marathons, psychological online quests and online

conferences, live broadcasts of Reels and Stories on Facebook or Instagram, informational and motivational videos on YouTube, Telegram channels and the youth network TikTok (Moshura, 2021). It is the combination of conventional and modern approaches, methods and forms of psychological and pedagogical influence that will develop the adolescent's competence to independently search for and comprehend environmental information.

For a clearer result and to consolidate the material, students should take additional ethics courses and work with a psychologist to help children behave properly and defend their position on any life issues, including their attitude to the environment (U.S. Department of Education, 2021). Using such methods can lead to the development of a public desire to preserve nature and the planet's ecology in the future and to the development of a systematic understanding of human connections with nature and cause-and-effect relationships about the activities of people today.

DISCUSSION

Based on the study of the structure of youth environmental awareness development, it can be said that man-made environmental problems caused by human activity are an important aspect to be explored in general education institutions to help children critically assess the current state of the environment, have an understanding of the characteristics of the planet's ecology, and know and be able to protect nature and encourage others to develop public environmental awareness, which in turn is necessary to regulate the current state of the environment.

As L. Chawla (2020) notes in her research, modern children have an understanding of current environmental issues and can empathise with nature in this regard. In addition, the author notes the need to use psychological and educational practices to confirm the position of children and develop environmental awareness. It cannot be stated that most children are interested in this subject from childhood, as at an early age few parents will tell their children about the complexities of the environment and humanity's impact on it, but at a more mature age, it is possible if clear provisions are made to help develop environmental awareness. Practical training makes sense in this case, otherwise, a teenager will not be able to acquire the necessary knowledge to protect nature and care for the environment on their own.

In her dissertation, Syaska (2010) emphasises that using specific programmes to learn about the ecology of the planet and the basics of its protection is necessary in the modern world, especially given the current environmental situation. It will help young people to care about the environment from an early age, thus instilling the necessary knowledge on this subject, which will be used in their work and passed on for generations.

In her research work, K.A. Grimmette (2014) noted that the implementation of educational programmes in educational institutions has a positive result, and therefore it makes sense to take specific measures to raise the necessary degree of environmental awareness among children, which

further development is necessary for nature conservation. This opinion can be considered reasonable since properly designed curricula can influence young people's attitudes towards the environment in the way of protecting and preserving it. In addition, the environmental competence of the teachers themselves is important in teaching such programmes, as they will be able to explain and teach students how to properly care for and protect nature, and to instil a proper understanding of the need to preserve the environment (Lackney, 2008).

A. Fernandez *et al.* (2019) noted in their research that it is important to conduct courses and programmes for adolescents in educational institutions using information technology, as this will generate interest and engagement, which will lead to the required curriculum outcome. Considering that most children and adolescents are now growing up with access to and use of information technology in their everyday lives, such encouragement of children can have positive results, especially if current youth trends are considered (namely, by providing examples through bloggers' media materials or documentaries, and by teaching the material through conferences, presentations, etc.)

In their work, L. Darling-Hammond *et al.* (2019) note that education can help to further develop young people with the attitudes necessary for the future, which is a great lever for preserving nature and the ecology of the world. In addition, scientists indicate that it is possible to reach an unquestionable consensus in the learning process, but there can be no complete agreement of all parties to the learning process since each student and teacher has their own opinion on a particular subject, but with specific standardisation of the specifics of the environmental awareness programme, the result can be close to the above.

Summarising the study and researchers' opinions on the structure of adolescents' environmental consciousness in general education institutions, it can be said that there is a certain need to develop in children in educational institutions such concepts as ecology, nature protection and identification of the specific features of human interaction with nature, which can be a step towards the development of environmental competence to establish clearer countermeasures to the current environmental situation of the planet. Almost all authors have a common opinion on this aspect, which means that this subject is popular and necessary to explore in educational institutions while using modern information technologies to make the learning process more interesting and to obtain as much information as possible on the subject.

CONCLUSIONS

The study identified that the development of environmental awareness is influenced by various groups of factors: individual, social and organisational. The task of the educational institution is to help students acquire the necessary environmental competences: cognitive, value and activity-

practical, i.e. to provide adolescents with relevant knowledge, develop an appropriate attitude towards them and encourage them to implement them in everyday life. Having achieved the purpose of the study, the author has established that the structure of adolescent environmental awareness consists of several levels, the interaction between which determines an appropriate attitude to the environment.

Based on the results of the study, it can be stated that the necessary measures to protect the environment and nature should be developed in modern youth to preserve the environment today and in the future. Therefore, it is of particular importance to develop the environmental awareness of children and adolescents in educational institutions, where a special programme of education for normal attitudes to ecology and nature will be used, and where universal values regarding attitudes to nature, the specifics of nature protection and the preservation and restoration of the environment will be developed. The current features of adolescents' attitudes towards the environment are not promising, as in most cases, their parental upbringing and education based on educational programmes do not use the features of environmental protection. The priority concepts to be explored are the preservation of life and nature on Earth, the preservation of natural and cultural monuments, the basics of protecting nature and resources, and the development of a normal attitude towards nature. The concept should be developed through the introduction of a modern system of teaching environmental awareness, and additional information opportunities, such as using messengers, applications, etc.

Further development of the subject of the structural components of adolescents' environmental awareness in the context of a general education institution can be continued through the study of the current attitude of adolescents to nature and the environment, and tracking the historical factors of the current worldview of adolescents. In addition, it is possible to examine the psychological characteristics of young people's current attitudes to environmental problems and nature conservation, and possible principles for changing people's psychological attitudes towards environmental problems, tilting them towards more conscious and sustainable environmental protection. In addition to the newly established educational programme for the development of environmental awareness among adolescents, the practical use of basic methods of nature conservation and ecology to develop healthy environmental habits can be added in the form of additional classes in educational institutions, and special regular trainings.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Amran, A., Perkasa, M., Satriawan, M., Jasin, I., & Irwansyah, M. (2019). Assessing students 21st century attitude and environmental awareness: Promoting education for sustainable development through science education. *Journal of Physics: Conference Series*, 1157(2), article number 022025. [doi: 10.1088/1742-6596/1157/2/022025](https://doi.org/10.1088/1742-6596/1157/2/022025).
- [2] Balundė, A., Perlaviciute, G., & Truskauskaitė-Kunevičienė, I. (2020). Sustainability in youth: Environmental considerations in adolescence and their relationship to pro-environmental behavior. *Frontiers in Psychology*, 11. [doi: 10.3389/fpsyg.2020.582920](https://doi.org/10.3389/fpsyg.2020.582920).
- [3] Chawla, L. (2020). Childhood nature connection and constructive hope: A review of research on connecting with nature and coping with environmental loss. *People and Nature*, 2(3), 619-642. [doi: 10.1002/pan3.10128](https://doi.org/10.1002/pan3.10128).
- [4] Chu, E.W., & Karr, J.R. (2017). *Environmental impact: Concept, consequences, measurement*. [doi: 10.1016/B978-0-12-809633-8.02380-3](https://doi.org/10.1016/B978-0-12-809633-8.02380-3).
- [5] Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97-140. [doi: 10.1080/10888691.2018.1537791](https://doi.org/10.1080/10888691.2018.1537791).
- [6] Dzhengiz, T., & Niesten, E. (2020). Competences for environmental sustainability: A systematic review on the impact of absorptive capacity and capabilities. *Journal of Business Ethics*, 162, 881-906. [doi: 10.1007/s10551-019-04360-z](https://doi.org/10.1007/s10551-019-04360-z).
- [7] Esquer, J., Munguia, N., & Velazquez, L. (2022). Increasing young people's environmental awareness. In Brears, R. (Ed.), *The Palgrave encyclopedia of urban and regional futures*. Cham: Palgrave Macmillan. [doi: 10.1007/978-3-030-51812-7_121-1](https://doi.org/10.1007/978-3-030-51812-7_121-1).
- [8] Fernandez, A., Camargo, C., & Nascimento, M. (2019). Technologies and environmental education: A beneficial relationship. *Research in Social Sciences and Technology*, 4(2), 13-30. [doi: 10.46303/ressat.04.02.2](https://doi.org/10.46303/ressat.04.02.2).
- [9] Grimmette, K.A. (2014). The impacts of environmental education on youth and their environmental awareness. *Environmental Studies Undergraduate Student Theses*, 135. Retrieved from <https://digitalcommons.unl.edu/envstudtheses/135>.
- [10] Hosany, A.R.S., Hosany, S., & He, H. (2019). Children sustainable behaviour: A review and research agenda. *Journal of Business Research*, 147, 236-257. [doi: 10.1016/j.jbusres.2022.04.008](https://doi.org/10.1016/j.jbusres.2022.04.008).
- [11] Hrybiuk, O. (2019). Improvement of the educational process by the creation of centers for intellectual development and scientific and technical creativity. In A. Hamrol, A. Kujawińska, & M. Barraza. (Eds.), *Advances in manufacturing II* (Vol. 2 – Production engineering and management; pp. 370-382). Cham: Springer. [doi: 10.1007/978-3-030-18789-7_31](https://doi.org/10.1007/978-3-030-18789-7_31).
- [12] Lackney, J.A. (2008). Teacher environmental competence in elementary school environments. *Children, Youth and Environments*, 18(2), 133-159.
- [13] Liovochkina, A.M. (2013). *Psychology of ecological culture of students* (Doctoral thesis, G.S. Kostyuk Institute of Psychology of the NAPS of Ukraine, Kyiv, Ukraine).
- [14] Loughland, T., Reid, A., & Petocz, P. (2002). Young people's conceptions of environment: A phenomenographic analysis. *Environmental Education Research*, 8(2), 187-197. [doi: 10.1080/13504620220128248](https://doi.org/10.1080/13504620220128248).
- [15] Moshura, V.V. (2021). Features of environmental consciousness formation of the adolescents by means of social media. *Scientific Journal of National Pedagogical Dragomanov University. Series 12. Psychological sciences*, 13, 74-83. [doi: 10.31392/NPU-nc.series12.2021.13\(58\).07](https://doi.org/10.31392/NPU-nc.series12.2021.13(58).07).
- [16] Muñoz-García, I.M., Alcántara-Manzanares, J., & Quintana, S.M. (2022). Key aspects of adolescents' environmental attitudes with a view to transformative education. *Education Sciences*, 12(9), article number 591. [doi: 10.3390/educsci12090591](https://doi.org/10.3390/educsci12090591).
- [17] Nabochuk, O.Yu. (2015). *Psychological conditions of the development of senior pupils' ecological consciousness by means of information technologies* (PhD thesis, Rivne State University of the Humanities, Rivne, Ukraine).
- [18] Padalka, R.H. (2018). *Psychological peculiarities of ecological consciousness development in junior schoolchildren* (PhD thesis, National Dragomanov Pedagogic University, Kyiv, Ukraine).
- [19] Shen, M., & Wang, J. (2022). The impact of pro-environmental awareness components on green consumption behavior: The moderation effect of consumer perceived cost, policy incentives, and face culture. *Frontiers in Psychology*, 13, article number 580823. [doi: 10.3389/fpsyg.2022.580823](https://doi.org/10.3389/fpsyg.2022.580823).
- [20] Syaska, I.O. (2010). *Forming of ecological consciousness of senior pupils in the educational-upbringing process of general educational establishments* (PhD thesis, V.O. Sukhomlynskyi State University of Mykolaiv, Mykolaiv, Ukraine).
- [21] Tomchuk, M., Khrolenko, M., Volokhata, K., Bakka, Yu., Ieresko, O., & Kambalova, Ya. (2022). *Information technologies in the formation of environmental consciousness in future professionals*. *International Journal of Computer Science and Network Security*, 22(1), 331-339.

- [22] Trask-Kerr, K., Chin, T.-C., & Vella-Brodrick, D. (2019). Positive education and the new prosperity: Exploring young people's conceptions of prosperity and success. *Australian Journal of Education*, 63(2), 190-208. doi: 10.1177/0004944119860600.
- [23] U.S. Department of Education. (2021). *Supporting child and student social, emotional, behavioral, and mental health needs*. Retrieved from <https://www2.ed.gov/documents/students/supporting-child-student-social-emotional-behavioral-mental-health.pdf>.
- [24] Zsoka, A., Szerenyi, Z., Szechy, A., & Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of Cleaner Production*, 48, 126-138. doi: 10.1016/j.jclepro.2012.11.030.

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Структурні компоненти екологічної свідомості підлітка в умовах загальноосвітнього навчального закладу

Анотація. Актуальність досліджуваної проблеми формування екологічної свідомості підлітків зумовлено необхідністю в умовах загальноосвітнього навчального закладу прививати учням поняття природокористування та природозбереження, для того щоб формувати здорову поведінку людей щодо природи та її ресурсів, а також належний рівень ціннісного ставлення до природних та культурних пам'яток. Мета статті – визначити основні структурні компоненти, чинники та умови формування екологічної свідомості підлітків в освітніх закладах, а також виявити можливості використання новітніх інформаційних технологій для розвитку та популяризації питання екологічної свідомості. Для того щоб комплексно дослідити тему екологічної свідомості, у статті використано аналітичний, статистичний та комплексний дослідницькі методи. Основні результати дослідження полягають у з'ясуванні типів та особливостей формування екологічної свідомості у підлітків. Представлено критерії екологічної компетентності: когнітивний, ціннісний та діяльнісно-практичний. Визначено структуру екологічної свідомості учнів загальноосвітніх закладів на базі когнітивного, конантивного, аксіологічного та перцептивно-емотивного рівнів. Розглянуто можливості використання інформаційних технологій, які допоможуть формувати нову програму виховання свідомості підлітків, а саме: сучасних систем для показу та розповсюдження інформації, соціальних мереж, а також форматів онлайн-конференцій та онлайн-курсів. Практичне значення дослідницької роботи полягає у створенні новітньої програми формування здорового ставлення підлітків до екології та встановленні базових цінностей, якими варто керуватися, щоб зберегти наявні пам'ятки природи та культури, а також на заняттях з виховання екологічної свідомості в загальноосвітніх закладах, навчальних курсах та закладах позашкільної освіти

Ключові слова: ставлення до екології; психологічний вплив; навчально-виховний процес; інформаційні технології; природозбереження

UDC 373.016:81'243]:681.5
DOI: 10.52534/msu-pp1.2023.31

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Major benefits of using smart technologies in education

Article's History:

Received: 24.11.22

Revised: 26.02.23

Accepted: 31.03.23

Suggested Citation:

Nesterenko, I. (2023). Major benefits of using smart technologies in education. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 31-38. doi: 10.52534/msu-pp1.2023.31.

Abstract. This research considers the features of applying smart-learning technologies in education that provide future-qualified specialists with the necessary skills for the implementation of successful professional activities in the conditions of a digital society. The relevance of the study is conditioned upon the need to find the main advantages of smart education in educational institutions. The purpose of the research is to determine the benefits of using smart technologies in education and the abilities that students should master to meet the needs of modern society. The author attempts to use a set of interconnected theoretical research methods to achieve the purpose and present the examined subject comprehensively, including the method of critical analysis of scientific literature, which contributed to the description of the purposes and specifics, the possibility and benefits of using smart-learning technologies and drawing conclusions, and the method of examining and summarising the experiences of other countries, which allowed concluding. It was identified that for various entities and educational situations, the meaning of "smart" has different definitions. It has been established that fundamental content changes are occurring, which makes the modern educational system smart in the majority of countries around the world. It was determined that using smart-learning technologies opens up many new opportunities in education, which improve the concentration of students' attention, accelerate the assimilation of educational material, and, as a result, increase the success rate of each student. Based on research, four levels of abilities in smart education that students should master to meet the needs of modern society have been proposed. The main advantages of using smart learning in the educational process are described. The most common are the continuity of the educational process and the integrity of educational information; mobility; the student's autonomy. The research can be useful for specialists in educational institutions and teachers to improve the professional training of specialists

Keywords: smart education; smart-learning technologies; distance learning; specialists; the main advantages of smart learning; levels of abilities

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INTRODUCTION

Modern education, at all levels, is unconstrained by time and location, and learning may occur in both real-world and virtual settings, through a variety of technology and pedagogical tools (Chen *et al.*, 2020). Education must be flexible, as it is constantly transforming due to the introduction of new components, methods, and learning technologies. Based on students' strengths and deficiencies, the present learning environments need to be modified. To

perform the demand and fix the flaws in the present education systems and techniques, the smart education vision should be utilised. Smart education implementations require smart education frameworks (Choi & Lee, 2012).

There have been countless new computer technologies developed over the past several decades that have simplified daily living. The result of this expansion in technology is an improvement in human existence. Technology has



improved the quality of our daily lives on an entire new level. Material and technical values, which have not bypassed the educational process, are becoming increasingly popular. Undoubtedly, the advent of the World Wide Web has changed the concept of education. Thus, in the modern educational system of most countries in the world, fundamental content changes are occurring, which makes the system different – a SMART system, the abbreviation of which is interpreted as S – self-directed, M – motivated, A – adapted, R – resourced, and T – technological.

The approach to education with technology in the classroom is inevitably evolving as the Smart society develops. New universities, or “Smart universities”, where the Internet and technological advancements can offer a new standard of educational and scientific processes and the outcomes of training, scientific, innovative, educational, and other activities, are responsible for the tasks of preparing new format specialists for successful and competent employees in the smart society (Morze *et al.*, 2021). The smart-education paradigm provides the ability to adapt to students’ levels and needs and involves an active exchange of experience and ideas. In addition, smart education is easily managed both from the inside of each educational institution due to the flexibility of the educational process and from the outside. The integration of information and communication technology into the educational process, and using multimedia tools, is going online. The cognitive process is stimulated by electronic learning (e-learning) and multimedia technologies, which offer the chance to visualise educational content.

In recent years, the active attention of many educators to the process of establishing “smart education” has been observed. Educational projects implemented around the world focus on intellectual education. For example, the concept of “Smart nation” was first encountered in Singapore in 2006. An important part of a “Smart nation” is technological education (Hua, 2012). According to the reforms that are beginning to be implemented, the so-called “schools of the future” (eight pieces) were established, focusing on a variety of learning environments. In South Korea, educators developed the Smart educational project, which was based on the tasks of updating the educational system and modernising the educational infrastructure (Choi & Lee, 2012). In New York, an educational project called “Smart School” gives technology integration a special role in the classroom. Students can improve their academic performance and be effectively prepared for participation in the modern-day economy. In 2011, to promote learning in the 21st century through user-oriented learning solutions, Finland established a smart education initiative. Through user-driven and inspirational learning solutions, the initiative seeks to advance learning for the 21st century (Kankaanranta & Mäkelä, 2014). The smart learning program called “Mohammed Bin Rashid Smart Learning Programme” (United Arab Emirates, UAE) started in 2012. The programme envisages the launch of “smart classes”, in which educators must establish a new learning environment and a new culture.

Smart technologies were gradually introduced into the educational process in Ukraine. According to the Order of the Ministry of Education and Science, Youth, and Sports of Ukraine “On the Implementation of the Pilot Project “LearnIn – SMART Learning” (2012) initiative made a great advancement toward bettering Ukraine’s educational system and using modern technology. It designed to establish a possible new educational path and improve teaching and learning standards.

In the scientific literature, the concept of intelligent learning environments is becoming more popular. To be considered intelligent and provide effective solutions, a learning environment must enable the identification of learners’ characteristics, provide necessary resources and tools, automate learning processes, and evaluate their outcomes (Mogas *et al.*, 2022). While widely researched over the past ten years, the issue of employing new information technologies in the educational process is still very much in force. The characteristics of the application of new information technologies in the educational process have been considered in several research by Ukrainian and foreign specialists (Cebrián *et al.*, 2020; Chen *et al.*, 2020; Cho *et al.*, 2020).

T. Herasymchuk (2015) explores the key concerns surrounding using smart technology, which boosts student motivation and cognitive activity, aids in intensifying and individualising learning, and removes the psychological barrier associated with using a foreign language for communication. Smart learning most effectively leads to creative activity and proper assimilation of the essential content, enabling self-development and identifying the creative potential of the student’s personality, according to scholars like A. Uminska (2017) and I. Kovalchuk (2018).

Another scientist, O. Osova (2018), concluded that the strategy of reforming contemporary foreign language education involves updating the subject, instructional formats, and instructional methods through using new technologies. The work by K.C. Li and B.T.-M. Wong (2021) deserves attention among researchers of smart learning. The authors discuss the development of pedagogical methods that successfully use intelligent learning technologies in different learning environments and conduct a detailed examination of how intelligent learning may be adapted to the features of different application areas. An overview of research on intelligent technologies, with a focus on new technologies connected to artificial intelligence, was offered by authors E. Dimitriadou and A. Lanitis (2022) in their study.

The study’s purpose is to demonstrate the advantages of using learning tools in the classroom.

MATERIALS AND METHODS

Considering the complexity of the subject, the author comprehensively explores the problem and substantiates and applies a complex of interrelated theoretical research methods: analysis and synthesis, comparison, study and generalisation, systematisation, and scientific sources. The search for sources was performed in databases such as Google Academy, ERIC (ProQuest), Education Database (ProQuest),

APA PsycInfo (EBSCO), ScienceDirect (Elsevier), various English-language electronic resources, etc.

By applying the method of analysis, several studies have been processed to determine the benefits of using smart technologies in education and the abilities that students should master to meet the needs of modern society. Using the synthesis, the specific features of applying smart-learning technologies in education were explored. The comparison served to contrast the researchers' scientific interpretations of the term "smart learning" and to identify key features of the phenomena examined. Systematisation allowed identifying the number of causal connections and the pinpointing of the essential elements of smart teaching in educational institutions.

The research of a particular subject was conducted in stages based on an acknowledged scientific and methodological framework. A theoretical analysis of scientific literature on the examined subject to determine the subject's relevance and identify the main aspects, and determine the characteristics of using smart-learning technologies in education has been included. The processing and analysis of several studies on the characteristics of employing smart technology in education and the skills that students should possess to satisfy the demands of contemporary society. The flexibility of academics' and practitioners' perspectives on how the idea of smart education and the application of smart complexes are compatible with the major global developments in education is often the centre of attention. The study's findings were summarised and relevant observations were made.

RESULTS AND DISCUSSION

Definition of the term "smart learning"

Despite the fact that today the term "smart learning" is quite common, there is still no clear and unified definition of this interpretation in the educational systems of many countries in the world. Nevertheless, some attempts to delineate the key components have been made. Smart learning, according to foreign scholars (García-Tudela *et al.*, 2022), is ubiquitous, context-aware learning. In addition, other scientists hold the same opinion. For example, Kim *et al.* (2013) confirm that smart learning is an educational paradigm focused on the student and services rather than simply focusing on using devices. In his research, A. Middleton (2015) outlines some aspects of intelligent learning, giving preference to the focus on the student and the results he receives due to the usage of sophisticated technology. The researcher emphasises that personal and intelligent technologies help participants be involved in learning and increase their independence due to a richer personal context in the educational process. In addition, others make an effort to describe the characteristics of smart learning. Presented by the Ministry of Education, Science, and Technology of the Republic of Korea (Lim & Kye, 2019), the features of smart learning include independent, driven, flexible, and resource-enriched, and technological learning. Scientists J. Lee *et al.* (2014) consider "smart learning" to include both official and

informal education, social and collaborative learning, and situational and individualised learning. In addition, they emphasised a content focus and application orientation.

In the educational system "smart" means clever, customised, and flexible. Nonetheless, the definition of "smart" has different meanings for different subjects and educational situations. For students, being smart means being able to make the best decisions and judgements possible by utilising your knowledge and expertise. Using educational technologies helps achieve the set purpose effectively and efficiently (Gardner, 2011). The term "smart" for educational technology refers to its ability to successfully do its intended task (Spector, 2014). This type of learning is engaging, intelligent, and scalable in an educational setting. The educational environment that is headed toward smart learning provides tailored and personalised learning services that engage the student in efficient, fruitful, and performing learning.

With the development of such technologies as YouTube, cloud computing, distance learning, Facebook, Twitter, blogs, Google, etc., education is becoming more accessible. Due to the Internet, students can study anywhere in the world and at any time. A person has the opportunity to choose a field of knowledge, including a non-professional one, and immerse himself in it as much as he is interested in it. An important factor is the free availability of many resources.

Other intelligent technologies, such as cloud computing, educational analytics, the Internet of Things (IoT), wearable (portable) gadgets, etc., are connected to smart education. Learning knowledge may be studied and used to improve teaching and learning through using cloud computing and educational analytics (Țălu, 2020). These adaptable learning technologies allow the learning platform to respond to data specific to each student and modify the learning resource as necessary using cloud computing and learning analytics (Johnson *et al.*, 2015).

Considering the above-mentioned, the author of this research concluded that the purpose of smart education is to provide future-qualified workers with the necessary skills to implement successful professional activities in what a digital society is like. With this type of education, students have the chance to explore utilising smart complexes that contain test materials, readings for the course, activities for independent study, questions for the final examination, etc. in addition to lecture and laboratory-practical materials.

In addition, it should be mentioned that the reform of modern smart education puts forward new requirements for teaching staff. The assignments are accomplished by a teacher who anticipates the results of his actions and models the educational process accordingly. The outcomes of society's socioeconomic and spiritual development are intimately correlated with the professionalism of teachers. The quality of the teaching staff is the most important component of the educational system because all other components must be implemented in concert with the human resources of the educational system. The task of establishing educational programmes for the next generation based on cutting-edge learning technologies has been given to teachers, and they

have been given the specific purpose of teaching and equipping the next generation with someone with contemporary thinking who can successfully realise themselves in life.

Main educational trends

The idea of smart education and the usage of smart complexes are in line with the major global trends in education, where technology has changed how education is given and received in many different ways. The leading educational technology is increasingly distance learning. Video courses on YouTube and iTunes are becoming extremely popular and in high demand. The number of electronic educational materials is growing rapidly. The customisation of education is an alternative to unified educational approaches, which demand the same outcomes from all educational subjects. Individualised educational plans should, therefore, be based on each student's particular psychological characteristics. Gamification, a rewarding technology that uses game elements in non-game contexts, can help raise motivation for learning and boost its quality. By interactive immersion in the virtual environment, learning through video games offers a singular chance to impart information about the actual world. Interactive electronic textbooks should significantly alter how educational content is now presented and interpreted. The multidimensionality of the contemporary educational process, which is supported by multimedia technology, cannot be provided by the linear design of courses and their textual presentation.

The efforts of numerous organisations involved in defining the necessary competencies for the 21st century serve as evidence of the importance of the subject of "smart learning". The Organisation for Economic Cooperation and Development (OECD) has established ten fundamental requirements and divided them into four categories: modes of thought, modes of activity, modes of operation, and modes of living in the world (Ananiadou & Claro, 2009). The work being done by the national Partnership for 21st Century Skills group (Johnson *et al.*, 2015), which was established in 2002 by educators, businesspeople, and politicians to define the skills required for the future generation, is not any less significant. Critical thinking, communication, problem-solving, learning, innovation, life and career skills, media and information literacy are a few examples of key talents. In addition, the main subjects through which students can acquire these skills were determined: English, reading, writing, world languages, art, mathematics, and economics. The North Central Regional Educational Laboratory (NREL) has published a list of 21st-century skills that includes digital literacy, creative thinking, effective communication, and high productivity (Burkhardt *et al.*, 2003).

As follows, the identified trends serve as the foundation for changes in smart education development strategies. With numerous benefits to offer, using smart technologies in education has become a crucial component of the educational system. Information and communication technology enhances student-centered engagement and digital learning in many ways. Education trends shaped schools and

universities to implement cutting-edge educational technology help enhance the process of teaching and learning.

Levels of smart education abilities

Four levels of abilities in smart education – basic knowledge and basic skills, comprehensive abilities, personalised expertise, and collective intelligence – that students must acquire to meet the needs of modern society are proposed based on the activities of the organisations listed above and several studies.

Reading, writing, and other fundamental skills are examples of *basic knowledge and abilities*, whose mastery is important for the student's success and for mastering the next levels of abilities (Partnership for 21st Century Learning, 2015). According to H. Jenkins (2009), it is basic knowledge that is the main ability of the 21st century.

Comprehensive abilities are needed for critical thinking and the ability to solve the problems of the modern world. Having acquired comprehensive abilities, the student is able to reason correctly, think comprehensively, analyse, and make the right decisions in various difficult situations (Alajmi *et al.*, 2017).

Abilities like *personalised expertise* are quite important for future specialists as they involve the mastery of information and technological literacy, creativity, and innovative skills. The development of students' information and technological literacy involves mastering ICT skills, which include using various ICT applications and a combination of cognitive abilities or thinking skills (Alajmi *et al.*, 2017). Creative and innovative skills require thinking and working creatively with others, implementing creative ideas.

No less important is *collective intelligence*. These are important ways of working, the positive result of which is achieved through participants' communication and collaboration in the educational process. The work algorithm is that after receiving information, students need to think about ways of sharing and transmitting the results to other people (Ananiadou & Claro, 2009). Therefore, the student is required to be active in communicating with others. In addition, collaboration requires students to work effectively in a team setting.

Smart-guiding education's concepts include the following:

- utilisation of up-to-date material from the curriculum to address academic issues. The world's information flow is accelerating in both volume and speed, as is professional activity. Before working in a real environment, educational materials need to be supplemented with information from the present;
- independent project, research, and cognitive activity of an organisation;
- the application of the educational process in a dispersed learning environment and the preparation of specialists to find innovative solutions to real-world problems depend on this notion.

Some of the primary advantages of smart education include providing students with a high-quality learning experience through using technology (Smart classrooms...,

2022). Scientists stress the significance of developing a smart education system that makes use of smart technologies, which have a variety of benefits, including fostering the growth of professional knowledge and creative abilities, developing critical thinking, ensuring equal learning opportunities, and facilitating access to educational resources, the

potential for their application in the instruction of a variety of disciplines, the high effectiveness of knowledge acquisition, the increase in learning interest among students, the sophistication of technologies and students' comprehension and perception of them, etc. (Alajmi *et al.*, 2017). The main benefits of smart education are presented in Table 1.

Table 1. The benefits of smart education

The principal benefits of smart education		
guaranteeing that software established for different operating systems works seamlessly together, allowing for the execution of the continuity of the educational process and the integrity of educational content	mobility, ubiquity, continuity, and ease of access to educational resources without regard to location or time	providing equal learning opportunities regardless of the devices used

Source: developed by the author of this study

The confirmation of the relevance, and the importance of the issue that author of this research considers in her research is the results of scientific forums and conferences. It testifies to the trend of the electronic society transition to the knowledge society or "smart society". For example, several nations and international organisations have launched digital development strategies to support a thorough digital transformation in education. During the inaugural International Conference on Artificial Intelligence and Education, UNESCO published the Beijing Consensus to help with the execution of the Education 2030 Agenda. Seventeen of the member nations of the Organisation for Economic Co-operation and Development (OECD) produced digital education-related strategies between 2015 and 2019 according to the study on digital strategies in education across OECD countries. In addition, two major subjects are highlighted in the European Union's Digital Education Action Plan (2021-2027), namely "Fostering the Development of a High-Performant Digital Education Ecosystem" and "Enhancing Digital Skills and Competencies for the Digital Transformation" (European Commission, 2020).

The Chinese government has recently put forth several strategies and policies designed to encourage the systematic fusion of intelligent technology and education even more. The New Generation Artificial Intelligence Development Plan, Education Informatisation 2.0 Action Plan, and China's Education Modernisation 2035 Plan are a few of these. In addition, the Ministry of Education of the People's Republic of China emphasised the significance of putting the strategic action of digitalising education into practice and speeding up the process of digital transformation and intelligent upgrading of education (Global Smart Education Conference, 2021). Two Global Smart Education (GSE) Conferences and four US-China Smart Education Conferences (UCSEC) in a row since 2016 have been hosted. These conferences have been organised in collaboration with universities and international organisations throughout the world. The gathering was attended by thousands of specialists and academics in the fields of education and

technology from more than 50 nations and international organisations, including UNESCO and the OECD.

Questions and discussions, that are of great value for this research, caught the author's attention at these conferences. The main idea focused on cutting-edge subjects and trending subjects such as K-12 education, higher education, vocational education, transforming education via intelligent technology, artificial intelligence, future education, smart learning, and educational futures. The Horizon Project Regional Report, the White Paper on the Building of Smart Education Pilot Zones, the Joint Project of Rethinking and Redesigning the National Smart Education Plan, and other projects and research findings were presented at the conferences.

In summing up it was stated that based on digitisation and digitalisation, digital transformation in the field of education is dedicated to:

- 1) strengthening the digital foundation;
- 2) establishing smart learning environments;
- 3) fostering the co-establishing and co-sharing of high-quality digital educational resources;
- 4) exploring customised models for developing students and training teachers;
- 5) enhancing digital literacy and skills of teachers and students;
- 6) enhancing digital awareness, thinness, and vigilance.

Notably, the final theses about the benefits of using smart learning announced at the conferences completely coincide with opinions presented in this study. As follows, smart education makes use of contemporary science and technology to provide students, instructors, parents, and other participants in the learning and teaching processes with a variety of supports and on-demand services. It helps to improve the quality and equality of education. According to this standpoint, smart education will have a great chance to be a breakthrough that unifies intelligent technology with future education. It is the dominant paradigm that designed to use intelligent technology to enhance human activities in all sectors and provide a new standard of

living. One might refer to the development of a smart society as a worldwide trend.

As the educational process has been transferred to the electronic world, utilising smart technology is intended to maximise learning effectiveness. By using this strategy, it will be feasible to duplicate the teacher's knowledge and provide everyone access to it. Students who receive a smart education can develop fresh knowledge and the traits of a clever person, who is well equipped with information and computer technologies for seeking, analysing, and coming up with innovations. It is especially demonstrated by how this approach has been implemented and developed in the many countries throughout the world that were already considered above.

While putting in place a smart school system might be exciting, there are obstacles to overcome. To meet the evolving demands of both staff and students, smart schools must adapt. In addition, they need to be able to put various solutions into practice to make sure the classroom runs smoothly. Smart schools are a real thing that plays a significant role in teaching our future leaders..

CONCLUSIONS

During the research of this issue, the target was attained; in particular, the idea of "smart" was examined, the key benefits of utilising smart technology in education were identified, and the skills that students should have to satisfy the demands of contemporary society were determined.

Smart education, as a fresh phase of development of modern education, plays an important role in the process of learning. The emphasis on smart education and its advancements has emerged as a fresh fashion in the world of education. There is a need to move toward smart education as at the current stage of educational growth, there are growing needs that cannot be addressed by either conventional educational technology or e-learning technologies.

It has been proven that smart technologies are signposts for the emergence of a new educational paradigm, which will enable the implementation of the trend of include activities for the development of a free creative personality in the educational process. Students' cognitive and creative activity is successfully stimulated by the employment of contemporary smart technology in the learning process. It is smart technologies that allow the development of revolutionary educational and methodical materials, and the development of individual teaching methods for students.

Considering this, the main useful purposes of using smart education have been identified. The most obvious are: continuity of the educational process and ease of access to educational information; independence from time and place; mobility; and autonomy of the pedagogical worker and student. As a result of achieving these objectives, students now have four levels of abilities to master to meet the requirements of contemporary society. These talents are divided into four categories: knowledge, skills, attitudes, and values. Exploring the efficiency of educational technology in the process of learning a foreign language is a potential area for future research.

The research's scientific originality lies in the identification of the key benefits of utilising "smart learning" in the educational process and the regularities that ensure future qualified specialists with the abilities to conduct successful professional activities in the context of a digital society. The author's personal contribution consists in setting the problem, determining the purpose and methods of research, and finding and analysing literary sources on the subject of the research.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Alajmi, Q., Sadiq, A., Kamaludin, A., & Al-Sharafi, M.A. (2017). E-learning models: The effectiveness of the cloud-based E-learning model over the traditional E-learning model. In *2017 8th International Conference on Information Technology (ICIT)* (pp. 12-16). Amman: IEEE. doi: 10.1109/ICITECH.2017.8079909.
- [2] Ananiadou, K., & Claro, M. (2009). 21st century skills and competences for new millennium learners in OECD countries. *OECD Education Working Papers*, 41. doi: 10.1787/218525261154.
- [3] Burkhardt, G., Monsour, M., Valdez, G., Gunn, C., Dawson, M., & Lemke, C. (2003). *enGauge 21st century skills: Literacy in the digital age*. Naperville – Los Angeles: North Central Regional Educational Laboratory and the Metiri Group.
- [4] Cebrián, G., Palau, R., & Mogas, J. (2020). The Smart Classroom as a means to the development of ESD methodologies. *Sustainability*, 12(7), article number 3010. doi: 10.3390/su12073010.
- [5] Chen, N., Yin, C., Isaias, P., & Psotka, J. (2020). Educational big data: Extracting meaning from data for smart education. *Interactive Learning Environments*, 28(2), 142-147. doi: 10.1080/10494820.2019.1635395.
- [6] Cho, E., Cho, Y.H., Grant, M.M., Song, D., & Huh, Y. (2020). Trends of educational technology in Korea and the US: A report on the AECT-Korean Society for Educational Technology (KSET) panel discussion. *TechTrends*, 64(3), 357-360. doi: 10.1007/s11528-020-00493-5.
- [7] Choi, J.W., & Lee, Y.J. (2012). *The status of SMART education in KOREA*. In T. Amiel & B. Wilson (Eds.), *Proceedings of EdMedia 2012 – World Conference on Educational Media and Technology* (pp. 175-178). Denver: Association for the Advancement of Computing in Education (AACE).
- [8] Demir, K.A. (2021). Smart education framework. *Smart Learn. Environ*, 8, article number 29. doi: 10.1186/s40561-021-00170-x.

- [9] Dimitriadou, E., & Lanitis, A. (2022). The role of artificial intelligence in Smart Classes: A survey. In *2022 IEEE 21st Mediterranean electrotechnical conference (MELECON)*. Palermo: IEEE (pp. 642-647). doi: [10.1109/MELECON53508.2022.9843020](https://doi.org/10.1109/MELECON53508.2022.9843020).
- [10] European Commission. (2020). *Digital Education Action Plan (2021-2027)*. Retrieved from <https://education.ec.europa.eu/focus-topics/digital-education/action-plan>.
- [11] García-Tudela, P.A., Prendes-Espinosa, P., & Solano-Fernández, I.M. (2022). Smart learning environments: A basic research towards the definition of a practical model. *Smart Learning Environments*, 8, article number 9. doi: [10.1186/s40561-021-00155-w](https://doi.org/10.1186/s40561-021-00155-w).
- [12] Gardner, H. (2011). *Frames of mind: The theory of multiple intelligences* (3rd ed.). New York: Basic Books.
- [13] Global Smart Education Conference. (2021). Retrieved from <http://gse.bnu.edu.cn/en>.
- [14] Herasymchuk, T. (2015). Prospects for learning a foreign language in order to form the professional competence of students with the help of Internet technologies. *Theoretical and Didactic Philology*, 19, 29-39.
- [15] Hua, M.T.A. (2012). Promises and threats: iN2015 Masterplan to pervasive computing in Singapore. *Science, Technology and Society*, 17(1), 37-56. doi: [10.1177/097172181101700103](https://doi.org/10.1177/097172181101700103).
- [16] Jenkins, H. (2009). *Confronting the challenges of participatory culture: Media education for the 21st century*. Cambridge: MIT Press.
- [17] Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2015). *NMC Horizon Report: 2015 Higher Education Edition*. Austin, Texas: The New Media Consortium.
- [18] Kankaanranta, M., & Mäkelä, T. (2014). *Valuation of emerging learning solutions*. In J. Viteli & M. Leikomaa (Eds.), *Proceedings of EdMedia 2014 – World conference on educational media and technology* (pp. 168-172). Tampere: Association for the Advancement of Computing in Education (AACE).
- [19] Kim, T., Cho, J.Y., & Lee, B.G. (2013). Evolution to smart learning in public education: A case study of Korean public education. In L. Tobias, R. Mikko, L. Mart, & T. Arthur (Eds.), *Open and social technologies for networked learning: Revised Selected Papers of IFIP WG 3.4 International Conference, OST 2012* (pp. 162-178). Berlin: Springer. doi: [10.1007/978-3-642-37285-8](https://doi.org/10.1007/978-3-642-37285-8).
- [20] Kovalchuk, I. (2018). *Professional-communicative competence formation of future officers by means of humanitarian disciplines in higher military educational establishments* (PhD thesis, Ivan Franko Zhytomyr State University, Zhytomyr, Ukraine).
- [21] Lee, J., Zo, H., & Lee, H. (2014). Smart learning adoption in employees and HRD managers. *British Journal of Educational Technology*, 45(6), 1082-1096. doi: [10.1111/bjet.12210](https://doi.org/10.1111/bjet.12210).
- [22] Li, K.C., & Wong, B.T.-M. (2021). Review of smart learning: Patterns and trends in research and practice. *Australasian Journal of Educational Technology*, 37(2), 189-204. doi: [10.14742/ajet.6617](https://doi.org/10.14742/ajet.6617).
- [23] Lim, C., & Kye, B. (2019). *Classroom revolution through SMART education in the Republic of Korea: Case study by the UNESCO-Fazheng project on best practices in mobile learning*. Paris: United Nations Educational, Scientific and Cultural Organization.
- [24] Middleton, A. (Ed.). (2015). *Smart learning: Teaching and learning with smartphones and tablets in post compulsory education*. Sheffield: Media-Enhanced Learning Special Interest Group and Sheffield Hallam University Press.
- [25] Mogas, J., Palau, R., Fuentes, M., & Cebrián, G. (2022). Smart schools on the way: How school principals from Catalonia approach the future of education within the fourth industrial revolution. *Learning Environ Research*, 25, 875-893. doi: [10.1007/s10984-021-09398-3](https://doi.org/10.1007/s10984-021-09398-3).
- [26] Morze, N., Smyrnova-Trybulska, E., & Glazunova, O. (2021). Design of a university learning environment for smart education. In *Research anthology on preparing school administrators to lead quality education programs* (pp. 518-545). Hershey: Information Resources Management Association. doi: [10.4018/978-1-7998-3438-0.ch024](https://doi.org/10.4018/978-1-7998-3438-0.ch024).
- [27] Order of the Ministry of Education and Science, Youth and Sports of Ukraine No. 812 "On the Implementation of the Pilot Project "LearnIn – SMART Learning". (2012, June). Retrieved from <https://zakon.rada.gov.ua/rada/show/v0812736-12#Text>.
- [28] Osova, O. (2018). Experience of using technologies of teaching foreign languages to students in terms of smart education. *Pedagogy and Psychology*, 60, 53-63. doi: [10.5281/zenodo.2539352](https://doi.org/10.5281/zenodo.2539352).
- [29] Partnership for 21st Century Learning. (2015). P21 framework definitions. Retrieved from https://static.battelleforkids.org/documents/p21/P21_Framework_Definitions_New_Logo_2015_9pgs.pdf.
- [30] Smart classrooms. Advantages and disadvantages. (2022). Retrieved from <https://eduxpert.in/smart-classrooms-advantages-disadvantages/>.
- [31] Spector, J.M. (2014). Conceptualizing the emerging field of smart learning environments. *Smart Learning Environments*, 1, article number 2. doi: [10.1186/s40561-014-0002-7](https://doi.org/10.1186/s40561-014-0002-7).
- [32] Țălu, Ș. (2020). New perspectives in the implementation of smart-technologies in higher education. In *Proceedings of the 2nd International scientific and practical conference "Modern management trends and the digital economy: From regional development to global economic growth" (MTDE 2020)* (pp. 253-257). doi: [10.2991/aebmr.k.200502.042](https://doi.org/10.2991/aebmr.k.200502.042).

- [33] Uminska, A. (2017). *The formation of prospective foreign language teacher's reflective culture in the process of professional development* (PhD thesis, Zhytomyr Ivan Franko State University, Zhytomyr, Ukraine).

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Основні переваги використання smart-технологій в освіті

Анотація. Актуальність дослідження зумовлено необхідністю наукового пошуку щодо з'ясування основних переваг smart-освіти в навчальних закладах, що передбачає забезпечення майбутніх кваліфікованих спеціалістів необхідними навичками для реалізації успішної професійної діяльності в умовах цифрового суспільства. Мета роботи – визначити переваги використання smart-технологій в освіті, а також здібності, якими повинні володіти студенти, щоб задовольнити потреби сучасного суспільства. Задля досягнення мети й усебічного представлення досліджуваної тематики застосовано комплекс взаємопов'язаних наукових теоретичних методів дослідження, серед яких: метод критичного аналізу наукової літератури, який дав змогу описати цілі та специфіку, можливість та користь застосування технологій smart-навчання, сформулювати висновки; метод вивчення та узагальнення досвіду інших держав, який допоміг з'ясувати етапи реалізації освітніх проєктів, спрямованих на «розумну освіту» в багатьох країнах світу в останні роки, а також метод порівняння та систематизації, який дав змогу визначити деякі ключові компоненти «smart-навчання». З'ясовано, що для різних суб'єктів та освітніх ситуацій поняття «розумний» має різні визначення. Констатовано, що в сучасній освітній системі більшості країн світу відбуваються докорінні змістові зміни, що роблять систему інакшою – smart-освітою. Визначено, що використання технологій smart-навчання відкриває багато нових можливостей у навчанні, які покращують концентрацію уваги учнів, прискорюють засвоєння навчального матеріалу і, як наслідок, підвищують успішність кожного учня. На основі досліджень запропоновано чотири рівні здібностей, якими мають оволодіти студенти, щоб задовольнити потреби сучасного суспільства. Охарактеризовано основні переваги «розумного навчання» в освітньому процесі, найпоширеніші серед яких: безперервність навчального процесу й цілісність навчальної інформації, мобільність (незалежність від часу та місця навчання), автономність педагогічного працівника студента. Стаття має практичне значення для фахівців освітніх установ, педагогів, оскільки вміщений у ній матеріал сприятиме покращенню професійної підготовки спеціалістів, а також для учених та студентів під час пошуку способів удосконалення нових складників, методик та технологій навчання

Ключові слова: smart-освіта; smart-технології; дистанційне навчання; спеціаліст; основні переваги smart-навчання; рівні здібностей

UDC 37.09

DOI: 10.52534/msu-pp1.2023.39

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Distance learning as a relevant educational technology in higher education institutions

Article's History:

Received: 02.12.22

Revised: 04.03.23

Accepted: 31.03.23

Suggested Citation:

Nestulya, S., & Shara, S. (2023). Distance learning as a relevant educational technology in higher education institutions. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 39-46. doi: 10.52534/msu-pp1.2023.39.

Abstract. The relevance of the subject is conditioned upon the fact that the current conditions, namely the COVID-19 epidemic and the introduction of martial law in Ukraine, cause dynamic changes in various spheres of human activity, including education. Despite internal and external obstacles, the educational process does not stop, and there is a need to adapt to large-scale changes in the country. The educational sector has transformed from the conventional form of the educational process, namely face-to-face, to online distance learning. Considering this, the purpose of the study is to analyse the peculiarities of implementing the distance learning process in a higher education institution in Ukraine, namely, the Higher Educational Institution of the Ukoopsilka "Poltava University of Economics and Trade". For a broad understanding of the problem and outlining the prospects for a quality educational process in the context of global processes, the study used several methods, including analysis, synthesis, deduction and surveys. The study outlines the main changes implemented by the management of higher education institutions in response to the social challenges posed by the pandemic and war. The effectiveness of using special programmes during training sessions in the distance education process is assessed. The flexibility of the educational sphere is substantiated, and the advantages and disadvantages of distance learning in terms of the quality of education are identified. The results of a student survey reflecting the real attitude of students to online learning are presented. The practical value of the work is that its results can be used by teachers to select high-quality tools designed to implement learning tasks in a distance educational format

Keywords: pandemic; digitalisation; training; university; acquisition of professional competence

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INTRODUCTION

The history of distance learning dates back to the 19th century, and it was from that period that its various forms began to gain popularity and development. As for Ukraine, it was not typical to use this approach to organise the educational process, as the conventional form usually prevailed.

Attempts to introduce distance learning tools into the higher education system have been made since the early 2000s, but they have not gained much traction. To a large extent, it is caused by distrust on the part of the management of educational institutions, and students themselves, in the



possibility of acquiring quality knowledge remotely. However, the situation in the Ukrainian educational environment has changed dramatically due to the spread of the acute respiratory disease COVID-19 and the introduction of quarantine restrictions in 2020 (Nazarenko & Polishchuk, 2021).

It was from this period that the problem of distance learning as an effective approach to the organisation of the educational process began to receive special attention in scientific discourse. It has been examined by scholars from various fields: educators, sociologists, lawyers, psychologists, etc. Their interest was driven by the measures implemented by the state authorities, as all educational entities were obliged to switch to distance learning. However, as noted by researchers L. Vasilchenko & N. Shatska (2021), there are not yet sufficiently effective organisational solutions for the organisation of the distance educational process, and yet several teachers are looking for innovations in this area. In addition, after the pandemic's spread declined and quarantine restrictions were lifted, the question of the feasibility of using distance learning is still relevant for Ukraine (Perepelytsia, 2022). The war unleashed by Russia has complicated, and in some areas made impossible, the traditional face-to-face educational process.

In particular, G.A. El Refae *et al.* (2021) in their study explained the content of the concept of distance learning, and its structural elements. The researchers were able to identify the significance of this mechanism and consider the approaches based on which it is implemented. L. Branchetti *et al.* (2021) proved the prospects of the distance learning process and argued that it is more effective than the conventional one. Therefore, these scholars described the benefits of using this approach in modern social conditions, especially in higher education institutions. The opposite position was demonstrated by G. Debeş (2021), as she identified the disadvantages of distance learning, in particular in the context of acquiring professional knowledge and skills. The author examined this issue from the standpoint of the quality of the educational process in a distance format and explored the level of professional competence acquired by students. E. Arthur-Nyarko *et al.* (2020) analysed the priority approaches and tools that can be used to deliver training and consultations remotely. Researchers support this approach and note that it is more rational than the conventional one. M. Wotto (2020) in her research examined the international experience of using distance learning. Based on the conclusions of the analysis, she described the priority measures that should be taken in the Ukrainian educational environment to ensure that the distance learning process is highly effective. It is important that the researcher was able to establish the impact of digitalisation on society and justify the learning activities of citizens. She noted that distance learning is an effective mechanism for the future development of the information state.

The author of this study defined the purpose of the research, which was to analyse the features of the distance learning process and to substantiate its effectiveness as

an educational technology within higher education institutions. To achieve this purpose, the following tasks have been set: to define the content of the concept of "distance learning", to consider its structure and properties, to explore the advantages and disadvantages of this approach, to examine the tools for introducing and implementing a distance learning in higher education institutions of Ukraine, to propose ways to improve the quality of higher education in the context of distance learning and active processes of European integration.

MATERIALS AND METHODS

The method of analysis was used at the beginning of the work to conduct a thorough study of distance learning, namely to identify its features and characteristics. It was used to analyse the structure and principles underlying the above mechanism. The method of synthesis was used to describe the theoretical positions that were identified during the analysis. It was possible to establish a link between the concepts of "distance learning" and "educational technology".

In addition, the study used the method of deduction, which was responsible for the development of its logical structure. Accordingly, at the beginning of the work, a general analysis was conducted, which was expressed in the theoretical study of the main concepts related to its object. Further, specific provisions relating to distance learning within higher education institutions in Ukraine were examined, namely, the specifics of its implementation. Priority means for its improvement in the future have been identified, and recommendations for improving the quality of distance learning in Ukrainian higher education institutions have been developed.

The survey method was used to develop the empirical component of the research. In particular, a survey was conducted among master's students majoring in 011 "Educational Pedagogical Sciences", specialising in "Higher Education Pedagogy" at the Department of Pedagogy and Social Sciences at Poltava University of Economics and Trade. The respondents were 21-23 years old, including 15 girls and 15 boys. The survey asked 3 questions, namely: "Are you satisfied with the quality of the distance learning process?", "Do you want to receive professional knowledge in the future in the distance learning mode?", "Does the form of the learning process affect the level of professional competence?". The results obtained during this process are presented in percentage terms.

All procedures conducted in research involving people complied with ethical standards, did not violate the honour and dignity of respondents, considered the age of the respondents and preserved the anonymity of the results. In the course of the survey, the interviewer adhered to the provisions of the recommendations on the ethical aspect of conducting pedagogical research developed by reputable organisations, including the American Educational Research Association (2011) and the British Educational Research Association (2018).

RESULTS

The concept of distance learning and its main advantages

The concept of “distance learning” should be understood as a modernised educational process implemented based on the latest digital and telecommunication programmes that provide the subjects of the educational environment with the opportunity to engage in learning activities remotely, namely in the absence of physical interaction between them. To characterise the features of this mechanism, and to identify its main advantages and disadvantages, the author focuses on its attributes.

First of all, it was found that distance learning is characterised by flexibility. This property is expressed in the possibility for subjects to acquire knowledge and skills at a place and time convenient for them. This aspect is especially important for students of higher education institutions, as they have the opportunity to combine academic activities with practical ones in the form of internships or full-time employment. Thus, it allows them to immediately master a broad base of theoretical knowledge and implement it in life, during their professional activities (Dietrich *et al.*, 2020).

Another feature of distance learning as an educational technology is modularity. It consists in dividing the curriculum into relevant modules that deal with different subjects of the same discipline. According to the authors, this approach allows students to develop a full understanding of the content of a particular subject area in a particular course. In turn, teachers are able to teach courses individually or in groups, according to the approach chosen by students.

In addition, notably, the high cost-effectiveness of the distance learning process, which is an advantage for all actors in the educational environment. In particular, students get the opportunity to save their time and resources, which they usually spend on travelling to higher education institutions. Teachers are empowered to manage their own resources rationally, using them to their maximum effectiveness (Chen *et al.*, 2021).

A particular feature of distance learning that characterises it as a modernised and up-to-date educational technology is the changing role and importance of the teacher in this process. This property demonstrates the improvement of the learning environment in accordance with the conditions of modernity, and the specifics of social ties. During distance learning, the teacher appears to students as a subject of providing information and presenting educational material and as a guide who analyses the learning process and seeks to help students. What is fundamentally new is that the relationship between the above-mentioned entities develops both during classes and in the course of additional consultations, which certainly has a positive impact on the quality of the educational process (Branekova, 2020).

Adverse aspects of distance learning and their impact on the professional competences of future specialists

In addition, the impact of distance learning on the student was characterised, since the distance learning process has

distinctive features from the conventional one in the context of the student's personal development. It is reflected in the fact that during distance education, students have to organise the learning process and distribute tasks to a greater extent on their own. In addition, distance learning has a significant impact on the development of the creative and intellectual potential of the student's personality, which is expressed in their desire to acquire additional knowledge and master new skills through using digital tools and the latest technologies (Garad *et al.*, 2021).

Therewith, for a qualitative analysis of distance learning as an educational technology, it is necessary to analyse its shortcomings. Such an approach is driven by the need to consider both the positive and adverse aspects of the distance learning process, and to provide a fair assessment of the latter (Migocka-Patrzałek *et al.*, 2021).

Distance learning cannot be implemented in the absence of special digital devices and communications. In this context, this means a personal computer or laptop, and a stable internet connection that the student can use freely. These tools ensure the implementation of learning activities, and in the absence of at least one of them, learning is impossible. Another disadvantage is the lack of “live communication”, which is an important component of communication between the subjects of the educational process. Some students prefer face-to-face learning precisely due to the unhindered interaction with the teacher and other students.

However, these shortcomings are not significant, as it is possible to develop conditions under which they will not affect the learning process. Regarding the first comment, which concerns internet connectivity, all cities in Ukraine that are not under occupation by the Russian army have mobile networks and internet providers that allow users, including students, to have both wired and wireless access to the internet. To support communication and communication between teachers and students, additional online meetings can be organised for consultations on the subject or free extracurricular communication between the subjects of the educational process (Sousa & da Silva, 2020).

However, distance learning has a significant drawback that makes it virtually impossible to use in some cases. First and foremost, it is about training specialists in areas that require the perfect development of practical skills. Such specialities include medical, technical, natural and other fields that require a high need to acquire knowledge and skills related to using special tools, devices and technologies. Therefore, the main activity of students enrolled in such specialities is laboratory and practical work. This indicates an urgent need to practice the acquired skills and acquire professional competence. Admittedly, there are a number of digital and virtual reality tools available nowadays that students can use to develop their practical skills. However, this approach is not perfect and cannot guarantee the high quality of knowledge acquired by students (Brady & Pradhan, 2020).

The state of implementation of distance learning at Poltava University of Economics and Trade (PUET)

Based on the analysis of the advantages and disadvantages of distance learning, it can be established that it is currently a priority for society and has a high potential for possible use in the future. It was established that for a certain number of professional areas and, accordingly, academic specialities, it is necessary and mandatory for students to conduct laboratory classes and acquire the necessary practical skills.

As such an educational institution as the Higher Educational Institution of the Ukoopsilka "Poltava University of Economics and Trade" (PUET), it actively uses a distance approach to the organisation of the educational process. In particular, the experience of using distance learning in this institution reaches 13 years, which indicates its priority. Moreover, about 25,000 students from different territorial units received education based on distance and information technologies. The contribution of PUET lecturers to the development of the distance Ukrainian educational environment is important, as they have managed to develop more than 2000 distance courses. In addition, local PUET distance education centres are located in 10 Ukrainian cities, which certainly allows asserting the active activity of the educational institution and the desire for development, including through

distance approaches (Main Distance Learning Centre of the Poltava University of Economics and Trade, 2022).

In addition, the principles underlying distance learning at PUET should be analysed. First of all, each student is given a personal page in the e-learning system. The sequence of training is expressed in the development of a schedule of classes in the disciplines provided by the training course. It is important to visualise the progress of knowledge acquisition during distance learning, and demonstrate the grade book. Priority is given to using a virtual record book and conducting an exam session remotely via online conferences. As for the student's presence at the university, it is mandatory only during the submission of documents and final certification.

To complete the assessment and define distance learning as an educational technology, a survey was conducted among master's students of Poltava University of Economics and Trade. The following results were obtained for the first question ("Are you satisfied with the quality of the distance learning process?"): 87% of respondents chose the answer "yes", 13% – "no". To the question "Would you like to receive professional knowledge in a distance form in the future?" 91% of respondents answered "yes", while 9% preferred the conventional form of education. The results of the third question ("Does the form of the educational process affect the level of professional competence?") were as follows: 79% of students answered "yes", 21% – "no" (Fig. 1).

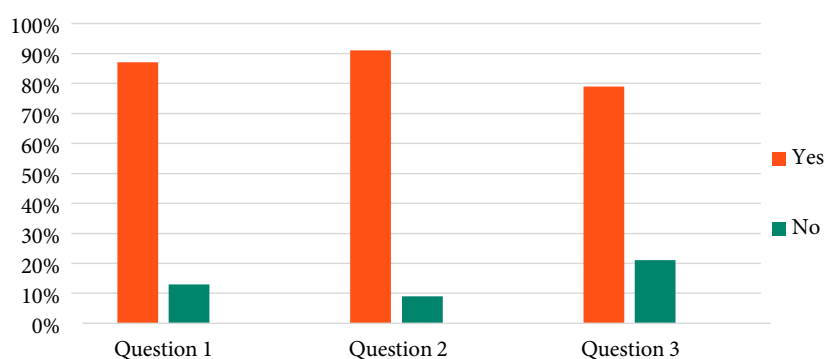


Figure 1. Results of the survey among PUET master students

Thus, it can be established that students express satisfaction with distance learning and consider it a priority for future use.

DISCUSSION

P. Faisal & Z. Kisman (2020) paid special attention to effective tools that can be used to conduct the learning process in a distance format. They stressed the priority of cloud environments, namely the possibility of storing educational materials in them for use by a large number of students. The researchers argued that this way, it is convenient to use information from any digital device, which allows learning anywhere. In addition, these scientists believe that such an approach will accelerate the optimisation and increase the efficiency of the process of transitioning educational activities from conventional to distance learning. According to

the author of this research, using cloud environments is an important tool in distance learning. He agrees with this position and believes that in this way, it is possible to speed up the exchange of information between the subjects of the educational process and make it more accessible.

T. Corlatean (2020) expresses an adverse attitude to the implementation of the educational process in a distance format. He highlighted the main risks that can arise during distance learning. The researcher is convinced that the quality of students' professional knowledge and competence is significantly deteriorating as a result of remote learning and the inability to develop practical skills. In addition, the researcher emphasises the inability of the teacher to exercise full control over the activities of students during classes and to objectively determine their level of knowledge. However, it is difficult to agree with the statements

made by T. Corlatean, as most of them are not true. In particular, the author of this research observes no difference in the levels of efficiency and quality of education in distance and face-to-face learning. In addition, it is impossible to agree with the researcher's position that there is no control over the educational process by the teacher, as today there are platforms that allow monitoring the actions of students during classes and tests.

The scientific work of E. Daroedono *et al.* (2020), in which the researchers focused on approaches to the acquisition of knowledge by students in medical specialties in distance learning. The authors noted that this process was implemented quite effectively at the beginning of the pandemic and continues to develop at the present stage. Therefore, it was possible for both teachers and students to perform the assigned learning tasks. It is because teachers can teach educational materials in several formats at once: video, audio, or text, and students can choose the most convenient way to work with them. For future doctors, it is extremely important to acquire and develop practical skills, which are achieved through using special computer programmes and virtual reality technologies. They allow students both to acquire new practical skills and to work with modern technologies and tools that will be essential in their future professional activities. This position can be partially agreed with, but it should be noted that the entire process of training medical specialists cannot be implemented through distance learning, as there is an objective need for laboratory and control classes.

M. Kuldashv *et al.* (2021) described the main problems faced by teachers and students in the course of distance learning activities. The authors focused mostly on technical shortcomings, but they did not ignore personal ones. The researchers highlighted the problems that arose as a result of overloading local servers in higher education institutions. In addition, they outlined problems with the Internet connection that hampered the training sessions. As for personal shortcomings, they include the low degree of computer literacy of the subjects of the educational process and their psychological unpreparedness for work in such conditions. These shortcomings can be considered reasonable, but, notably, they can be resolved and eliminated, which will certainly improve distance learning.

I. Bakhov *et al.* (2021) managed to describe the approaches that are prioritised for the development of the educational distance environment in Ukraine. Their recommendations are largely based on international experience and relate to reforming the entire educational process. First of all, the authors note the necessity to consolidate the role and place of information and communication technologies in the educational sphere at the legislative level as a way to further its development. In addition, the development and support of a systemic Ukrainian educational and scientific information mechanism, which would include telecommunications infrastructure, digital resources, virtual library services, and information and analytical tools for managing the educational environment. Notably, these approaches are

rather general, and the researchers did not identify specific ways to implement them. Thus, the proposed positions can be partially agreed with, but they should be more specific.

The development of distance learning in Ukraine was explored by V. Shevchenko *et al.* (2021). In their research, they described the current problems that are typical for Ukrainian society in the field of distance education. The researchers focused on such shortcomings as the lack of appropriate budgetary support for the development of distance learning tools, and other elements that are part of the structure of the educational and scientific information system. They argue for the necessity of developing and implementing consistent multi-vector financing of information and communication technologies used in distance learning activities. The proposed ideas are indeed quite a priority, as they will have a positive impact on the implementation of distance learning activities in Ukraine.

In terms of tangential surveys among students, such a study was conducted, for example, by N.O. Terenda *et al.* (2020) at the I.Ya. Horbachevsky Ternopil National University of the Ministry of Health of Ukraine. The results obtained by these researchers confirm that students are mostly satisfied with online learning. The majority of participants in the survey have a generally good attitude to distance learning and name only a few of its shortcomings, find it easy to learn the material, have access to consultations, and in most cases receive comprehensive answers to their questions. In addition, students note that in the learning process they mainly use electronic materials received from teachers, although they have many comments on these educational sources.

Most of the shortcomings mentioned by students were subjective, and the level of obstacles is closely related to self-motivation and the ability to self-organise. However, notably, the majority of respondents (42.3%), although they are quite successful in studying remotely, would like to return to conventional education. 28.8% want to learn remotely, and the rest cannot answer this question (Terenda *et al.*, 2020). These results are very different from those obtained by the authors of this study. These differences can be explained by the fact that over the past two years, significant positive changes have occurred in the Ukrainian educational process and the level of distance learning has increased significantly. On the other hand, over time, this form of education has become more familiar to students, and they have been able to better adapt to the challenges of the modern world. Thus, in general, it can be concluded that distance learning has been quite successful and the existing problems are gradually being resolved.

Thus, the discussion revealed the main problems facing Ukrainian society and the ways to overcome them. It indicates the priority of developing approaches and tools for distance learning in the future, under normal external social conditions.

CONCLUSIONS

The study established that distance learning is indeed a relevant educational technology that should be used in higher

education institutions in Ukraine. The research has succeeded in establishing the content of the concept of “distance learning”, which includes the educational process that occurs in the absence of physical contact between students and teachers, through information and communication technologies. In addition, it was possible to explore the features inherent in the above-mentioned form of the educational process. These included flexibility, modularity, reforming the role of the teacher in educational activities, and effective influence on the student's personality. All of them were disclosed and considered, which allowed describing the vectors of distance learning.

However, for a qualitative assessment of the distance learning process, the authors considered its adverse properties. The authors described the dependence on the availability of unimpeded access to the Internet and digital devices for the subjects of educational activities and the lack of “live communication” between students and teachers. Therewith, the author suggests ways to overcome and avoid them, which gives grounds to assert that the above shortcomings are not significant. In addition, the research notes that there is a list of specialities that require practical training of specialists, namely, compulsory training. In this case,

it is impossible to completely replace the conventional form of the educational process.

To determine the subjective attitude of students to distance learning, a survey was conducted among master's students enrolled in the speciality “Higher Education Pedagogy” at the Department of Pedagogy and Social Sciences at Poltava University of Economics and Trade. The survey had certain limitations, including quantitative (only master's students were involved in data collection) and geographical (the research was conducted within one educational institution). Accordingly, the level of satisfaction with the quality of education received was determined, and it was established that using distance learning in the future is a priority approach. Therefore, in the following works, it is appropriate to consider effective ways for medical students to perform learning activities in a distance form, and qualitative testing of their skills.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] American Educational Research Association. (2011). *Code of ethics*. Retrieved from [https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics\(1\).pdf](https://www.aera.net/Portals/38/docs/About_AERA/CodeOfEthics(1).pdf).
- [2] Arthur-Nyarko, E., Agyei, D.D., & Armah, J.K. (2020). Digitizing distance learning materials: Measuring students' readiness and intended challenges. *Education and Information Technologies*, 25(4), 2987-3002. doi: 10.1007/s10639-019-10060-y.
- [3] Bakhov, I., Opolska, N., Bogus, M., Anishchenko, V., & Biryukova, Y. (2021). Emergency distance education in the conditions of COVID-19 pandemic: Experience of Ukrainian universities. *Education Sciences*, 11(7), article number 364. doi: 10.3390/educsci11070364.
- [4] Brady, A.K., & Pradhan, D. (2020). Learning without borders: asynchronous and distance learning in the age of COVID-19 and beyond. *ATS Scholar*, 1(3), 233-242. doi: 10.34197/ats-scholar.2020-0046PS.
- [5] Branchetti, L., Capone, R., & Rossi, M.L. (2021). Distance-learning goes viral: Redefining the teaching boundaries in the transformative pedagogy perspective. *Journal of E-Learning and Knowledge Society*, 17(2), 32-44. doi: 10.20368/1971-8829/1135418.
- [6] Branekova, D. (2020). The successful model of distance learning. *Trakia Journal of Sciences*, 18(S1), 275-284. doi: 10.15547/tjs.2020.s.01.047.
- [7] British Educational Research Association. (2018). *Ethical guidelines for educational research* (4th ed.). London.
- [8] Chen, E., Kaczmarek, K., & Ohshima, H. (2021). Student perceptions of distance learning strategies during COVID-19. *Journal of Dental Education*, 85(S1), 1190-1191. doi: 10.1002/jdd.12339.
- [9] Corlatean, T. (2020). Risks, discrimination and opportunities for education during the times of COVID-19 pandemic. In *Proceedings of the 17th International RAIS conference on social sciences and humanities* (pp. 37-46). Research Association for Interdisciplinary Studies. doi: 10.5281/zenodo.3909867.
- [10] Daroedono, E., Siagian, F.E., Alfarabi, M., Cing, J.M., Arodes, E.S., Sirait, R.H., Suryowati, T., Sunarti, L.S., Ahmad, L.N., Wiyanto, M., Kurniaty, L., & Hutabarat, R.S.O. (2020). The impact of COVID-19 on medical education: Our students perception on the practice of long distance learning. *International Journal of Community Medicine and Public Health*, 7(7), 2790-2796. doi: 10.18203/2394-6040.ijcmph20202545.
- [11] Debeş, G. (2021). *Distance learning in higher education during the COVID-19 pandemic: Advantages and disadvantages*. *International Journal of Curriculum and Instruction*, 13(2), 1109-1118.
- [12] Dietrich, N., Kentheswaran, K., Ahmadi, A., Teychené, J., Bessière, Y., Alfenore, S., Laborie, S., Bastoul, D., Loubière, K., Guigui, C., Sperandio, M., Barna, L., Paul, E., Cabassud, C., Liné, A., & Hébrard, G. (2020). Attempts, successes, and failures of distance learning in the time of COVID-19. *Journal of Chemical Education*, 97(9), 2448-2457. doi: 10.1021/acs.jchemed.0c00717.

- [13] El Refae, G.A., Kaba, A., & Eletter, S. (2021). Distance learning during COVID-19 pandemic: Satisfaction, opportunities and challenges as perceived by faculty members and students. *Interactive Technology and Smart Education*, 18(3), 298-318. doi: [10.1108/ITSE-08-2020-0128](https://doi.org/10.1108/ITSE-08-2020-0128).
- [14] Faisal, P., & Kisman, Z. (2020). Information and communication technology utilization effectiveness in distance education systems. *International Journal of Engineering Business Management*, 12. doi: [10.1177/1847979020911872](https://doi.org/10.1177/1847979020911872).
- [15] Garad, A., Al-Ansi, A.M., & Qamari, I.N. (2021). The role of e-learning infrastructure and cognitive competence in distance learning effectiveness during the Covid-19 pandemic. *Cakrawala Pendidikan*, 40(1), 81-91. doi: [10.21831/cp.v40i1.33474](https://doi.org/10.21831/cp.v40i1.33474).
- [16] Kuldashev, M., Mukumova, M.Z., Sadikova, Y.S., Mirzayev, D.Ya., & Mirzayeva, M.H. qizi. (2021). Problems of quality of distance learning online. *Linguistics and Culture Review*, 5(4), 2439-2443. doi: [10.21744/lingcure.v5nS4.1993](https://doi.org/10.21744/lingcure.v5nS4.1993).
- [17] Main Distance Learning Center of the Poltava University of Economics and Trade. (2022). *How the distance education process works*. Retrieved from <https://el.puet.edu.ua>.
- [18] Migocka-Patrzałek, M., Dubińska-Magiera, M., Krysiński, D., & Nowicki, S. (2021). The attitude of the academic community towards distance learning: A lesson from a national lockdown. *Electronic Journal of E-Learning*, 19(4; Part 1), 262-281. doi: [10.34190/ejel.19.4.2405](https://doi.org/10.34190/ejel.19.4.2405).
- [19] Nazarenko, Yu., & Polishchuk, O. (2021). *Education in pandemic conditions in 2020/2021: Analysis of problems and consequences*. Retrieved from <https://cedos.org.ua/researches/osvita-v-umovah-pandemiyi-analiz-problem-i-naslidkiv/>.
- [20] Perepelytsia, T. (2022). *Distance learning and war: How will the experience of the pandemic help Ukrainian education?* Retrieved from <https://dif.org.ua/article/distance-learning>.
- [21] Shevchenko, V., Malysh, N., & Tkachuk-Miroshnychenko, O. (2021). Distance learning in Ukraine in COVID-19 emergency. *The Journal of Open, Distance and E-Learning*. doi: [10.1080/02680513.2021.1967115](https://doi.org/10.1080/02680513.2021.1967115).
- [22] Sousa, O.C., & da Silva, R.F. (2020). [Contributions of technology to distance learning: How the university will need to reinvent itself to face the challenges of the 21st century](https://doi.org/10.1080/02680513.2021.1967115). *Revista Espacios*, 41(02), 21.
- [23] Terenda, N.O., Terenda, O.A., Horishnyi, M.I., & Panchyshyn, N.Ya. (2020). Features of distance learning of students in the conditions of the COVID-19 pandemic (According to the results of the survey). *Medical Education*, 4, 57-60. doi: [10.11603/me.2414-5998.2020.4.11661](https://doi.org/10.11603/me.2414-5998.2020.4.11661).
- [24] Vasilchenko, L., & Shatska, N. (2021). Implementation experience of distance learning under the circumstances of the pandemic. *Open Educational E-Environment of Modern University*, 10, 43-55. doi: [10.28925/2414-0325.2021.105](https://doi.org/10.28925/2414-0325.2021.105).
- [25] Wotto, M. (2020). The future high education distance learning in Canada, the United States, and France: Insights from before COVID-19 secondary data analysis. *Journal of Educational Technology Systems*, 49(2), 262-281. doi: [10.1177/0047239520940624](https://doi.org/10.1177/0047239520940624).

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Дистанційне навчання як актуальна освітня технологія в закладах вищої освіти

Анотація. Актуальність теми зумовлено тим, що сучасні умови, а саме епідемія COVID-19, а також введення воєнного стану на території України, зумовлюють динамічні зміни, що стосуються різних сфер життя людської діяльності, зокрема освітньої. Незважаючи на внутрішні й зовнішні перешкоди освітній процес не зупиняється і є потреба підлаштовуватися під масштабні зміни в країні. Освітня сфера трансформувалася від традиційної форми навчального процесу, а саме очної, до дистанційної в режимі онлайн. З огляду на це сформульовано мету дослідження, що полягала в аналізі особливостей реалізації навчального процесу дистанційного формату в закладі вищої освіти України, а саме у Вищому навчальному закладі Укоопспілки «Полтавський університет економіки і торгівлі». Задля широкого розуміння проблеми та окреслення перспектив якісного освітнього процесу в умовах глобальних процесів у дослідженні використано низку методів, серед яких: аналіз, синтез, дедукція та опитування. У результаті дослідження схарактеризовано основні зміни, які реалізувало керівництво вищих навчальних закладів у відповідь на суспільні виклики, що постали під час пандемії та війни. Проведено оцінку ефективності використання спеціальних програм під час навчальних занять у дистанційному освітньому процесі. Обґрунтовано гнучкість освітньої сфери, а також визначено переваги й недоліки дистанційного навчання, які стосуються якості освіти. Представлено результати опитування студентів, що відображають реальне ставлення здобувачів освіти до онлайн-навчання. Практична цінність роботи полягає в тому, що її результати викладачі можуть використати для підбору якісних інструментів, призначених для реалізації навчальних завдань у дистанційному освітньому форматі.

Ключові слова: пандемія; цифровізація; підготовка фахівців; університет; набуття професійної компетенції

UDC 378:377:780.616.432-048.23]159.943

DOI: 10.52534/msu-pp1.2023.47

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Psychophysiological factors of effective development of piano technique of future music teachers

Article's History:

Received: 30.11.22

Revised: 25.02.23

Accepted: 31.03.23

Suggested Citation:

Novosiadla, I. (2023). Psychophysiological factors of effective development of piano technique of future music teachers. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 47-58. doi: 10.52534/msu-pp1.2023.47.

Abstract. The results of successful training of students of music and pedagogy at piano lessons depend on their technical level, and possession of an entire range of skills for the implementation of performance tasks. However, effective development is hindered by psychophysiological factors, namely excessive hand clenching, the inability to rationally use the necessary muscle groups and to distribute the load on the body in a balanced manner. The purpose of the study is to analyse the process of development of performance skills through the understanding of psychophysiological characteristics. The methodological basis was established by the works of Ukrainian and foreign scholars, pianists and teachers. A set of methods was used to solve the tasks: analysis, systematisation, classification, and generalisation of pedagogical experience. Descriptive and didactic methods were used to outline technical performance problems and ways to solve them; the method of pedagogical observation was used to test and confirm the effectiveness of the chosen methodology. The research emphasises the key points of correction of body posture, which help to eliminate excessive stiffness of movements, and overstrain of weaker muscle groups and have a positive impact on the development of performing freedom. First and foremost, it's about sitting properly at the tool, developing a sense of the weight of the hand at rest and during lifting. The research offers tested exercises that ensure the fixation of optimal muscle sensations in the shoulder girdle area, especially in the area of the scapula and shoulder joint, during various arm movements. Another common problem is insufficient attention to the functioning of the finger extensor muscles, which impedes the development of their dexterity and independence and causes wrist stiffness. The significance of educating students to consciously master primary motor skills based on specific muscle sensations is substantiated. The results of the study prove that a certain algorithm of actions in the setting of the game apparatus and the correction of deficiencies can ensure the stability of performing freedom, self-control and self-regulation of motor actions

Keywords: music pedagogy; formation of technical skills; organisation of playing movements; tension and relaxation of muscles; sitting at the instrument; self-control of motor actions

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INTRODUCTION

Modern perspectives on the problem of developing technical skills have emerged as a result of a rethinking of the historical process of piano pedagogy and performance. Nowadays, the question of the relationship between a pianist's technique and psychophysiological characteristics is

becoming increasingly important at different stages of music performance training: from the initial period to the acquisition of professional skills. The development of piano technique involves the coordination of mental processes with appropriate physical movements. All the mental processes



of a pianist's performing actions are manifested in the work of the muscles, in changes in muscle tone. In the 19th century, the connection of muscle movements with the human psyche, namely, the unity of the cognitive process and motor functions, began to be referred to in physiology as "psychomotor skills". In modern science, psychomotor skills are frequently interpreted as "motor activity", "motor activity", "movement physiology", etc. However, it is not just about physical movements but a complex system that encompasses physiological and mental properties. From this, it can be concluded that the pianist's psychomotor skills are a set of actions caused by psychophysiological factors that determine the effectiveness of the development of piano technique.

The development of a pianist's technique is a long and energy-consuming process that begins with mastering basic performance movements and, in fact, never ends, as achieving even a seemingly absolute level of technical skill has no limits to perfection. The quality of pianistic skills, speed and mastery in mastering them depend on how professionally competent and responsible the approach to the organisation of playing movements was at the initial stage of mastering the skills of playing the instrument, which would consider the anatomical and physiological features of the musculoskeletal and muscular system of the body. Insufficient awareness of this frequently leads to disastrous consequences: it causes technical difficulties for beginners, making them reluctant to continue their studies, and for professional performers, it can lead to various hand diseases (epicondylitis, bursitis, tendonitis, etc.). In addition, it is impossible to develop its organic connection with the emotional and auditory spheres without adjusting the motor sphere.

Currently, in higher music and pedagogical education, there is a situation where students with different levels of pre-university training in piano skills are enrolled: graduates of primary music schools, professional colleges, and those who have learned to play the piano on their own. The development of future music teachers' professional competences requires them to possess knowledge and skills that they can pass on to their students. Thus, it is crucial for them to realise the relationship between the effective results of piano training and the psychophysiological characteristics of the performance process, to learn self-control and self-regulation.

A prerequisite for the development of performing skills of piano students with a low level of pre-university training, as noted by A. Grinchenko (2022), is to consider physiological and psychological characteristics. The author considers auditory-motor coordination to be one of the pianist's synthesised skills, which is designed to subordinate motor actions to auditory representations. In her opinion, "lack of or insufficient coordination is manifested in 'clumsiness' and unnecessary movements when playing. It is a skill that can only be developed by exercising self-control...". This opinion is confirmed by L. Guseynova (2020), who believes that "technical obstacles should be overcome through the active participation of consciousness" and that this process consists of the ability to analyse the causes of technical

failures and choose the right methods to eliminate them. But in both studies, insufficient attention is paid to the root causes of performance shortcomings – flaws in the staging of piano movements, which provoke the existing problems and require appropriate methods of correction.

A fundamentally different approach is demonstrated in the research project of R. Niu (2020), in which he examines the causes of physiological injuries based on research data on the specifics of piano pedagogy and performance in China. The author considers the correct position of the instrument and the development of important and useful habits for playing the piano as the main condition for preventing injuries and chronic diseases of the musculoskeletal system. The results of his research aroused a deeper interest in this subject and served as a factor in my analytical judgements, which are presented below.

The purpose of the proposed study is to consider a proven approach, which consists of the rational, appropriate use of muscles and helps piano students to effectively develop their performance skills, and to protect them from undesirable injuries.

LITERATURE REVIEW

The perfect psychomotor self-regulation at all levels of its organisation: mental, sensory and motor – as an obligatory component of music performance activity was emphasised by K. Martinsen (1966). At the beginning of the 20th century, a prominent psychophysiological, founder of the scientific theory of psychophysiological organisation and regulation of movements N. Bernshtein (1967) considered the problem of coordination of various components forming a complex structure of human motor actions to be one of the main ones in music pedagogy, noting that most technical defects that occur during piano playing are the result of inconsistencies in the work of the main links of the student's psychophysiological apparatus. M. Bernstein's research was continued by the theory of V. Sradzhev (1987) on the coordination of movements at different levels of psychomotor activity, which became an important stage in the improvement of piano technical skills.

An analysis of contemporary works by Ukrainian scholars in the field of piano performance and music pedagogy demonstrates that the problem of the influence of psychophysiological factors on pianistic qualities and the development of performance skills is the least explored. Evidently, it is caused by the fact that, as is known from the history of piano pedagogy, there was no single scientific and methodological approach to the problem of technical development. Each of the schools of piano technique development – mechanical, anatomical and physiological, and psychotechnical – denied the basic assumptions of each other, promoting their ideas. Currently, scientific studies are appearing whose authors, based on these different, sometimes opposing, ideas, are trying to define universal key principles for the effective development of a pianist's technique and the existence of its components and analyse the internal relationships in this complex. The issue of pi-

ano technique – as a subject of scientific and methodological works of the leading piano teachers of Ukraine of the 20th century V. Shapiro and G. Beklemishev – is considered by N. Zymohlyad (2015). In particular, the author notes that analysing the work of the adherent of the anatomical and physiological school of P. Ramul, the prominent teacher, representative of the Kyiv piano school G. Beklemishev critically evaluated the author's attempts to subordinate performance movements to the laws of physiology and even considered them harmful to pianists, since, in his opinion, "constant attention to the active or passive state of the hand can cause psychological stiffness", while supporting the idea of analysing movements that the performer should "...fix, memorise them through repeated repetitions" (Zymohlyad, 2015).

Ye. Cherniak and S. Zankova (2017) highlight the theoretical and practical aspects of the development of future instrumentalists' performance techniques and classify historically established methods of working on its development (mechanistic, intuitive motor, conscious motor, conscious auditory), noting that all these methods in a single and interdependent process represent a psychophysiological approach, where there is a synthesis of consciousness and movements.

The problem of the ontogeny of performing skill in terms of functional detection of the process of automation of playing movements and motor memory of future music teachers is considered by V. Husak (2013). Based on a retrospective analysis of the scientific heritage, the author explores the psychological features of skilful playing, the role of mental processes in the development of performing skills, patterns, methods and techniques of its development in the process of instrumental training of students.

The psychophysiological features of the organism, which provide the necessary speed of motor reactions during playing, explain the innate ability of a performing musician to play skilfully G. Tsypin (1984): "Students are more or less naturally gifted in motor-technical terms, just as they are more or less capable in terms of musical hearing and rhythm. However, innate properties are only part of the story. The other, no less important, is related to learning," thus confirming the importance of considering psychophysiological factors in piano training.

The significance of technical development as a performing component in the education of the professional culture of a music teacher is emphasised by V. Irkliienko and N. Demyanko (2019). Therewith, Bing Wang's (2010) research proves that the analysis of scientific and methodological literature and practical experience has demonstrated the existence of several contradictions, in particular "between the bifunctionality of the future music teacher's performance technique and the unidirectionality of its development in the learning process". It confirms the author's opinion that the fundamental principles of performing the technique, which is based on the correct body position and organisation of piano movements, still receive little attention. Therewith, the development of piano technique is one of the priority tasks in the training of future music teachers.

Contemporary foreign scholars are much more active in demonstrating interest in the issue. Psychophysiological nature of piano movements and their coordination is emphasised by M. McLachlan (2014; 2017), J.I. Pozo (2022). In particular, highlighting the problem of the importance of psychological processes in music education, J. Pozo gives a positive assessment of the methodological principles that consist in the education of self-control and self-regulation of the student's performance actions. Such an approach focuses on the relationship between the student's movements and the instrument, namely how their movements can transform the sound produced by the instrument. The author emphasises that "...instead of giving instructions or closed explanations, the teacher encourages the student to make decisions, try to understand why things are happening and evaluate their actions". Among the innovative piano teaching methods analysed in the publication by Z. Ye Yang (2020), mentions the possibility of correcting performance movements using appropriate computer programmes. However, the author considers the principle of their work to be imperfect and emphasises the superiority of conventional methods of developing piano playing skills.

Research on the interdependence of pianistic qualities and psychophysiological factors has gone beyond the boundaries of music-pedagogical and artistic sciences and has become interdisciplinary. For example, the nature of neuroplasticity in somatosensory-motor integration functions through intensive piano training is considered by M. Hirano *et al.* (2020) together with other Japanese neuropsychologists.

Differences in the proprioceptive and motor functions of children who play the piano and those who have never played the instrument were analysed by Y.-T. Tseng *et al.* (2020) from Taiwan, proved the effectiveness of piano lessons in terms of their benefits to children's fine motor skills, provided the wrist is in the correct position.

The reaction of the back and forearm muscles when different pianists perform the same fragments of classical music was explored by a group of scientists from the Polytechnic University of Turin, Italy, in the laboratory of neuromuscular system engineering. The study they conducted using electrodynamic devices confirmed the initial hypothesis that improper functioning of the forearm flexor and extensor muscles potentially increases the risk of injury in professional pianists (A. Thio-Pera *et al.*, 2022).

A thorough study of the specific features of the piano technique in terms of the efficiency and economy of muscle use, according to their motor potential, for coordinated and smooth performing actions was conducted by B. James (2018). The scientist emphasises that "music performance is a complex sensorimotor behaviour that becomes automated through involvement of all motor and sensory areas of the brain through systematic practice with auditory feedback". The research analyses the organisation of the movement of various components that affect the technique of the game from the standpoint of biomechanics; the effect of gravitational force, which ensures the balance of the

torso in a sitting position and the regulation of performing movements, is considered.

The irrational use of muscles and excessive joint loading as causes of occupational diseases of the musculoskeletal system of pianists are analysed in the dissertations of L.F. Rayo (2020) and B.A. Lister-Sink (2015).

The analysis of the above sources demonstrates that piano technique is a constant process of improving movements, and the success of its development depends on the level of control over them, which consists both in making these movements automatic and in improving the quality of this automaticity, which cannot be achieved without considering the psychophysiological nature of performance actions.

MATERIALS AND METHODS

The study is based on the author's many years of experience in teaching piano to students of various categories: from beginners to students who are actively engaged in performing activities. For the past ten years, the author has been teaching students of the Faculty of Music and Pedagogy at a classical university who master performance skills, mastering the instrument at various levels (from beginner to advanced). The author's pedagogical observations over a long period allowed identifying common problems of students' technical development, identifying and characterising the most common causes of shortcomings. The methodology of developing the performance skills of future music teachers, which has been developed over the years, has allowed the development of the results presented in the research.

The methodological and theoretical foundation of the research is based on the works of prominent leading scholars in musicology, theory and methods of music and pedagogical education, piano teaching methods, psychophysiology, neuropsychology, and biomechanics. The criteria for selecting the literature are conditioned by the necessity to cover the outlined problem comprehensively, based on the basic pedagogical principles of piano technique development (Martinsen, 1966; Gat, 1968; Tsy-pin, 1984; Sradzhev, 1987), and involving knowledge about the psychophysiological aspects of performing movements (Bernshtein, 1967; Mazel, 2001; Mark, 2003; Hall, 2004; Kokun, 2006; McLachlan, 2014, 2017, etc.), biomechanical regularities, which are crucial for the effectiveness of the training process, but are frequently ignored in solving technical problems in practice. To achieve this purpose, a set of theoretical and empirical methods was used. Using the methods of analysis, systematisation and comparison of the data obtained, generalisation of pedagogical experience, the current state of the problem in psychological and pedagogical, music and pedagogical and methodological literature is determined, and current trends in the piano training of students of music and pedagogical profile in Ukraine are considered. The application of these methods confirmed the need to revise the approach to the development of piano technique, which is based on conventional, outdated methodological principles and focuses on achieving the desired result through intensive, rather harmful, training. In

addition, the above methods allowed identifying alternative criteria for the development of performance skills (Lister-Sink, 2015; James, 2018; Niu, 2020; Rayo, 2020) based on the properties of psychophysiology and the laws of biomechanics and substantiating the methodological principles of their improvement. Using the classification method allowed identifying the reasons that hinder technical development and threaten the physical health of students: incorrect posture while sitting at the instrument, which adversely affects the muscles of the neck and lumbar spine and can cause spinal deformities; irrational methods of organising primary movements at the piano, which develop bad habits; inability to achieve complete relaxation, which causes stiffness of movement and overload of the joints; insufficient elasticity and mobility of the fingers due to improper functioning of the flexor-extensor muscles. The results of the study are based on the descriptive method: the cause-and-effect relationship of the above problems is considered, which consists in a violation of muscle balance and overload of joints, and therefore – clamping of the wrist and forearm, inability to achieve freedom and ease in performing technical tasks. Using the didactic method allowed for highlighting the “preventive” pedagogical approach, which demonstrates such methods of organising game movements that prevent the occurrence of the listed problems and ways to correct the existing shortcomings. The effectiveness of the proposed approach has been tested and confirmed using the method of pedagogical observation.

RESULTS AND DISCUSSION

According to the author's observations, majority of the students have forearm tension, stiffness of movements, and rapid fatigue of the muscles of the hands, which adversely affects the educational and creative process and the performance of artistic assignments. It is quite difficult to correct these shortcomings, especially for advanced students, when the established piano movements have become habits developed over the years and are caused by individual psychophysiological characteristics: temperament, behavioural style, physical structure of the body, some of which have psychosomatic manifestations.

Everyone who learns to play the piano, and any other musical instrument, perceives the hands as the main mechanism of the performance process and understands that the effective use of creative possibilities depends on their dexterity. Therewith, as noted by V. Mazel (2001), it should be remembered that “the hand is a part of the body, and its motor and power actions should be fully subordinated to the physiological laws of the human body”. Thus, when it comes to the basics of learning to play the piano, the question remains: what is more important and correct to “set” – the hands or the body. The author's opinion on the answer to this question is outlined below.

Experience demonstrates that many teachers pay great attention to hand posture without giving due importance to the entire body. In other words, the hands (“forearms”, “hands”, “fingers”) are used as the main instrument for

producing sound on the instrument in complete isolation from the stronger muscles of the body. By the time a student starts playing an instrument for the first time, it is not important whether they are a six-year-old child or a seventeen-year-old student, they have already developed a set of movements that they use in everyday life, such as sitting, waving their arms, raising and lowering them, etc. The problem is that when starting to learn to play the piano, it will be necessary to change your habits and cultivate the movements that will be needed to design and successfully develop your piano skills. Thus, the purpose of the initial lessons should be to thoroughly prepare the student's body for completely new motor sensations. Admittedly, the sooner this process occurs, the younger the performer, the faster it can be done, and the easier it is to learn new movements. The problem is complicated by the fact that a prerequisite for such a change is the cultivation of these habits in everyday life. The new sensations should be stable in all actions of the student, as using new movements only on the instrument will not give the desired results. According to O. Kokun (2006), a Doctor of Psychology, Professor, and author of a textbook on psychophysiology, "learning new motor skills, a person ('human being') develops new spatial models of the body, which constitute the foundation of a dynamic image". It is a long process that requires patience and perseverance, and exercises that will develop muscle connections that will correspond to new forms of movement will be useful.

Textbooks on psychophysiology define the following classification of muscle groups: very strong – legs, hips; strong – shoulder girdle area; relatively strong – forearm muscles; relatively weak – neck, hand; weak – fingers (O. Motuziuk *et al.*, 2017). Logically, the main load should be borne by the strong leg and back muscles – as a force generator. As for the back, its importance in the work of musicians, especially pianists, is crucial. The spine is the part of the nervous system that is in contact with all organs and systems. It sends signals if there is irrational use of muscles, their overstrain. Uncomfortable feelings or pain symptoms should not be ignored since, according to the world-renowned spine specialist, professor at the Canadian Spine Institute H. Hall (2004), "pain does not require treatment, it requires control. And understanding, awareness of this is the first step in solving the problem". In his opinion, back pain is not caused by external factors but by irrational actions of the person, namely: poor posture, uncomfortable working posture, overload in the muscular sphere, etc. For musicians, these factors are caused by poor body posture and improper hand movements while playing the instrument. According to Hall, poor posture and certain types of movements can cause muscle pain and spasms. These considerations are supported by T. Mark (2003), who believes that musicians' pain is the result of inefficient muscle use and harmful movements during performance.

First of all, the problem of slouching at the instrument cannot be ignored. The straighter the student's back is, the less stress is placed on the intervertebral discs, and therefore there is no discomfort in the back. The neck is particularly

important, as the areas of the cervical vertebrae are very delicate and the neck muscles are not strong enough to cope with the stress they have to bear when they are in the wrong position. The point is that when the head is strongly tilted forward, the cervical muscles overextend, unable to withstand the load exerted on them by the head. Nowadays, the problem of overstrain of the neck muscles is extremely relevant. Using smartphones and other gadgets leads to posture distortion and stooping: a posture with the head bent down at a strong angle is a typical phenomenon. It is especially dangerous for children and adolescents whose spine is still developing. As a result of this deformity, in addition to excessive tension of the neck muscles, blood circulation is disturbed, and nerve endings are pinched, which provokes the development of vegetative-vascular dystonia with severe headaches and dizziness. For beginner pianists, the habit of keeping their heads tilted extends to their seating position at the instrument, which adversely affects the development of performance skills. Foci of overstrain in the neck area are dangerous as they spread to other muscle groups, causing tightness in the muscles of the arms and back. Therefore, when sitting at the piano, it is necessary to ensure that the head, neck and back form a single line and perform synchronised movements, and if the performer needs to lean towards the keyboard, it should be done with the entire body, and not by bending the neck and head in isolation.

Another cause of back discomfort that Professor H. Hall (2004), is problems in the lumbar spine. Muscle balance in the waist area both helps to maintain good posture and redistributes stresses that could cause back strain, shifting it to the leg muscles. Notably, this allows both to relieve the back, especially the shoulder girdle, and helps to organise arm movements that require freedom and flexibility. To check whether the load is being redistributed correctly, the professor suggests the following exercise: sit down, straighten your back, and rest your thumbs on the bones of your pelvic joints. To ensure that the back position is correct, without discomfort in the lumbar region, and that the body is supported by the legs, the fingers should feel these protruding bones. If they "hide" in such a way that the fingers cannot rest on them, it means that the spine is curved and, accordingly, the load is transferred to the lower back instead of the legs. Posture development is a psychophysiological action that fosters fundamentally new sensations that should be remembered and recorded in a way that makes them familiar and every day.

When working with students, it is important to pay attention to how they sit at the instrument. Very frequently, it is necessary to correct the bad habit of hunching over while playing the piano, and crossing your legs under the chair (especially when the pedal is not used). Such a position causes unpleasant sensations since the entire load is placed on the lower back, adversely affects the sound quality and causes performance shortcomings. Therefore, the first thing to do is to focus the student's attention on the legs. The recommendations of the teacher of the Royal Northern College of Music in Manchester (England), concert pianist

M. McLachlan (2014) are reasonable and confirmed in the author's teaching activity. From the very first lessons, the teacher advises to develop the habit of sitting correctly on the instrument: for the body to have a single support, to transfer its weight to the legs, namely, to the heels of the feet. To do this, you need to sit on the edge of a chair and keep your feet not parallel but with your heels together (in the form of the English letter V). It is in this position that the weight of the body is transferred to the strongest muscle groups – legs and hips, while the body and arms have maximum freedom of movement. The development of a new posture of the student's body should be based on sensations that help to bring the upper body into a state of balanced equilibrium. It allows for correct posture and easy correction if necessary. After all, when working on the organisation of a student's playing movements, the teacher should always remember the dual nature of the movement process. It is necessary to achieve such a result when the student moves from a state of rest (stationary state) to motor actions with the minimum required expenditure of physical strength. And this is only possible when the upper part of the case is in a state of balanced equilibrium. It is a situation caused by the laws of biomechanics, as argued by B. James (2018): "The entire body is involved in the making of music, providing the playing actions and a stable base for unrestricted upper body movements. When the pelvis is fixed on the piano bench, the gravitational force transmitted from the lower back and pelvis to the legs provide stability for dynamic movements of the torso and arms – where the torso sways from front to back or side to side, and the arms are free to move in front, across and to the sides of the body. When the torso is tilted towards the keyboard, the shoulder complex is well positioned to apply force to the fingers to maintain a stable position on the keyboard."

The specificity of the musician's profession is that one has to constantly perform many different movements that are complex in sensation and form. In this regard, it is important to control particularly vulnerable joints, preventing them from excessively active independent movements. The cervical spine has already been mentioned, and improper flexion and extension of the joints of the hand and elbow are no less dangerous.

The shoulder joints are the most mobile and enduring, supported on all sides by strong muscle groups (O. Motużiuk *et al.*, 2017). The advantage of the shoulder joints is that they have a naturally large range of motion and can therefore perform more load than weaker joints (elbow and hand). In addition, active movements in the shoulder joint area should be primary in the organisation of game movements involving other parts of the arm, as they organise and control the swing movement.

An effective solution to the problem of clenched hands and jerky movements caused by the irrational use of muscle groups was a set of exercises used by the author of the study in individual classes with students. These simple exercises help to balance the load on the arms and spine and have a positive effect on the development of performance skills.

To do this, in a sitting position, it is necessary to simultaneously raise both arms to shoulder-width apart and move them back, fixing this position (Fig. 1):



Figure 1

Be sure to remember the feeling of how the shoulder muscles work (strong muscles hold the weaker ones), and then bring your arms forward with a sharp movement (Fig. 2):



Figure 2

Therewith, a sense of freedom should be maintained. This exercise should be used with beginners instead of the conventional methods still used by many teachers: when a child, sitting at an instrument, raises their arms and brings them forward, putting them on the lid of the piano or keyboard. The argument that this approach is harmful to the organisation of performing movements is that it causes overstrain of the muscles of the entire shoulder girdle and blocks the power impulses going towards the playing part of the arm. As a result, the muscle groups of the scapula and clavicle are idle and the impulses, not finding a way out, are guided oppositely, provoking overstrain in the spine. The vertebrae are compressed and inevitably deformed, which leads to disastrous consequences. In other words, uncompensated loads of muscle groups cause a constant source of tension in the entire shoulder girdle, which accompanies the student in everyday life. In addition, when the student lifts the arm and does not pull it back, as suggested above, but lifts it and brings it forward, the student does not have the opportunity to feel the work of the scapula and clavicle muscles. As a result, the arm begins to function outside the sensation of the scapula as the beginning of the power zone and in isolation from the shoulder and back. And the forearm takes on an uncharacteristic main force load. Thus, it proves once again that the technique of moving the arm to the side and back when lifting is the most physiologically correct. In this case, the student develops the skills of feeling the hand as an integral system with the minimum required degree of tension. In addition, according

to M. McLachlan (2017), it is more natural to move in a circular or arcuate manner, rather than in a straight line, when the muscle groups connecting the joints are strained with minimal force. Once again, it is necessary to emphasise that in the development of the arm swing, students should concentrate their attention on the source of force in the shoulder blade area and fix in their memory those positions in which the feeling of the entire arm and its performing freedom is manifested to the maximum. Whereas the teacher's instruction to relax the shoulders is incorrect, as focusing only on this area does not bring the desired result.

The authors of this study dwell on this issue in such detail as the wrong approach to the organisation of playing movements, which many teachers 'sin' with, is the root from which all subsequent performance problems grow. The Hungarian pianist and teacher J. Gat (1968) emphasised that "...the fact that a beginner sometimes achieves a good musical effect with the help of incorrect movements should not lead the teacher astray. Only those technical solutions are satisfactory that will be effective, that are part of the prospect of musical and technical development of students." Overexertion does not occur on its own but is the result of improper movements. If the muscle groups move the joints on the right way, there is minimal tension. If these movements are unnatural from the standpoint of physiology, muscle groups are overstretched. In this case, even using various additional exercises to release the arms and body will not help and will not give the desired stable result.

Another problem that deserves attention is the development of the ability to relax the hands, as it is quite difficult to achieve a feeling of complete release and relaxation. The entire musical performance technique is based on the cyclical nature of moments of tension and relaxation. An insufficient degree of relaxation is the root cause of stiffness, as uncompensated tensions provoke both localised overstrain of individual muscle groups and stiffness of the entire playing apparatus. For the release process to occur automatically, it is first necessary to distinguish between the concepts of "volitional, active throw" and "free fall". The differences between these two concepts are based on the muscle sensations when the arm is raised and lowered, and they are developed at different stages of training. It is especially important to develop an active throw, which should be done consciously, with this action brought to automaticity – a free fall of the arm. The main problem is that the overstrain of the shoulder girdle muscles at the moment of arm lifting does not allow for full relaxation during the fall, as at this moment the arm is inhibited involuntarily, which provokes the so-called alert reactivity (Mazel, 2001): the student is afraid of the throw and clamps the arm even more. Therefore, to begin with, it is important to develop a sense of suspension of the arm, which is the catalyst for all power-motor actions. It is developed based on two factors: the minimum necessary tension of the shoulder girdle muscles, which help to hold the arm; and a stable feeling of the weight of the arm in the raised state – its working position. A simple exercise by V. Guterman (1984), which

is recommended for use in the classroom: in a standing position, straighten your back, raise your arms until your fingers are at eye level, and imitate movements as if you were threading a needle. What happens at this point: the muscle groups in the back are moderately tense – just enough to keep the arms in suspension, the forearm muscles are relaxed to allow for manipulation of the fingers, while the fingers, especially the tips, are concentrated as much as possible to perform the desired action. In addition, this exercise is useful as it helps to develop a sense of the playing apparatus as an integral system, namely, the relationship between the power and playing areas of the arm.

The specifics of the physiology are that the muscle groups of the arm that move this or that part of the arm are located one joint above the joint they set in motion: that is, the fingers and wrist are controlled by the forearm muscles, the shoulder part of the arm is actuated by the muscles of the scapula, etc. Power impulses come from the top down – this must be remembered to avoid mistakes in the organisation of game movements. A correctly "programmed" pulse should return from the fingers to the shoulder blade. Isolated movements of any of the joints outside of contact with other parts of the arm lead to overstrain of the muscle groups surrounding that joint. As a result, any impulses are blocked in the area of the isolated joint and the entire arm goes through a phase of overstrain. The following exercises are useful for developing a sense of interaction between all parts of the hand as a single system:

1) "pendulum" – in a standing position, first move the arm back, then bring it forward. Perform the exercise holding the shoulder of the "working" arm with the other hand (Fig. 3-4). The student should feel the impulse pass from the scapula muscles to the chest muscles, redistributing muscle tension:



Figure 3



Figure 4

2) arms are lowered along the body and pressed against it. The exercise is performed simultaneously with both hands: first, raise your forearms without taking the elbows off the body, touching the shoulders with the fingers (Fig. 5), then raise your elbows and spread them apart (Fig. 6), then bend the elbows and bring the forearms forward at a 90° angle (Fig. 7), then turn them backwards with the palms of your hands and pull them back until the shoulder blades are closed (Fig. 8). Try to remember the feeling of these movements.



Figure 5



Figure 6



Figure 7



Figure 8

And the last aspect, which, in the author's opinion, is not given enough attention in the methodological literature and pedagogical practice, concerns the correct functioning of the finger muscles, namely the flexors and extensors. It is of fundamental importance, as the flexor muscles are strong, while the extensor muscles are much weaker and require special attention. The flexor muscles are naturally well developed, as the grasping reflex is inherent in a child

from birth (a baby clenches his fists, grabs a toy) and its essence is that when the first (thumb) finger comes closer to the others, something like a pincer is established. Accordingly, as the child grows and develops, the flexor muscles are further developed, while the extensor muscles are hardly used in everyday life. It is not the case with playing the piano, therefore, it is necessary to develop the right habits from the very beginning, which will determine the quality of sound production and technical skill in the future. In addition, it is necessary to prepare the student's hand for new, non-standard sensations necessary for soft contact of the fingers with the keyboard (especially the 1st finger), development of their flexibility and independence.

Very often, insufficient elasticity and mobility of the fingers is caused by the wrong habit of clenching them in a fist. The right and wrong habits for pianists are mentioned in his monograph V. Mazel (2001). In everyday life, the conventional order of fingers clenched in a fist is usually the following: all fingers are pressed firmly against the palm of the hand with the thumb pressing on the index finger (Fig. 9).



Figure 9

Therewith, there is little interaction between the muscle groups of the 1st and other fingers. Fingers clenched in this way cause excessive tension in the hand-forearm area and provoke rapid fatigue of the entire arm. The lack of contact between the 1st finger and the other fingers prevents the required automatic release. And when the student first sits down at the instrument, they place their fingers on the keyboard in such a way that the 1st finger is in contact with the index finger only, "working" in isolation from the rest of the fingers, whose extensor muscles are not involved. It is much more useful to develop the habit of clenching your fist with the 1st finger lying along the palm of your hand towards the little finger (Fig. 10):



Figure 10

It will allow bringing the muscle groups of the thumb and the base of the other fingers closer together and coordinate their actions accordingly. This arrangement of the

1st finger serves as a shock absorber that prevents other fingers from coming into contact with the keyboard and balances the work of the flexor and extensor muscles. In addition, the convergence of the abductor muscles of the 1st and 5th fingers helps to coordinate their actions. When the fist is opened, there is no tension between the outer fingers, which helps to maintain the elasticity of all fingers and avoid wrist stiffness. With this arrangement of fingers, the possibility of natural stretching of the palm increases, especially between the outer fingers.

In addition, it should be added that developing a good habit is about more than just making a fist, it's about holding a pen or pencil. For example, in Ukraine, schoolchildren mostly hold a pen with the 1st and 3rd fingers, while in American schools, children hold it with the 1st finger, which is covered by the other fingers. The difference in the effect of these two habits is similar to the one described above – in the example of the fist.

Learning to play the instrument should be based on knowledge of the basics of anatomy, and psychophysiology, in particular, the structure of the musculoskeletal system, the functioning of the muscular system, and the patterns of human movements. The knowledge gained by the students would allow for an understanding of the functions of the musculoskeletal system and the specifics of different muscle groups. Considering that each of them performs its own specific functions, their incorrect use or non-use during performance movements adversely affects both the sound quality and the development of technical skill.

Piano performance can be compared to the activity of athletes in terms of the intensity of using certain muscle and joint groups. Admittedly, achieving the desired result requires a lot of effort and training. Playing the piano involves frequently repeated movements of the fingers, forearms, elbows, etc. And, just like athletes, pianists face the risk of physiological injury. No musician is immune to this, regardless of whether they are a beginner or a professional performer. The wrong habits developed from the first lessons will become an obstacle to achieving a high technical level, but even if you are a brilliant performer, this does not mean that you have a safe technique and will not have serious medical problems in the future.

At the beginning of the 21st century, the problem of the danger of various kinds of injuries while playing the piano due to the ignoring of psychophysiological factors began to be actively raised by scientists from Western Europe, the USA, Asia, and Australia. However, in Ukraine, music pedagogy still focuses on the technical component of performance, without considering the connection between the human body structure, muscle functions and playing an instrument.

A similar idea was expressed in his dissertation by R. Niu (2020), which he devoted to the problem of technical education of pianists in China. It is a well-known fact that Chinese musicians demonstrate a high level of performance in the world, but the flip side of these successes remains unnoticed: the cost of winning competitions. The pursuit of great achievements becomes, in the scientist's

opinion, particularly traumatic for children: “students frequently develop movement habits that pose a danger to them in the future, as their play involves a combination of unnatural physiological techniques, frequent repetition of high-intensity exercises and ineffective technical postures.” It is hard to disagree with his opinion, as Ukraine is facing a similar situation. In fact, the problem is much deeper than it seems at first glance, as it is concerned with improving performance skills, and above all with the health consequences caused by mindless training. Repetitive Strain Injury, as noted by R. Niu (2020), result in numerous, sometimes chronic, musculoskeletal diseases. And to avoid this, it is easier to prevent their development than to treat them later.

L. Guseynova (2020), exploring the problem of improving the functional mobility of the student's playing apparatus in the piano class, considers “achieving muscle freedom and a sense of maximum comfort” to be the most important condition for the development of technique. The researcher emphasises the feeling of the weight of the hand, using game techniques that should be accompanied by a “muscular feeling of comfort”. Much attention is paid to ways to overcome technical difficulties, and the role of consciousness in this process is emphasised, especially when developing muscle memory in slow-paced exercises. Agreeing with the author, notably, these movements will become automatic if they are repeated identically. And this is only possible when a student understands what function certain muscles perform and can independently develop a specific algorithm for piano actions.

The importance of psychophysiological factors in the development of piano technique is emphasised by L.F. Rayo (2020), who notes that “when learning new skills, the brain and body must establish new connections between neurons for movements to become automatic”. The level of control over movements, in his opinion, is determined by making them automatic, and constantly improving the quality of this automaticity, when the process of mastering the technique is transformed into controlled and expressive work. It should be agreed with the author that this approach raises the quality of performance to a higher level: previously difficult movements become smoother and more harmonious, and the technique becomes not an end in itself but a means to achieve artistic purposes.

The results of many years of pedagogical and personal performance experience are reflected in B.A. Lister-Sink's doctoral dissertation (2015). An Australian researcher examined the effectiveness of an interdisciplinary method in mastering “trauma-preventive” piano technique. She notes that the number of cases where pianists become patients of orthopaedic surgeons, spine surgeons, and neurologists has increased. The reason for this, in her opinion, is “the existence of a correlation between injury and overuse/overstrain of muscles, chronic tension and stress on the joints”. The method of teaching developed by B. Lister-Sink was defined as an “alternative technical model”, which includes knowledge of neuropsychology, biomechanics, sports pedagogy, physiology of the performing arts, non-Western

pedagogy, in particular Tai Chi gymnastics. A separate point of this technique is using the Alexander Technique, a set of exercises named after the author and developer Frederick Matthew Alexander. Using this technique helps to rationally use the body's capabilities and harmoniously use muscles. As F.M. Alexander noted, "A person cannot get rid of problems unless they change their habits that will allow them to get rid of problems" (Who was F. Matthias Alexander?, 2020). The model developed by B. Lister-Sink demonstrated results that, according to the author, differ significantly from the conventional approach to technical development. The analysis of this thorough work, which contains a huge amount of interesting and useful information, certainly deserves a more detailed study and may become the subject of separate research.

CONCLUSIONS

The study of theoretical sources has allowed determining that the issue of psychophysiological factors in the development of the piano technique of future music teachers is still relevant. A retrospective analysis of scientific and pedagogical approaches to solving this problem allowed the developing of a universal theory based on practical experience. The cause-and-effect relationship between the performance shortcomings of piano students and the organisation of their motor activity, which consists in the lack of coordination of two interrelated and interdependent zones – power and playing, which determines the coherence of active and passive movements, is outlined. The criteria for the correct placement of the playing apparatus are determined, muscle groups and the specific features of their load during piano movements are classified. The

importance of self-control, self-regulation of motor activity in mastering the basic performance skills necessary for the successful performance of artistic and technical tasks is substantiated. Exercises are offered that help to rationally distribute the load on the muscles to avoid clamping of the arms and shoulders, relieve excess tension and achieve performance freedom. It is proved that the proposed approach to the development of piano technique, considering psychophysiological factors, allows consolidating the necessary sensations at the subconscious level and can provide students with self-control of the performance process. Psychomotor development, along with musical and auditory, emotional and volitional, etc., is the foundation for successful professional training of music teachers.

This research does not exhaust all the details of the problem and inspires further scientific discussion. Alexander Technique exercises, which help to relax muscles and promote coordination of movements, require a deeper study. In the world's leading music schools – the Juilliard School in New York, the Royal Academy of Music in London and Toronto, the Boston Conservatory, etc. – a course on these exercises is part of the educational process. This internationally recognised method is little known in Ukraine, and the effectiveness of its use in Piano Pedagogy for the harmonious development of performance skills is worth exploring.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Bernshtein, N. (1967). *The coordination and regulation of movements*. Oxford: Pergamon Press.
- [2] Cherniak, Ye., & Zankova, S. (2017). Theoretical and practical aspects of the formation of the performing technique of the future instrumentalist. *Scientific Bulletin of Bohdan Khmelnytsky Melitopol State Pedagogical University. Series: Pedagogy*, 2, 144-148. doi: 10.7905/nvmdpu.v0i19.2386.
- [3] Gat, J. (1968). *The technique of piano playing*. London: Boosey & Hawkes Inc.
- [4] Grinchenko, A. (2022). On the problem of improving performance skills of future teachers in the process of playing the piano. *Pedagogy of creative personality formation in higher and general academic schools*, 81, 152-155. doi: 10.32840/1992-5786.2022.81.28.
- [5] Guseynova, L. (2020). Educational problems of improvement of the pianist's functional mobility of the performing apparatus. *Research Notes. Series "Psychology and Pedagogy Research" (Nizhyn Mykola Gogol State University)*, 1, 46-51. doi: 10.31654/2663-4302-2020-PP-1-46-51.
- [6] Guterman, V. (1984). *Return to creative life. Professional diseases of the hands*. Yekaterinburg: Humanitarian-ecological lyceum.
- [7] Hall, H. (2004). *A consultation with the back doctor*. Toronto: McClelland & Stewart.
- [8] Hirano, M., Kimoto, Y., & Furuya, S. (2020). Specialized somatosensory – motor integration functions in musicians. *Cerebral Cortex*, 30(3), 1148-1158. doi: 10.1093/cercor/bhz154.
- [9] Husak, V.A. (2013). *The specifics of the development of performance skills in the process of instrumental training of future music teachers*. *Scientific Journal of National Pedagogical Dragomanov University. Series 14: Theory and Methodology of Arts Education*, 19 (Part 1), 59-66.
- [10] Irkliienko, V., & Demyanko, N. (2019). Future teachers of musical art training during individual classes in major musical instrument. *Aesthetics and Ethics of Pedagogical Action*, 20, 119-127. doi: 10.33989/2226-4051.2019.20.171644.
- [11] James, B. (2018). Pianism: Performance communication and the playing technique. *Frontiers in Psychology*, 9, article number 2125. doi: 10.3389/fpsyg.201802125.

- [12] Kokun, O.M. (2006). *Psychophysiology*. Kyiv: Tsentr Navchalnoi Literatury.
- [13] Lister-Sink, B.A. (2015). *A study of students' perceptions of the effectiveness of an interdisciplinary method for teaching injury-preventive piano technique* (Doctoral thesis, Columbia University, New York, United States).
- [14] Mark, T. (2003). *What every pianist needs to know about the body*. Chicago: GIA Publications, Inc.
- [15] Martinsen, K. (1966). *Individual piano technique*. moscow: Muzyka.
- [16] Mazel, V. (2001). *The musician and his hands: Physiological nature and formation of the motor system*. Tel Aviv: Pilies Studio.
- [17] McLachlan, M. (2014). Prevention is better than cure. In *The foundations of technique* (pp. 7-22). London: Faber Music.
- [18] McLachlan, M. (2017). Development and health. In *The psychology of piano technique* (pp. 77-106). London: Faber Music.
- [19] Motuziuk, O.P., Khmelkova, A.I., & Mishchenko, V.I. (Eds). (2017). *Workshop on human physiology* (2nd ed.). Kyiv: Medicine.
- [20] Niu, R. (2020). *Types and causes of physiological injury in piano playing, with emphasis on piano pedagogy in China* (Doctoral thesis, School of Music, Morgantown, United States). doi: 10.33915/etd.7693.
- [21] Pozo, J.I. (2022). The psychology of music learning. In J.I. Pozo, M.P. Pérez Echeverría, G. López-Íñiguez, & J.A. Torrado (Eds), *Learning and teaching in the music studio* (pp. 47-83). Singapore: Springer. doi: 10.1007/978-981-19-0634-3_3.
- [22] Rayo, L.F. (2020). *Developing control in piano technique* (Doctoral project, Texas Tech University, Lubbock, United States).
- [23] Sradzhev, V. (1987). *Problems of the development of piano technique*. Tashkent: Fun.
- [24] Thio-Pera, A, De Carlo, M, Manzoni, A, D'Elia, F, Cerone, GL., Putame, G., Terzini, M., Gazzoni, M., Bignardi, C., & Vieira, T. (2022) Are the forearm muscles excited equally in different, professional piano players? *PLoS ONE*, 17(3), article number e0265575. doi: 10.1371/journal.pone.0265575.
- [25] Tseng, Y.-T., Tsai, C.-L., & Chen, F.-C. (2020). Wrist proprioceptive acuity is linked to fine motor function in children undergoing piano training. *Journal of Neurophysiology*, 124, 2052-2059. doi: 10.1152/jn.00282.2020.
- [26] Tsypin, G.M. (1984). *Learning to play the piano*. moscow: Prosveshcheniye.
- [27] Wang, B. (2010). The method of formation of performance technique of the future music teacher. *Scientific Bulletin of the South Ukrainian National Pedagogical University named after K.D. Ushynsky*, 7-8, 3-8.
- [28] Who was F. Matthias Alexander? (2020). Retrieved from <https://alexandertechnique.com/fma/>.
- [29] Ye Yang, Z. (2020). Modern piano teaching technologies: Accessibility, effectiveness, the need for pedagogues. *İlköğretim Online*, 19(3), 1812-1819. doi: 10.17051/ilkonline.2020.735171.
- [30] Zymohlyad, N.Yu. (2015). *Piano technique as the basis for the development of professional pianist*. *Scientific Journal of National Pedagogical Dragomanov University. Series 14: Theory and Methodology of Arts Education*, 19, 130-133.

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Психофізіологічні чинники ефективного розвитку фортепіанної техніки майбутніх музичних педагогів

Анотація. Результати успішного навчання студентів музично-педагогічної спеціальності на заняттях з фортепіано залежать від їхнього технічного рівня, володіння цілим комплексом навичок для втілення виконавських завдань. Однак ефективному розвитку перешкоджають психофізіологічні чинники, а саме: надмірне затиснення рук, невміння раціонально використовувати потрібні групи м'язів та збалансовано розподіляти навантаження на корпус. Мета дослідження – проаналізувати процес формування виконавських навичок через осмислення психофізіологічних особливостей. Методологічну основу склали праці українських та зарубіжних науковців, піаністів-педагогів. Для вирішення поставлених завдань було використано комплекс методів: аналіз, систематизацію, класифікацію, узагальнення педагогічного досвіду. Для окреслення технічних виконавських проблем і способів їх вирішення було використано описовий і дидактичний методи; для перевірки і підтвердження ефективності вибраної методики – метод педагогічного спостереження. У статті наголошено на ключових моментах корекції постановки корпусу, що допомагають позбутися надмірної скованості рухів, перенапруження слабших м'язових груп і позитивно впливають на розвиток виконавської свободи. Це насамперед правильна посадка за інструментом, виховання відчуття ваги руки в спокійному стані і під час підйому. Запропоновано апробовані вправи, що забезпечують фіксацію оптимальних м'язових відчуттів у ділянці плечового пояса, особливо в зоні лопатки і плечового суглоба, під час різних рухів руками. Іншою поширеною проблемою визначено недостатню увагу до функціонування м'язів-розгиначів пальців, що перешкоджає розвитку їхньої вправності та самостійності і є причиною затисненості зап'ястка. Обґрунтовано важливість виховання в студентів усвідомленого оволодіння первинними руховими навичками на базі конкретних м'язових відчуттів. Результати дослідження доводять, що визначений алгоритм дій у постановці ігрового апарату та виправленні недоліків здатний забезпечити стабільність виконавської свободи, самоконтроль і саморегуляцію рухових дій

Ключові слова: музична педагогіка; формування технічних навичок; організація ігрових рухів; напруженість і розслабленість м'язів; посадка за інструментом; самоконтроль рухових дій

UDC 378

DOI: 10.52534/msu-pp1.2023.59

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Current trends in the training of vocational education specialists in road transport

Article's History:

Received: 03.12.22

Revised: 01.03.23

Accepted: 31.03.23

Suggested Citation:

Pryimak, V. (2023). Current trends in the training of vocational education specialists in road transport. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 59-68. doi: 10.52534/msu-pp1.2023.59.

Abstract. The research is devoted to the examination of the leading trends in the training of future specialists in the road transport sector. The relevance of the study is conditioned upon the need for a rapid response of modern educational institutions to the processes of globalisation and changes in global trends in the socio-economic, educational, scientific, information and other sectors. As one of the most influential sectors in the economy of each country, the road transport infrastructure requires high-quality training of competitive specialists and a constant search for ways to improve its efficiency. The purpose of the research is to explore, identify and substantiate several trends which affect the quality of specialist training or contribute to its improvement in line with the requirements of the times. The research analyses the relevant scientific literature and uses scientific methods of systematisation, comparative and structural analysis, generalisation, and specification. The research outlines the current trends in the professional training of road transport education specialists. The author summarises the main trends in the industry as an integral part of education in a multi-level system designed to provide the necessary theoretical and practical experience for future specialists with a focus on the most complete professional self-determination. The significance of the competence-based and practice-oriented approaches as the most important in the process of training a specialist is specified. The factors that influence the quality of training of competitive employees in the road transport sector, who will have the opportunity for decent employment and professional growth, are identified. It is concluded that the improvement of training of future specialists in the road transport industry in recent years is designed to integrate into the international educational space, to improve the quality of training in the production, economic, educational and scientific spheres. It is emphasised that high-quality training at all levels can be effective if all participants in the process are active. The practical significance of the research is the possibility of using the results obtained in planning new programmes for the training of future specialists in technical educational institutions, in organising the process of internships during training and advanced training of industry specialists

Keywords: motor transport industry; technical education; higher education pedagogy; integration and globalisation of education; teaching technologies; professional development; competence approach

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INTRODUCTION

Obtaining the status of a candidate for membership in the European Union means creating conditions for the education and training of future competitive specialists, including those in the field of road transport. The relevance of the research is determined by the scale of problems in the industrial and scientific spheres, which, in turn, requires the necessary level of quality training of specialists who will be able to ensure the functioning of the industry soon. The state of higher education in Ukraine is of great importance, coupled with a decline in society's responsibility for employing young professionals and fully realising their professional knowledge and practical skills. Other problems include the contradictions between the labour market for university graduates, on the one hand, and the requirements of road transport companies and the mismatch between the demand for specialists and the supply of specialists in society, on the other (Kulish *et al.*, 2019).

High-quality training of road transport specialists will allow corresponding the requirements of society. To achieve this, it is important to have technical education institutions working in a targeted manner. Specialists are trained mainly in universities, technical schools and colleges. The flagship among them is the National Transport University of the Ministry of Education and Science of Ukraine. The problem of improving the process of training specialists through individualisation of training, which involves intensification of learning activities using modern methods and technologies, is particularly relevant. Modernising education and elevating it to the level of developed European countries as the most important link in the training of future specialists and the education of a creative, well-rounded personality is a key area (Dziurski, 2014).

The purpose of the research is to identify the main trends in the training of specialists in the road transport industry, considering the conditions of socio-economic development, globalisation, European integration, trends in education, etc.

Currently, there are few or fragmentary scientific studies by Ukrainian authors that examine the trends in the training of road transport specialists, and they do not fully cover the problems associated with the professional development of future specialists according to the challenges of modern society. Only certain issues have been explored, such as the training of road transport specialists in the context of digitalisation (Kovalchuk & Soroka, 2021), using technical means of training future specialists (Chaban *et al.*, 2012), innovative approaches to training future road transport specialists (Voltrikh, 2018). Noteworthy are the studies related to the general problems of training and education of specialists in the road transport industry of Ukraine (Sydorenko, 2009), general aspects of training of modern specialists in colleges (Boichuk, 2009), etc.

V.P. Sydorenko (2009) and O.V. Voltrikh (2018), analysing the conditions for raising the level of training of engineering and technical workers to the level of developed European countries, consider the key to spreading the practice of combining vocational education with production by

establishing specialised training and production bases for teaching students and fostering qualities that will allow students to develop "independence of technical thinking and form practical orientations" through modern visual aids and information technologies that can provide active learning

L. Janssens *et al.* (2022) reflected on the next level of quality assurance in higher education in European educational institutions with a focus on the sustainable development plan. The frequency analysis established that European countries accept transformational learning but not very actively. Only the UK system demonstrated high rates of approval of this type of training.

The American researchers J.J. Moye *et al.* (2020) analyse both the trends that affect education in the trucking industry and the factors that cause these trends to emerge and influence change and innovation. The authors describe the trends that will have the greatest impact on the industry and education in the next 5 years.

Researchers L. Guàrdial *et al.* (2021) pay particular attention to maintaining the quality of the educational process in the case of transition to distance learning. In particular, the researchers analyse in detail the literature on pedagogical innovations and practices involving technology. Due to the information collected and analysed in the course of the study, the IDEAS framework was developed, which encourages the establishment of a new type of higher education.

In addition, the focus of Cedefop (2019) is on the implementation of innovative pedagogy based on close cooperation between employers and educational institutions as suppliers of specialists in the field of motor vehicles. The research suggests using individual competence development plans and introducing special "training contracts" between students and organisations, which will allow for full-fledged "on-the-job training". Researchers R.M. Yasin *et al.* (2013) conducted a meta-analysis of peer-reviewed professional journals and identified the leading trends in the training of road transport specialists with a focus on global training systems and stressed the need for continuous analysis of their effectiveness.

The main trends, their continuous nature and focus on continuous improvement depend on fundamental changes in the world and society. It is necessary to consider modern trends and approaches to the organisation of the process of training specialists in the road transport industry, considering the requirements of employers, and the target benchmarks of education. The scientific originality of the research can be defined as the actualisation of the issue of the quality of higher education in the field of road transport in Ukrainian higher education institutions in the context of Ukraine's preparation for accession to the European Union.

MATERIALS AND METHODS

The research uses a combination of theoretical methods: research and analysis of scientific literature, methods of systematisation, comparative and structural analysis, generalisation, and specification. The methodological and informational foundation of the research was based on theoret-

ical works by Polish, Czech, American, Ukrainian scholars and authors from Asian countries. The research was based on works on higher education pedagogy, economics and development of the road transport industry, professional training, and education in the transport sector, in particular in higher education institutions and technical schools, etc.

As a result of the theoretical study of literature, using the method of analysis, the research defines the content of the concept of “professional training of a specialist”, and the requirements for training as a system of actions, which should result in the quality management of the process of mastering the necessary knowledge, skills and gaining practical experience of future specialists in a particular area of the motor transport profile.

As a result of the research of scientific literature, the main tendencies characteristic of the process of training specialists are described, the interrelations between the socio-economic development of the country, the development of education and science and the specifics of functioning of production enterprises of the motor transport industry are determined using structural analysis, on which requirements, from the standpoint of employers, the orientation of student training depends.

The research uses the comparison method to identify the positive and adverse aspects of some methods of organising retraining, including Ukrainian and foreign training technologies, full-time and distance learning, etc. Using the method of specification, the research defines the role of innovations in the road transport sector, which provoke changes in the requirements for theoretical knowledge, skills in working with modern equipment and personal qualities of a future employee, and the requirements of employers for future employees.

Using the method of information synthesis, the ways to improve the professional training of specialists (change of purposes, reorientation and establishment of a full-fledged educational environment, modernisation of processes) are outlined. The method of specification is used to determine approaches to the training process as a holistic pedagogical phenomenon, considering the trends of the time. In addition, the same method was used to identify the requirements for students as future professionals and the requirements for education professionals (new teaching purposes, “teaching to learn”, classical teaching skills combined with deep practical experience, mastering the knowledge and skills of an organiser and technologist of the educational process, high moral qualities). As a result of using the method of structural analysis, the trends in specialist training are presented both in a broad sense and the factors that influence their emergence due to changes are specified (in the form of a description of specific steps towards the establishment of an effective system of specialist training, the specifics of their application, the feasibility of use, adverse and positive characteristics, stages and expected results). Using the method of specification, the research clarifies the possibilities of perceiving trends and implementing modern technologies in the training of

specialists in the education of motor transport profile, presents the interpretation of the research results and presents the materials of the research.

RESULTS

Development of higher education in the field of motor transport with the orientation of the Ukrainian education system towards European standards

Ukraine's inclusion in the global educational space, which means investing in education and human capital development as the highest value following the example of developed countries, recognising education in Ukraine as a priority area of socio-economic, spiritual and cultural development of society, and implementing global educational trends, makes it urgent to establish an educational paradigm and use new approaches to training, relationships and behaviour of future professionals. The globalisation of the labour market, when every high-level specialist can work anywhere in the world, requires transformations in the educational system to help students of technical specialities develop a progressive understanding of the engineering world. Education is no longer an end in itself, but a means of becoming a professional capable of working in a competitive environment.

Both the general trends in education related to globalisation and the significant potential for the positive impact of open education elements on higher education and adult learning, and the trends in the training of technical specialists are important for the automotive sector. The processes of continuity and lifelong learning, the perception of non-formal, additional vocational education and its social potential, and openness are now leading the world's education. The processes of continuity and lifelong learning, the perception of non-formal, additional vocational education and its social potential, and openness are now leading the world's education. Education of the 21st century is one of the main guidelines of national policy in connection with the transition of human civilisation to a “knowledge society”, which imposes new requirements for the organisation of the educational process (Sorbonne declaration, 1998).

The processes of modernisation of higher technical education, including road transport education, are closely connected with the necessity to provide the industry with specialists, improve international competitiveness, meet human educational needs, and increase the level of professionalism and personal responsibility of future specialists, their competence and personal effectiveness. The evolutionary nature of technical education, which corresponds to changes in the road transport industry itself, and the continuity of knowledge acquisition establish the prestige and high quality of professional education, with attention to global development trends. Improved efficiency and the introduction of internationally recognised standards and certification schemes help to develop a reliable workforce for the industry.

Nowadays, readiness for future professional activity is based on a competency-based approach, when the result of the development of professional competence of a specialist

in road transport is important, which is considered as a system of established general and professional competencies, the ability to professional self-realisation and a set of personal values (Boichuk, 2009). The professionalism and competence of the graduate, their ability to think critically and creatively, and to adapt to the conditions of professional activity will enable them to become successful in their chosen profession. The expansion of the field of activity of the future specialist and innovative changes in educational institutions require improving the quality and development of personal characteristics of the specialist to ensure competitiveness.

Currently, innovative education contributes to planning the educational process as a way of development from social knowledge and skills in their profession to technological ones, which gives the specialist an understanding of the ways and methods of solving professional problems, and skills that allow tracking the dynamics of changes in their professional activities and drawing conclusions about ways to obtain the necessary amount of new knowledge and experience (Malanyuk, 2020).

The training of road transport specialists is significantly influenced by the introduction of innovative teaching methods, which allows for maintaining the high quality of the educational process on an ongoing basis and effectively combining research and teaching in educational institutions. A noticeable trend is the displacement of conventional forms of information presentation by using multimedia technologies, for example, conducting classes using slides and other electronic means of presenting educational material. Such an organisation of knowledge acquisition can help increase motivation and self-education and provide opportunities for creativity, exchange of knowledge and experience, and acquisition of key professional skills. However, researchers O.V. Voltrikh (2018), P. Zajac (2018), E. Danowska-Florczyk *et al.* (2021) emphasise that along with the positive impact, there is a threat of a significant gap between the knowledge gained and practical activities. It is possible to master the necessary professional actions only when a student performs all processes immediately under the supervision of a teacher, for example, maintenance work, installation work, etc.

The European culture of specialist training is distinguished by its sectoral and rational nature and is more monological, i.e., focused on the requirements of the industry in which specialists are needed. The system of vocational training is based on the ways of transferring knowledge and skills, perception and understanding of their content. The conventional educational process provides students with theoretical knowledge, but the connection between knowledge and specific professional activities is rather sporadic. Among the important problems in the training of road transport students are the difficulty of combining learning with practice, limited access to modern technologies and more sophisticated technical equipment, the inability to conduct experiments in real conditions, the lack of modern textbooks and relevant theoretical and practical competencies of teachers in educational institutions, which necessitates

a review of their level of training and ability to organise high-quality training for future employees that would correspond to all the requirements from the employers' standpoint. In addition, there are demotivating factors in educational institutions, the main of which are uninteresting, formal teaching, biased assessments, excessive workload, a large number of unnecessary subjects and tasks, and the lack of a clear, explicit connection between the disciplines taught and future activities (L. Amhag *et al.*, 2019).

Synchronising training programmes with the challenges of the modern road transport industry

A characteristic feature of the training of specialists in the road transport industry today is its proactive nature concerning rapid changes and improvement of production processes. Due to the development of a technologically new environment for transport companies, skilled professionals need to have modern engineering and technical knowledge and advanced production technologies, an understanding of effective ways to develop the transport sector, and the ability to think creatively and innovate.

V.P. Sydorenko (2009), thoroughly exploring the professional training of road transport industry specialists, identified several steps in this way, among which the author of this research considers the most important:

- compliance with the model of training industry specialists, which provides for the required level of research and teaching staff, technologists, and software developers who are experienced users of computer information systems and, thanks to their out-of-the-box thinking, are able both to transform knowledge into modern technologies and improve the automotive industry and pass it on to a generation of students;
- overcoming the excessive theoretical nature of training and strengthening its practical orientation through using innovative technologies, project-based learning, training, simulation games, mastering modern road transport technologies, and using digital tools;
- engaging the most competent specialists to develop training standards and making the most of their experience, developing modern visual aids (posters and 3D models in sections), considering the practice of global and European systems of training specialists in the road transport industry;
- -establishing corporate-type relations between road transport enterprises and vocational education institutions as an embodiment of the idea of training specialists specifically "for the customer" and the practice of combining vocational education with production (Sydorenko, 2009).

Over the past 10 years, the automotive industry has become known for its efforts to design smart cars, test electric trucks, develop unmanned technologies, introduce artificial intelligence, augmented reality, neural networks, ultra-fast device management via 5G networks, etc. Thus, due to a large number of innovations in the industry, a modern specialist in the road transport sector, in addition to theoretical knowledge and the development of the necessary personal qualities, must have the skills to handle

modern high-tech equipment (Dziurski, 2014). Innovations in materials for the transport sector, high-speed and high-performance vehicles, the growth of information systems and increased attention to transport ecology require new professions or specialisations that need to be taught by experienced professionals. It is necessary to emphasise the complexity of production processes, the need for wide-profile professions that could combine, in addition to basic professional ones, the functions of management, regulation of automation systems, finding rational solutions in non-standard situations, which could significantly improve the performance of enterprises; the impossibility of quickly integrating specialists into work processes due to insufficient practical training. The required professional level of personnel working in the road transport sector is most probably to determine its efficiency from an economic standpoint since it is the employees who will be responsible for solving several practical problems. A special role in the implementation of progressive ideas and solutions is given to representatives of the road transport elite, engineering and technical staff, management and administrative personnel who work to improve technological processes, organise research, introduce various innovations, apply highly efficient market economy trends using information tools and computer equipment.

The place of the practical component in the training of future specialists

As for the content of the future professional activity of an employee in the field of motor transport, it depends on the rapid development of modern cars, which are more than just an alloy of the latest technologies, and an example of using electronics, computer and digital devices that require appropriate conditions for repair and maintenance. As a result, young people are more interested in the process of exploring them and strive for high-quality consolidation of knowledge in practice; among teachers, the transfer of their own experience is especially valuable (Voltrikh, 2018).

Therefore, practical training plays a leading role in the professional training of road transport specialists at all stages as the main way to consolidate theoretical knowledge and develop students' skills of self-education and self-improvement, and establish a conscious desire to obtain a high-quality professional education. Motivation is important, and it depends on the availability of theoretical materials, especially in basic disciplines, and on the ability to apply the skills acquired in the workplace. In addition, education is increasingly considering the specifics of students from the new generation, who are increasingly rejecting standard education, which they consider to be of little use for the future, and focusing on their vision of themselves in life (Vinichenko, 2021).

Ukrainian researcher N. Malanyuk (2020) outlined trends and substantiated several principles that will ensure the quality training of future transport professionals. Among them, the principle of combining three components (science, learning, practice) and the special role of active work, which

is ensured by the organisation of a creative educational environment in an educational institution, should be highlighted. The principle of "education for the future" should be emphasised, which means that the competencies developed in a future specialist should be in line with the changes occurring in various spheres of human life and society in general.

The knowledge and skills of employees must correspond to the expectations of employers. These expectations include strong theoretical knowledge of the design and operation of vehicles, including hybrid and electric vehicles, knowledge of electronics, repair and maintenance skills, analytical thinking and cause-and-effect relationships, the desire to independently acquire knowledge from various sources, and a desire to improve and learn throughout life. Among the requirements put forward by employers are personal skills, namely: a culture of communication and negotiation, the ability to resolve claims and conflict situations, teamwork, and an interest and passion for automotive technology. Employers expect employees to have skills in working with computer programmes such as Audatex, SilverDAT, AutoData, etc. The functioning of modern enterprises and production systems in the context of economic instability, and dynamic social and technological processes leads to rapid updates of market needs and corresponding requirements for the training system, which are not responded to by the authors of programmes and curricula. Thus, the system of training specialists is conducted inertially (Raczkowski *et al.*, 2019). There is a need to consider the different interests of job providers, educational institutions and students themselves. Frequently, these interests do not coincide, but ignoring ways to resolve them leads to a decrease in employment. In this regard, the structure of interaction between stakeholders in the educational process is being transformed to address the needs that change over time. The work of educational institutions includes: identifying the stages of interaction between subjects in their mandatory coordination with changes in the labour market; organising ongoing cooperation and partnership at the student-enterprise level; focusing on individual training of each specialist, considering their capabilities and self-determination in a particular area of professional activity.

An important factor in the development of a specialist in the 21st century is that a graduate's profession will not mean that they will be completely successful. Specialists who can master supra-professional skills that are required in many professions will be most competitive (Phoong *et al.*, 2019). These skills include systemic thinking, intercultural communication skills, using a creative approach to solving problems, skills in the rational use of resources in production, knowledge of the specifics of working with artificial intelligence systems, etc. Mastery of these skills will increase the effectiveness of professional activities in their field and attract them to other areas while maintaining their relevance.

DISCUSSION

Due to the need to change the structure of professional activities of road transport specialists, it is difficult to imagine

the educational process designed to help develop the professional competencies of future specialists without the constant search for and use of innovative and more efficient technologies. In addition, dynamic changes in the labour market do not allow for an accurate prediction of the components of professional qualifications of future specialists, which leads to the perception of the functions of specialists as a more universal category. In the new environment, the key is the preparedness of a specialist for the profession, rather than the purposes of teaching them to think or "teaching them to learn". Employers do not care about the reasons why a candidate does not match a vacancy, therefore, the education system in the road transport industry must meet the demands of the times.

According to the results of the analysis of scientific publications, it can be argued that the main areas of training of road transport specialists today, depending on the rapid development of the industry and qualitative changes in education, are the focus on practical activities in the educational process and the competence approach. Focusing on the competency-based approach, it is necessary to overcome the contradiction between the quality of knowledge acquisition in various disciplines and modules and their remoteness from systematic use in professional activities. Some "knowledge puzzles" reduce the interest of young people in their professional activities. Such contradictions can be overcome by strengthening the links between the disciplines examined, and by developing problematic professional situations for students to solve on their own, giving lectures with the latest and most relevant information, by offering students new subjects for research and project work that requires the integrated use of knowledge in real-time (Reichert, 2019). The adaptation of training programmes should be as close as possible to each training area.

The competence approach remains relevant. This conclusion is reached by a contemporary researcher N. Malanyuk (2020), who, describing the components of the educational process, work programmes and curricula for individual disciplines, points to the need to develop the necessary components of competencies according to the standards, in particular through the establishment of appropriate professional programmes for each degree. In this process, the most important thing is effective teaching and methodological support as a condition for a quality educational process.

It is important in the training of automotive professionals to keep manuals up-to-date, providing information on the systems of specific models and the structure of cars, engines and devices used in modern car services in Ukraine. Due to such manuals, students can examine in detail the structure of all the cars that have been produced in recent years in the course of their theoretical studies, as it is almost always impossible to work with them in practice. By working with the updated manuals, graduates will be able to gain a sufficient level of technical knowledge and keep up with experienced employees.

The role of quality teaching and learning support is emphasised by V.P. Holovenkin (2019). He draws attention

primarily to the systematic nature of changes and the mandatory consideration of all components of educational activities and their mutual influence and emphasises the scientific approach and mandatory practical implementation of professional training.

Polish researchers (Kukacka & Kristoufek, 2020; Symela, 2021) describe the specifics of improving the level of training of future mechanics and the need to bridge the gap between theoretical and practical training. In solving the problem, researchers prefer to conduct both theoretical and practical classes and to distribute the training time evenly.

To solve the problem of the gap between theoretical knowledge and its practical use, researcher V.P. Sydorenko (2009) in his research proposes to involve manufacturers, educators and scientists in establishing a base for retraining and advanced training, namely specialised training and production centres to combine the training process of specialists with the process of car maintenance.

In addition, the Polish researcher P. Zając (2018) focuses on this issue and argues that cooperation with automotive industry organisations will bring education closer to real working conditions and help students gain practical experience. The system of educational technologies plays an equally important role in this process. In addition, they include participation in the design of programmes for the development of educational institutions and the substantiation and development of vocational training technologies.

Nowadays, students entering educational institutions, including those in the field of road transport, belong to the "gadget generation", perceive the world from screens and are accustomed to clip information and data visualisation, thus, to improve the quality of education, education professionals must be able to build their own training courses, workshops, practical classes, providing accessible content and online tests (Clement, 2019).

By acquiring the skills of online interaction, visualisation, interactive dialogue, and automation of knowledge control, a specialist actively improves professionally, and deepens pedagogical and information competencies. The most relevant resources for learning and work are Microsoft, Google, Dropbox, Moodle, and Youtube, whose capabilities allow implementing of learning activities in real-time. Thus, openness of education as one of the main trends can be implemented through the availability of educational materials hosted on data storage platforms such as Google or Dropbox. It allows students to access learning materials at any time when they are away from the classroom. Video hosting sites such as Youtube have a significant potential for self-education, as these platforms publish educational and popular science videos from a wide variety of fields of science and technology. Watching videos on such resources allows the student to significantly deepen the knowledge gained in theoretical and practical classes, and the student can choose the area of study that interests them independently. Frequently, video materials are posted by specialists from different countries who have extensive

experience, which helps to significantly reduce the time spent searching for the necessary information.

O.V. Voltrikh (2018) provides examples of the effective use of self-made banners and emphasises the need to constantly update posters for all subjects of the curriculum. All visuals should be modern, made with attention to detail and easy to understand. For example, using dissection stands and moving stands helps students learn about a car to observe and examine the engine or any other device from the inside. In this case, real visibility is more effective than multimedia technologies.

Of even greater importance is the student's interest based on the study of modern technologies, technical approaches, design and scientific ideas that can be implemented in the design and improvement of modern cars. Equally important is the training of those specialists who have already received their education through the organisation of advanced training.

Nowadays, professional development is conducted under additional educational programmes of the retraining system in licensed institutions. Depending on the personal attitudes and goals of specialists: to renew skills, and knowledge, adapt to new conditions at work or use training for career growth - in each of these conditions, educational institutions that provide professional development should offer specialists various group or individual training programmes. This process can occur in such forms as vocational courses, targeted courses, internships to gain practical experience, etc.

The retraining programmes may include courses on diagnostics and repair of modern car systems using software and equipment from modern companies such as Bosh, comfort systems, airbags and climate control systems, diesel engine power systems, brake systems, etc. A series of lectures and seminars are held to prepare for certification and subsequent training under the Bosh Academy programmes (Polish Alternative Fuels Association, 2021).

Unfortunately, it is not always possible for specialists to travel to another city or to another educational institution to improve their skills for several different reasons, including the fact that they are frequently overworked in their job roles, which does not allow them to leave their workplace for a long time.

Therefore, an important trend is using distance learning, the main features of which are flexibility, modularity, use of specialised technologies and learning tools, reliance on modern means of transmitting educational information, parallelism, dialogicity, continuity, accessibility, and fixity. Due to its flexibility, the trainee can organise the training in the required time rhythm, which is convenient for mastering the material (Polish Alternative Fuels Association, 2021; Salandanan *et al.*, 2021). Modularity allows establishing a holistic overview of a particular subject area through each course, which allows establishing curricula that meet individual and group needs from a set of independent module courses. Parallelism means that training can be conducted simultaneously with the main professional activity of a specialist, i.e. on the job. Dialogic is manifested

in the feedback between the teacher and the learner, and continuity in the ability to receive training without forced interruption in time. The entire learning process is accessible to each participant with the possibility of recording the results on tangible media in digital form (Reed, 2018; Vojtov *et al.*, 2019; European Business Association, 2020).

The advantages of distance learning that contribute to the choice of this method of professional development include the ability to use modern technologies and access to electronic libraries, which is a favourable condition for the real establishment of a single educational environment when there is a need to provide knowledge and transfer experience to a large number of specialists at the same time, considering individual learning pace, time-saving factors and learning costs (Price *et al.*, 2019; Benz & Bringmann, 2021; Turienzo *et al.*, 2022).

The labour market is not keeping pace with the changing demands of business, and this will not produce enough new talent. It is up to each company to address potential challenges when developing strategic employment plans, including skills mapping and advanced supply and demand models (Reed, 2018). The conclusions from these studies will facilitate activities to upgrade and change the skills of current workers on a large scale. If these efforts are to succeed, companies must develop new recruitment and HR strategies that will help them retain the most talented people who can successfully adapt to change in a competitive marketplace. Developing creativity in solving the current problems of Ukraine's road transport system will help achieve the desired results in less time and with fewer resources. To ensure a high level of adaptation of employees to the workplace, higher education institutions should ensure that they introduce various forms of training that would develop theoretical and practical skills.

CONCLUSIONS

The level of professional competence of vocational education specialists in road transport is one of the key factors that determine the quality of training of future specialists. Their competence is determined by their professional skills, and personal and supra-professional qualities. Continuing professional development, including distance learning, allows for regular improvement of professional knowledge and practical skills.

As the situation in the road transport industry becomes more complicated due to difficulties and lagging behind European standards, and with the necessity for educational institutions to respond dynamically to changes in the automotive industry, restructure learning processes and adapt them to changes in the labour market, random decisions cannot be considered instead of innovations in the training of road transport education specialists, as such changes must be deliberate and planned.

Due to the processes of globalisation and European integration, the rapid increase in the amount of information and the rapid development of information technology, and the rapid updating of technologies, special education specialists can successfully transfer their own experience in

the educational process only if they have developed both theoretical knowledge and practical skills, and value orientations, social mobility, creativity, flexibility and adaptation to change. Therefore, among the trends in training, the key ones were the need to replace the theoretically oriented educational process with a practice-oriented one, and using modern technologies, and organising high-quality professional development, including distance learning. Such conditions will respond to the immediate and future needs of future specialists in the field of research.

Compliance with the requirements of the motor transport sector operating in modern conditions and the focus of the educational process is the most decisive factors that are expected to produce the most effective results in improving the quality of vocational education.

Such a system of building the process of training specialists in road transport education is possible only with the active cooperation of all stakeholders: teachers, stu-

dents and employers. The examined trends and interest in new technologies and forms of work allow for high-quality training of specialists according to state educational standards and programmes. In further research, it will be advisable to identify ways to prevent and overcome contradictions in the training of future road transport specialists, the requirements of society and the needs of the industry as an important component of the economic development of the state. In addition, it is promising to explore the specific features of combining conventional and innovative approaches in the training of technical specialists, in particular in the road transport industry.

None.

None.

ACKNOWLEDGEMENTS

CONFLICT OF INTEREST

REFERENCES

- [1] Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher educators' use of digital tools and needs for digital competence in higher education. *Journal of Digital Learning in Teacher Education*, 35(4), 203-220. doi: 10.1080/21532974.2019.1646169.
- [2] Benz, J., & Bringmann, O. (2021). Scenario-aware program specialization for timing predictability. *ACM Transactions on Architecture and Code Optimization*, 18(4), article number 54. doi: 10.1145/3473333.
- [3] Boichuk, I. (2009). *Scientific-theoretical fundamentals of professional training of the future experts in college. Pedagogics, Psychology, Medical-Biological Problems of Physical Training and Sports*, 12, 18-21.
- [4] Cedefop. (2019). *Vocational education and training in Finland: Short description*. Luxembourg: Publications Office of the European Union. doi: 10.2801/841614.
- [5] Chaban, S.G., Kovra, A.V., & Purich, D.A. (2012). *Use of modern technical means in the training of automotive specialists*. In *Ways of implementing the credit-module system of the organization of the educational process and test forms of students' knowledge control: Materials of the scientific and methodical seminar. Issue 6: Implementation of competency-based learning* (pp. 108-110). Odesa: Science and Technology.
- [6] Clement, D. (2019). *Investing in innovation. How much do investments in innovation affect growth and productivity? A new paper makes progress, but answers remain elusive*. Retrieved from <https://www.minneapolisfed.org/article/2019/investing-in-innovation>.
- [7] Danowska-Florczyk, E., Stęchły, W., & Ziewiec-Skokowska, G. (2021). *Megatrendy w motoryzacji a inicjatywy sektorowe na rzecz rozwoju umiejętności w Europie*. Warszawa: Związek Pracodawców Motoryzacji i Artykułów Przemysłowych.
- [8] Dziurski, P. (2014). *Ewolucja branży motoryzacyjnej – trwałe tendencje*. In M. Romanowska, & J. Cygler (Eds.), *Granice zarządzania* (pp. 259-271). Warszawa: Szkoła Główna Handlowa.
- [9] European Business Association. (2020). *Infrastructure index 2020*. Retrieved from https://eba.com.ua/wp-content/uploads/2020/12/Infrastructure_2020.pdf.
- [10] Guàrdial, L., Clougher, D., Anderson, T., & Maina, M. (2021). IDEAS for transforming higher education: An overview of ongoing trends and challenges. *International Review of Research in Open and Distributed Learning*, 22(2), 166-184. doi: 10.19173/irrodl.v22i2.5206.
- [11] Holovenkin, V.P. (2019). *Higher education pedagogy*. Kyiv: National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute".
- [12] Janssens, L., Kuppens, T., Mulà, I., Staniskiene, E., & Zimmermann, A.B. (2022). Do European quality assurance frameworks support integration of transformative learning for sustainable development in higher education? *International Journal of Sustainability in Higher Education*, 23(8), 148-173. doi: 10.1108/IJSHE-07-2021-0273.
- [13] Kovalchuk, V., & Soroka V. (2021). Training of motor vehicle profile specialists in the conditions of digitalization. In B. Shneider (Ed.), *Pedagogical concept and its features, social work and linguology* (2nd ed.; pp. 2-20). Dallas: Primedia eLaunch LLC. doi: 10.36074/pcaifswal.ed-2.01.
- [14] Kukacka, J., & Kristoufek, L. (2020). Do "complex" financial models really lead to complex dynamics? Agent-based models and multifractality. *Journal of Economic Dynamics and Control*, 113, article number 103855. doi: 10.1016/j.jedc.2020.103855.

- [15] Kulish, A., Gyrenko, I., Kobzar, O., & Pavlenko, B. (2019). Problems of the introduction of the academic honesty principles in domestic institutions of higher education. *Asia Life Sciences*, Supplement 21(2), 101-116.
- [16] Malanyuk, N. (2020). The quality of professional education in the context of today's challenges (the example of future railway transport specialists' education). *Ukrainian Journal of Educational Studies and Information Technology*, 8(4), 21-37. doi: [10.32919/uesit.2020.04.03](https://doi.org/10.32919/uesit.2020.04.03).
- [17] Moye, J.J., Reed, P.A., Wu-Rorrer, R., & Lecorchick, D. (2020). Current and future trends and issues facing technology and engineering education in the United States. *Journal of Technology Education*, 32(1), 35-49. doi: [10.21061/jte.v32i1.a.3](https://doi.org/10.21061/jte.v32i1.a.3).
- [18] Phoong, S.Y., Phoong, S.W., Moghavvemi, S., & Sulaiman, A. (2019). Effect of smart classroom on student achievement at higher education. *Journal of Educational Technology Systems*, 48(2), 291-304. doi: [10.1177/0047239519870721](https://doi.org/10.1177/0047239519870721).
- [19] Polish Alternative Fuels Association. (2021). *Report: How will e-mobility change the Polish labour market? Green sectors of the future*. Retrieved from https://pspa.com.pl/wp-content/uploads/2021/10/PSPA_How_will_e-mobility_change_the_Polish_labour_market_Report_EN.pdf.
- [20] Price, R.A., De Lille, C., & Bergema, K. (2019). Advancing industry through design: A longitudinal case study of the aviation industry. *The Journal of Design, Economics, and Innovation*, 5(4), 304-326. doi: [10.1016/j.sheji.2019.07.003](https://doi.org/10.1016/j.sheji.2019.07.003).
- [21] Raczkowski, K., Schneider, F., & Laroche, F. (2017). *Report: The impact of road transport sector regulation on the entrepreneurship and economic growth in the European Union*. Warsaw - Linz - Lyon: Motor Transport Institute.
- [22] Reed, P.A. (2018). *Reflections on STEM, standards, and disciplinary focus*. *Technology and Engineering Teacher*, 71(7), 16-20.
- [23] Reichert, S. (2019). *The role of universities in regional innovation ecosystems*. Brussels: European University Association.
- [24] Salandanan, F.H., Buenvenida, L.P., & Bandy, M.M. (2021). Predictors of the effectiveness and efficiency of student affairs and services (SAS) among higher education institutions (HEIs). *International Journal of Management Entrepreneurship Social Sciences and Humanities*, 4(2), 99-117. doi: [10.31098/ijmesh.v4i2.666](https://doi.org/10.31098/ijmesh.v4i2.666).
- [25] Sorbonne declaration "Joint declaration on harmonisation of the architecture of the European higher education system by the four Ministers in charge for France, Germany, Italy and the United Kingdom in Paris, the Sorbonne". (1998, May). Retrieved from <http://www.ehea.info/page-sorbonne-declaration-1998>.
- [26] Sydorenko, V.P. (2009). *Problems of education and professional training of specialists in the motor transport industry of Ukraine*. *Actual Problems of Education and Upbringing of People with Special Needs*, 6, 145-157.
- [27] Symela, K.F. (2021). *Wyniki badań jako podstawa rozwoju kształcenia i szkolenia zawodowego oraz Zintegrowanego Systemu Kwalifikacji*. *Edukacja Ustawiczna Dorosłych*, 4, 7-10.
- [28] Turienzo, J., Cabanelas, P., & Lampón, J.F. (2022). The mobility industry trends through the lens of the social analysis: A multi-level perspective approach. *Sage Open*, 12(1), 1-13. doi: [10.1177/21582440211069145](https://doi.org/10.1177/21582440211069145).
- [29] Vinichenko, V.A. (2021). Technology of personnel training for the transport industry. *SHS Web of Conferences*, 97, article number 01006. doi: [10.1051/shsconf/20219701006](https://doi.org/10.1051/shsconf/20219701006).
- [30] Vojtov, V., Kutiya, O., Berezhnaja, N., Karnaukh, M., & Bilyaeva, O. (2019). Modeling of reliability of logistic systems of urban freight transportation taking into account street congestion. *Eastern-European Journal of Enterprise Technologies*, 4(3), 15-21. doi: [10.15587/1729-4061.2019.175064](https://doi.org/10.15587/1729-4061.2019.175064).
- [31] Voltrikh, O.V. (2018). Innovative approaches to training future road transport specialists. In *Training of future road transport specialists: Materials of the 2nd international scientific and practical online conference* (pp. 20-27). Lviv: Lviv Polytechnic National University.
- [32] Yasin, R.M., Yunus, F.A., Rus, R.Ch., Hashim, T.A., & Rahim, M.B. (2013). Current trends in technical and vocational education research: A meta-analysis. *Asian Social Science*, 9(13), 243-251. doi: [10.5539/ass.v9n13p243](https://doi.org/10.5539/ass.v9n13p243).
- [33] Zajac, P. (2018). Training of future employees in the field of road transport. In *Training of future road transport specialists: Materials of the 2nd international scientific and practical online conference* (pp. 10-20). Lviv: Lviv Polytechnic National University.

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Сучасні тенденції щодо підготовки фахівців професійної освіти автотранспортного профілю

Анотація. Статтю присвячено вивченню провідних тенденцій підготовки майбутніх фахівців автотранспортної сфери. Актуальність дослідження зумовлено необхідністю швидкого реагування сучасних освітніх закладів на процеси глобалізації та зміни світових тенденцій в соціально-економічній, освітній, науковій, інформаційній та інших галузях. Автотранспортна інфраструктура як одна з найбільш впливових в економіці кожної країни потребує якісної підготовки конкурентоздатних фахівців та постійного пошуку шляхів підвищення своєї ефективності. Мета статті полягає у вивченні, виокремленні та обґрунтуванні низки тенденцій, що впливають на якість підготовки фахівця або сприяють її покращенню відповідно до вимог часу. У процесі дослідження проаналізовано відповідну наукову літературу та використано наукові методи систематизації, порівняльного та структурного аналізу, узагальнення, конкретизації. У статті окреслено сучасні напрями у професійній підготовці фахівців освіти автотранспортного профілю. Узагальнено основні тенденції в галузі як складової частини освіти за ступеневою системою, що спрямована на оволодіння необхідним теоретичним та практичним досвідом майбутнього спеціаліста з орієнтацією на максимально повноцінне професійне самовизначення. Конкретизовано значення компетентісного та практикоорієнтованого підходів як найбільш важливих у процесі навчання фахівця. З'ясовано фактори, що впливають на якість підготовки конкурентоздатних працівників автотранспортної сфери, які матимуть можливість гідного працевлаштування та професійного росту. Зроблено висновки про те, що покращення підготовки майбутніх спеціалістів автотранспортної галузі в останні роки націлене на інтеграцію в міжнародний освітній простір, на підвищення якості підготовки спеціалістів у виробничій, економічній, освітянській та науковій сферах. Наголошено, що якісна підготовка на всіх рівнях може бути ефективною за активної роботи зі сторони всіх учасників процесу. Практичне значення дослідження полягає в можливості використати отримані результати в плануванні нових програм для навчання майбутніх спеціалістів у закладах освіти технічного спрямування, в організації процесу проходження практики під час навчання та підвищення кваліфікації спеціалістів галузі

Ключові слова: автотранспортна промисловість; технічна освіта; педагогіка вищої школи; інтеграція та глобалізація освіти; технології навчання; підвищення кваліфікації; компетентнісний підхід

UDC 76.021

DOI: 10.52534/msu-pp1.2023.69

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Methods of introducing additive technologies into the educational process in the training of future graphic designers

Article's History:

Received: 25.11.22

Revised: 27.02.23

Accepted: 31.03.23

Suggested Citation:

Derevyanko, N., & Zalevska, O. (2023). Methods of introducing additive technologies into the educational process in the training of future graphic designers. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 69-79. doi: 10.52534/msu-pp1.2023.69.

Abstract. Additive technologies provide many opportunities for improving activities in various fields, but the specifics of exploring their work and application in the educational process of students enrolled in design education programmes have been understudied. The purpose of this study is to develop methods of implementing additive technologies in the educational process of training future graphic designers and to test their effectiveness. To achieve this purpose, the research methodology used was a mixed-methods study. The study involved students and teachers of Khortytsia National Academy. Through video conferencing and discussions between teachers, the implementation of the "Additive Technologies" course in the educational process (study of 3D printing and modelling) and ways to use additive technologies in other subjects were developed and agreed upon. It was established that before the experiment, students had virtually no experience in learning or working with additive technologies, which was the foundation for the course curriculum. The students' assessment of the quality of learning on the scale "The instructional materials motivation survey" before and after the experiment was examined. A questionnaire has been developed to explore students' opinions on the effectiveness of using additive technologies in the work of a graphic designer, and their impressions of the methods of introducing additive technologies into the educational process. The survey found that the majority of students highly appreciated the impact of using additive technologies in the work of a graphic designer and believe that their study is necessary for effective learning and work in the future. In addition, students highly appreciated the teachers' ability to use additive technologies in the learning process. The methods of introducing additive technologies proposed in the study can be used in the training of higher education students in the field of 02 – Art, considering the specifics of the curriculum. In addition, there are prospects for using additive technologies to perform design work, internships using additive technologies, and defending qualification projects with real-time object manufacturing

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Keywords: design; 3D printing; modelling; 3D printer; design products

INTRODUCTION

Digital technologies have become an integral part of people's activities, and their rational use can greatly improve the learning process. Additive technologies allow for the production of objects for various purposes in a three-dimensional format, which significantly improves the production process of design products and has a wide range of applications in various fields of art and design. For example, using additive technologies for visual expression and exploring artistic production for future graphic designers allows them to model and produce designer and non-standard products, plan the design of various items in detail, and many other possibilities. Using additive technologies allows designers to take advantage of digital manufacturing in the early stages of design, balance the choice of different characteristics of the object being designed, adjust them, and calculate in detail the costs of establishing a particular product (Pellaccia *et al.*, 2021). The above leads to an increase in the number of jobs for specialists who can work effectively with additive technologies, as it is necessary to properly design and manufacture objects for further production and design objects for various purposes. In turn, graduates of higher education institutions do not have the necessary skills to meet the market's needs for using additive technologies. Changes in the curriculum are required due to the need for particular specialist knowledge and the development of the additive technology industry (Perez-Perez *et al.*, 2018).

Articles exploring using 3D printing in higher education institutions describe the acquisition of subject knowledge through the establishment of 3D printing systems, scientific and test models, using 3D printing in project-based learning, integrating 3D printing into the curriculum by incorporating it into existing courses and introducing new courses, and exploring 3D printing outside the university (Kalita *et al.*, 2019). When exploring how additive technologies are used in educational institutions of different levels, six categories of their use are identified: for teaching students 3D printing, teacher training, assistive technology for learning, making artefacts to assist learning, design of assistive technologies, and support for information activities (Ford & Minshall, 2019).

Authors C. Seidel and R. Schatz (2019) proposed the implementation of an additive manufacturing curriculum of students' choice. In addition, the problems of using 3D printing in student education are noted. It includes the material and technical base of each higher education institution and the skills, knowledge and abilities of the teachers themselves. Therewith, the introduction of 3D printing into the educational process has not been explored and requires development and testing of its effectiveness. The effective use of additive technologies in the educational process requires the development, implementation and study of the impact of using programmes that help to master the features of 3D printing for use in the field of design and the adaptation of existing curricula to the introduction of additive technologies. In addition, it is necessary to evaluate the effectiveness of various methods for specific learning objectives. Considering the obvious advantages of using additive technologies

in students' education and the small number of studies and recommendations in this area, the purpose of this study is to develop methods for introducing additive technologies into the educational process of future graphic designers.

Research objectives: to explore the issues in the available sources of scientific literature, to select possible areas for the introduction of additive technologies in the education of students in the chosen speciality; to develop methods for introducing additive technologies into the educational process of future graphic designers; to explore the effectiveness of the methods used and students' opinions on using additive technologies in the educational process and the work of a graphic designer.

LITERATURE REVIEW

The influence of 3D printing in the scientific community is constantly growing, as evidenced by the increase in the number of scientific publications on the subject since 2015 (Loy, 2018). For example, additive technologies are increasingly being used in manufacturing to make models (Wang *et al.*, 2020). Additive technologies have become a technological innovation in manufacturing, engineering, and design and allow for the establishment of large-scale and multifunctional products (Jin *et al.*, 2020). Additive manufacturing is the process of joining materials to make objects, combining a set of technologies with similar characteristics in terms of production forms with the ability to generate parts with or without digital applications (Kumar *et al.*, 2023). Additive technologies have many advantages over simple geometric design and are one of the revolutionary processes of the next few years (Jimenez *et al.*, 2019). It allows for more efficient use of materials and more design freedom compared to conventional production.

Additive manufacturing technologies allow for the production of complex and customised products, but the technologies themselves still need to be improved and shortcomings addressed (Akhavan & Manoochchri, 2022). When printing on 3D printers, there are still problems with the mismatch between theoretical design expectations and practical production capabilities (Chen *et al.*, 2021). These problems can be solved by implementing algorithms to detect flaws and modulate printing in real-time (Diao & Shih, 2019). Despite the productivity potential of additive technologies, their distribution and use are still quite limited (Monzon *et al.*, 2019). In addition, the industry of additive technologies is quite dynamic, which necessitates the implementation and continuous improvement of training programmes for students and individuals who acquire additional knowledge. The study of the specific features of additive technologies in curricula is frequently not provided for, and there is a lack of research on methods of introducing additive technologies into the educational process of students of various specialities. Using and researching 3D printing features is mostly done in scientific laboratories, and only a small part of higher education institutions and private educational institutions study 3D printing features, modelling and using them in the educational process.

MATERIALS AND METHODS

The analysis of scientific research on the study of additive technologies in the educational process has allowed identifying certain methods and ways that can be used to teach future graphic designers. S. Ford and T. Minshall (2019) noted that additive technologies open up opportunities for new practices of teaching several subjects in educational institutions of different fields. To effectively use 3D printing in the educational process, experts recommend that the first step is to get acquainted with the technology and only then search for creative ways to use it as an auxiliary tool in the graphics industry. M. Sable-Meyer *et al.* (2022) propose a programming language similar to Logo, which can be used to design various graphic drawings in 3D. Other researchers have proposed such methods of exploring the features of additive technologies as a literature review on the subject in the Scopus database, and project-based learning (exploring the features of a 3D printer, balanced practical use of the printer for printing itself).

O. Diegel *et al.* (2019) proposed training courses to maximise the effectiveness of using additive technologies in manufacturing and design based on problem-based learning. Using additive technologies outside of the classroom allows for expanding students' learning experience, developing their self-learning capabilities and gaining new and interesting work experience. Effectively apply project-based learning with the manufacture and testing of various models, which contributes to the development of the necessary skills for future work. Project-based learning with specific work purposes and constraints is more effective than tasks with fewer specific constraints and purposes (Prabhu *et al.*, 2020).

Researchers D.R. Calderaro *et al.* (2020) explored the characteristics of additive technologies to make decisions about their choice for use in production systems and analysed the competitive characteristics of printers and printing materials. Most of the 3D printing applications have been established through project-based learning and integration with the course curriculum. Students made a car model on their own and tested it. As a result of the experiment, it was found that the introduction of additive technologies had a positive impact on the learning process of students and their relationships with teachers. It allows using 3D printing as a tool for experimentation, product development and proof of concept, which allows for exploring new ideas and designing innovative products. The introduction of additive technologies has made learning more interesting and engaging. Printing allows for the integration of lectures and the practical work of students. In addition, students have the opportunity to make their models, which greatly increases their motivation to learn. The application of 3D printing in the curriculum for students in the Department of Graphic Engineering and Design will improve the learning process, outcomes, and teaching experience and contribute to the digital literacy of designers (Bernard *et al.*, 2019; Assuncao *et al.*, 2019).

The experiment was conducted using a mixed-methods research methodology. In the beginning, consultations were held between teachers who teach subjects in the graphic design specialisation to resolve the issue of how to introduce additive technologies into the students' learning process. The discussions were attended by lecturers with a scientific degree (Doctor of Philosophy) who have more than 5 years of teaching experience. Three discussions were held, and methods were agreed upon that could be implemented in the educational process, considering the material and technical support and the specifics of the curriculum of the higher education institution where the experiment was planned.

The study involved students ($n=48$ – 37 female students, 11 male students; age – 18-20 years) and teachers ($n=17$, work experience – more than 5 years) enrolled in the Graphic Design study programme at Khortytsia National Academy. The curriculum of these students included a course on additive technologies and their use in other subjects. Before the experiment, the presence of students' experience of learning or working with additive technologies and students' assessment of the learning process using the scale "The instructional materials motivation survey" proposed by J.M. Keller (2010) were explored. This questionnaire is effective for researching various aspects of student learning using innovative technologies, as noted by (Anuar *et al.*, 2021). The survey allows exploring four aspects of the evaluation of training sessions, namely, whether the training sessions contribute to confidence, whether the training material is sufficiently focused, satisfaction with the organisation and content of the training sessions and the relevance of the material being taught. After that, the teachers developed the content of the additional course "Additive Technologies" for students majoring in Graphic Design and ways to use additive technologies in the study of other subjects. The course content was agreed upon by the teaching staff at a meeting of the Academy's Academic Council. A detailed description of the methods of implementing additive technologies is provided in the results. The pedagogical experiment to implement the course was conducted during one academic semester (2021/2022).

A student survey was used to test the effectiveness of methods of introducing additive technologies into the educational process. For this purpose, the author's questionnaire was developed that allows evaluating the impact of using additive technologies on the educational process of students and their opinions on the effectiveness of using additive technologies in future work. It allows evaluating of their attitude towards additive technologies for use in future work, which is a prerequisite for their willingness to explore them.

The questionnaire consists of seven subscales, each with several questions, and an additional question at the end of the survey: "Please indicate your impressions of using additive technologies in the educational process". The survey covered seven aspects of using additive technologies, namely: using additive technologies to improve the products made by graphic designers, optimising the work

of a graphic designer, exploring the impact of additive technologies on the work of a graphic designer, the impact of using additive technologies on the educational process of future graphic designers and assessing teaching competence in using additive technologies. In addition, students evaluated the methods of implementing additive technologies used in the educational process.

Students answered the questions on a five-point Likert scale. The questions were agreed upon and refined during consultations between the teachers. The validity of the proposed questionnaire was checked by completing it by twelve teachers (who voluntarily agreed to participate in the experiment and completed the questionnaire online and sent suggestions for improving the questionnaire ques-

tions if desired) during the pre-testing of the questionnaire. The questionnaires were completed using Google Forms, the answers to the questionnaires were recoded and processed using SPSS Statistics, and the results were discussed and interpreted. To determine the reliability of the developed questionnaire, the value of the Cronbach alpha coefficient was calculated, and to explore the differences between the results before and after the experiment, the Student's T-criterion was calculated.

RESULTS

The pre-experiment study, which allowed examining whether students had experience learning or working with additive technologies, demonstrates the following results (Table 1).

Table 1. Students' experience or training in 3D printing prior to the experiment

Description of existing experience	Number of students, %
Explored additive technologies during training courses	0.43%
Explored additive technologies on my own	4.68%
Interested in 3D printing and 3D modelling	9.36%
Have a 3D printer at home or with friends, tried to work	4.26%
Visited scientific laboratories where he had experience with additive technologies	2.55%
Did not explore the peculiarities of 3D printing	78.72%

The results demonstrate that most students have no experience working and learning with additive technologies. Considering this, teachers developed methods for introducing additive technologies into the educational process with a detailed study of their features, and they were used in the educational process of other subjects after learning the fundamentals and some basic details of working with a 3D printer. Additive technologies were introduced into the educational process of future graphic designers through immediate learning of the features of additive technologies and their use in the study and completion of tasks in other subjects. The ways of introducing additive technologies into the educational process, which were previously considered by experts, are used – gaining subject knowledge by creating scientific and test models, using 3D printing in project-based learning, integrating 3D printing into the curriculum by including it in existing courses and introducing new courses and exploring 3D printing outside the academy.

Additive technologies were implemented considering the classification of teaching methods in higher education institutions, namely, methods of organising and implementing educational and cognitive activities, which are divided into:

1. Verbal methods – by the source of educational information (narration, explanation, conversations and lectures in various formats).

2. Visual methods – illustration (demonstration of the results of working with a 3D printer, demonstration of the features of printers and work with different types of material), and demonstration (use of video and multimedia during lectures, demonstration of the features of additive technologies).

3. Practical methods – working with a 3D printer, printing own models, working with them, improving them.

In addition, these methods are classified as synchronous – video conferencing and asynchronous – video lessons, discussions in online forums, e-mail correspondence and the Moodle platform. Lectures, discussions, and video conferences were held on the subjects:

1. Explore the features of 3D printers, their types, differences and specifics.

2. Explore the specific features of modelling objects in 3D format (features of modelling software).

3. Convert 2D images to 3D.

4. Features of printing the same established 3D models on different printers, differences in the operation of printers, and differences in modelling the same models in different programmes.

5. Differences in modelling the same models in different programmes.

6. Selecting the most efficient printer for printing certain objects based on the examined printer characteristics.

7. Selection of materials and printers depending on the characteristics of the object to be designed, the cost of printing and material, and the quality of the printed model.

Independent work on the subjects was completed:

1. Calculating the cost of printing specific objects on different printers (each student is given separate objects).

2. Calculate the cost of materials for printing objects in 3D.

A lesson was held using problem-based learning on the subject of "Printing advertising and design objects in 3D format, considering the specific features of the printing material", and the specific features of object modelling and se-

lection of printing characteristics were discussed. A playlist of videos on working with 3D printers and materials, and software for modelling objects in 3D format were included in the learning process to help students learn about printing, 3D printer characteristics, and materials. The students watched the videos on their own and discussed them in class.

The methods of organising and implementing educational and cognitive activities using additive technologies are divided into inductive methods – summarising the experience of lectures and practical classes, and independent work, summarising the conclusions about the operation of printers with different operating principles, the specifics of using materials to perform certain tasks; deductive methods – learning the educational material based on generalisations. These methods are used both in the immediate study of additive technologies and in using additive technologies in the study of other subjects. Methods of stimulating and motivating learning and cognitive activity. Reproductive – reproduction of ready-made samples and work on ready-made samples, instructions and tasks. Creative, problem-solving methods – independent modelling, work using 3D printing and modelling, completion of tasks from the teacher with the possibility of independent completion and correction. Problem tasks with an independent search for their solution. Methods of control (self-control, mutual control), correction (self-correction, mutual correction) of the effectiveness of the educational and cognitive activity. The control methods used were a review of the established and printed models and a discussion of the possibilities for their correction.

Students completed learning tasks under the guidance of a teacher and independently. Methods of stimulating and motivating learning and cognitive activity using additive technologies are divided into methods of stimulating inter-

est in learning and methods of stimulating duty and responsibility. Methods of stimulating interest in learning – establishing situations of interest during the teaching of certain material – games, videos, independent creation and printing of 3D models, didactic games, educational discussions, analysis of life situations and experiences (from the teacher's story or a video). Methods of stimulating duty and responsibility – completion of assignments within the timeframe set by the teacher, while evaluation of completed models was either not conducted or was rather descriptive (it is since students need both to complete the assignment and to develop modelling and creative skills, and self-learning skills).

During the actual study of additive technologies, binary teaching methods are widely used, namely: visual illustrative method, visual problematic method, visual research method, problematic research method, and verbal reproductive method. When using additive technologies in the educational process in other subjects, integrated methods were used, namely using 3D printing in the teaching of subjects from the educational programme. Training in additive technologies and their use in the study of other subjects was conducted during the first academic semester of the 2022-2023 academic year. At the end of the semester, students were surveyed using the author's questionnaire.

After the questionnaire survey, a descriptive statistical analysis of the results on students' opinions about using additive technologies in the educational process of graphic designers was conducted. The question about using additive technologies in the work of a graphic designer demonstrates that students see effective applications in almost all areas of future work. In addition, students mostly agree that using additive technologies in the work of a graphic designer can significantly optimise it. Table 2 presents a general descriptive statistical analysis of students' responses.

Table 2. Results of a student survey on using additive technologies in the work of graphic designers and their effectiveness

Answer options	Strongly agree (%)			Agree (%)			Probably yes (%)			Doubtful (%)			Disagree (%)
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Female students (n=133)	Male students (n=102)	Total (n=235)	Female students (n=133)	Male students (n=102)	Total (n=235)	Female students (n=133)	Male students (n=102)	Total (n=235)	Female students (n=133)	Male students (n=102)	Total (n=235)	
1. Using additive technologies will be effective in improving such graphic design products:													
Book layouts and illustrations	66.92	86.27	75.32	24.06	9.8	17.87	9.02	3.92	6.81	0	0	0	0
Advertising and information posters	69.17	77.45	72.77	21.05	17.65	19.57	9.77	4.9	7.66	0	0	0	0
Design of postcards and postage stamps	75.94	80.39	77.87	9.02	9.8	9.36	9.02	9.8	9.36	6.02	33.4	6.02	0
Product design	71.43	91.18	80	17.29	6.86	12.77	7.52	1.96	5.11	3.76	22.13	3.76	0
Company logos	77.44	85.29	80.85	9.02	11.76	10.21	10.53	2.94	7.23	3.01	11.7	3.01	0
Advertising printing products	78.2	83.33	80.43	7.52	12.75	9.79	9.02	3.92	6.81	5.26	22.98	5.26	0
Souvenir products	58.65	76.47	66.38	16.54	17.65	17.02	17.29	5.88	12.34	7.52	44.26	7.52	0

Table 2. Continued

1	2	3	4	5	6								
UI UX design of mobile applications, and websites (designing 3D objects for the website and printing them if necessary for work)	66.17	86.27	73.19	18.8	12.75	16.17	13.53	4.9	9.79	1.5	0.85	1.5	0
2. In your opinion, does using additive technologies in the work of a graphic designer allow for:													
Optimise the design process	76.69	81.37	78.72	12.03	14.71	13.19	11.28	3.92	8.09	0	0	0	0
Reduce waste compared to other technologies	76.69	83.33	79.57	11.28	11.76	11.49	9.02	4.9	7.23	33.01	1.7	3.01	0
Accelerate the product testing phase	79.7	82.35	80.85	10.53	12.75	11.49	7.52	4.9	6.38	22.26	1.28	2.26	0
Personalise products	82.71	79.41	81.28	8.27	13.73	10.64	9.02	6.86	8.09	0	0	0	0
Enables the manufacture and machining of complex parts	76.69	84.31	80	10.53	13.73	11.91	11.28	1.96	7.23	11.5	0.85	1.5	0
Provides more design possibilities	79.7	76.47	78.3	9.02	12.75	10.64	11.28	10.78	11.06	0	0	0	0
3. The impact of additive technologies on the work of a graphic designer:													
Enables the development of new products	66.92	82.35	73.62	24.06	13.73	19.57	9.02	3.92	6.81	0	0	0	0
Accelerates product development	66.17	84.31	74.04	18.05	9.8	14.47	15.79	5.88	11.49	0	0	0	0
Improves the level of knowledge and skills of designers	75.94	86.27	80.43	15.79	12.75	14.47	8.27	0.98	5.11	0	0	0	0
Facilitates the production of personalised products	72.93	76.47	74.47	15.79	13.73	14.89	9.02	9.8	9.36	2.26	1.28	2.26	0
4. Using additive technologies in the educational process allows:													
Optimise the learning process	71.43	76.47	73.62	18.8	14.71	17.02	9.77	8.82	9.36	0	0	0	0
Accelerate the learning of certain aspects of design	65.41	77.45	70.64	18.05	17.65	17.87	16.54	4.9	11.49	0	0	0	0
Better understand the specifics of product manufacturing	78.2	72.55	75.74	9.02	14.71	11.49	11.28	12.75	11.91	1.5	0.85	1.5	0
Promotes interest in learning	82.71	74.51	79.15	15.79	12.75	14.47	1.5	12.75	6.38	0	0	0	0
Stimulates learning beyond the classroom	73.68	74.51	74.04	10.53	17.65	13.62	15.79	7.84	12.34	0	0	0	0
5. For the effective use of additive technologies in the work of a graphic designer, it is necessary to:													
Learn the features of printers from different companies and with different operating principles	73.68	76.47	74.89	18.8	14.71	17.02	7.52	8.82	8.09	0	0	0	0
Explore the features of printing materials	72.93	74.51	73.62	21.05	24.51	22.55	6.02	0.98	3.83	0	0	0	0
Explore the basics and features of 3D modelling	77.44	88.24	82.13	16.54	11.76	14.47	6.02	0	3.4	0	0	0	0
Research progress in the development of additive technologies	78.95	85.29	81.7	16.54	7.84	12.77	4.51	6.86	5.53	0	0	0	0
6. Knowledge and skills of teachers in teaching additive technologies:													
Teachers are fully equipped with the skills to teach additive technologies	65.41	82.35	72.77	18.05	7.84	13.62	1.5	9.8	5.11	0	0	0	0
Teachers have pedagogical skills to work with additive technologies	69.17	79.41	73.62	8.27	11.76	9.79	6.02	8.82	7.23	1.5	0.85	1.5	0
Cooperation with teachers on the study of additive technologies was effective	58.65	80.39	68.09	16.54	11.76	14.47	9.02	7.84	8.51	0.75	0.43	0.75	0

Table 2. Continued

1	2		3		4		5		6				
7. Establishment of scientific laboratories in higher education institutions with the possibility of using additive technologies:													
Promote effective learning	73.68	76.47	74.89	18.8	13.73	16.6	7.52	9.8	8.51	0	0	0	0
Increase students' interest in learning	76.69	83.33	79.57	17.29	11.76	14.89	6.02	4.9	5.53	0	0	0	0
Increase the efficiency of design work	76.69	77.45	77.02	18.8	14.71	17.02	4.51	7.84	5.96	0	0	0	0
Promote independent study of 3D printer functions and material properties	79.7	74.51	77.45	16.54	14.71	15.74	3.76	10.78	6.81	0	0	0	0

The answers to the last question of the questionnaire ("Please indicate your impressions of using additive technologies in the learning process"), which summarises the impact of the methods of introducing additive technologies in this experiment, demonstrate that almost all students enjoyed the learning process very much:

- enjoyed it a lot (75.32%);
- enjoyed (14.47%);
- normal (5.95%);
- slightly difficult (4.26%);
- did not enjoy it (0%).

According to the results of the survey, almost all students enrolled in Graphic Design see the prospects and high efficiency of using additive technologies in the educational process. The assessment of each of the areas of application of additive technologies included internal reliability and average correlation between different items. The internal reliability study demonstrates that the Cronbach's alpha coefficient is:

- subscale 1 – using additive technologies will be effective in improving graphic design products (0.754);

- subscale 2 – opportunities for the effective use of additive technologies in the work of a graphic designer (0.841);
- subscale 3 – the impact of additive technologies on the work of a graphic designer (0.833);
- subscale 4 – effectiveness of using additive technologies in the educational process of future graphic designers (0.782);
- subscale 5 – key points for the effective use of additive technologies in the work of a graphic designer (0.853);
- subscale 6 – teachers' knowledge and skills in teaching additive technologies (0.738);
- subscale 7 – additional benefits and opportunities for students from the establishment of scientific laboratories in higher education institutions with the possibility of using additive technologies (0.788).

The questionnaire "The instructional materials motivation survey" was conducted before and after the implementation of methods of introducing additive technologies into the students' learning process. The results demonstrate that students rated the quality of learning in general with using the course of additive technologies and using these technologies in other subjects significantly higher than before the experiment (Table 3).

Table 3. Results of a student survey on the quality of learning with and without using additive technologies

Questionnaire subscales	Before the experiment	After the experiment	t	p
Confidence	3.11	4.23	1.98	<0.05
Attention	3.25	4.32	2.21	
Satisfaction	3.45	4.38	3.11	
Relevance	3.48	4.44	2.38	

Thus, students who attended the course "Additive Technologies" rated the educational process and the educational material of the entire course significantly higher than students who did not study additive technologies. It could indicate a strong impact of using additive technologies on students' learning in general, as it allows them to be integrated and used with other subjects. In addition, these results confirm the effectiveness of the selected methods of introducing additive technologies into the educational process of second-year students.

DISCUSSION

Using additive technologies in the educational process of students enrolled in the field of study 02-Art is a rather promising area of development of educational programmes. It allows working with real models, which is very important

for future designers. This technology allows producing the necessary models in a reduced or required size, exploring their functionality and shortcomings, and adjusting them before the final product is made (Jin *et al.*, 2020). The interest of the scientific community in additive technologies and their use in the educational process is constantly growing (Dube & Wen, 2022).

In this study, some methods of introducing additive technologies into the students' learning process were used, including those identified by A. Stern *et al.* (2019). Additive technologies are used to teach students 3D printing, such as: auxiliary technology for teaching other subjects of the curriculum, making artefacts to assist learning and support for information activities. The teaching methods described in this study are based on conventional teaching methods. The course planning was based on the data from

B. Banjanin *et al.* (2020) about the initial familiarisation and then application of this technology as an auxiliary tool in the learning process. Therewith, the implementation of an additive manufacturing curriculum of student choice was not used, as recommended, as it was planned to teach all students a particular course (Seidel & Schatz, 2019).

After the implementation of the course "Additive Technologies" and their use in the study of other subjects, a survey was conducted, which confirms the data of O. Diegel *et al.* (2019) on the benefits of using technology in the educational process. Students agree that additive technologies allow for the production of complex and customised products, which is a big advantage over other technologies (Gong *et al.*, 2022). And for future designers, the ability to design individual orders that differ from mass production, functional products, and interesting logos is especially important, which can be learned using 3D printing. In addition, the majority of students noted that using additive technologies in the work of graphic designers has many areas and will significantly optimise and improve the work of a designer.

The students noted that the opening of scientific laboratories with the possibility of visiting and using additive technologies outside the classroom allows for improving the quality of project work, develops opportunities for self-study and increases students' interest in learning. In addition, it will contribute to the development of students' practical skills and knowledge. An in-depth study of the principles of additive technologies and the practical features of printing can optimise the learning process, making it more productive and interesting (Ford & Minshall, 2019).

Teachers need to constantly monitor the development of additive technologies, and design teaching materials in such a way as to familiarise students with the basic principles of work and the possibilities of their use in future professional activities (Yang, 2018). In this study, students highly appreciated the skills of teachers in teaching knowledge of additive technologies. However, it is necessary to keep abreast of new products, innovations and developments in modern additive manufacturing in the chosen field to provide students with quality knowledge for future work. After all, education should provide knowledge that meets the requirements of the Fourth Industrial Revolution. And experts H. Kalita *et al.* (2019) recommend training teachers themselves for effective student learning. It is necessary to develop cognitive (knowledge of mathematics, logic, data management) and non-cognitive skills (critical thinking skills, teamwork, problem-solving and interpersonal skills). The implementation of additive manufacturing technologies requires the study of various disciplines, such as materials science, fluid mechanics, graphic design, etc. Using additive technologies in education accelerates the learning process and makes it more interesting. Using additive technologies in the training of future graphic designers allows developing non-cognitive skills, such as teamwork, communication skills, concentration, planning, and others necessary for solving work situations.

Further research into the specifics of materials and printing for different products is needed. In addition, students agreed that in the work of a graphic designer using additive technologies, it is necessary to constantly explore the features of technology development, improvement and correction of printing defects (Akhavan & Manoochehri, 2022). A detailed examination of the characteristics of materials and printers is necessary, as printing parameters are difficult to adjust to fully match the required model, and they have a major impact on the microstructure of the print and the quality of the established models (Qi *et al.*, 2019). Machine learning and print correction methods are used for this purpose, but it still requires research and study by future designers and monitoring during future work. For this purpose, machine learning and print correction methods, and artificial intelligence are used to correct and improve the technology, which can significantly improve the results of work (Liu *et al.*, 2020). However, object modelling and customisation, specifically in graphic design, where parts to be printed or modelled are frequently non-standard, are creative, requiring designers to learn the specifics of printing and modelling. After all, to establish perfect models and individual orders, it is necessary to thoroughly develop models and adjust printing, and select materials for a high-quality result (Jiang *et al.*, 2022).

Students noted that learning using additive technologies improves the educational process makes it interesting and motivates learning, which is an indicator of the effectiveness of the methods used in this research. In turn, student satisfaction with the learning process is an indicator of the quality of education in general and has long-term positive consequences for self-education in the future for each individual (Rajabalee & Santally, 2020). The students of the experimental group rated the effectiveness of learning significantly higher than the students of the control group, in whose educational process additive technologies were not used. Therefore, using additive technologies, in addition to the positive impact of their study, has a positive impact on the study of other subjects in the curriculum. The immediate impact of using additive technologies on the quality of learning can be explored in future experimental studies. An important and promising continuation of the introduction of additive technologies into the educational process of future graphic designers is their use during control and laboratory work with real-time model printing. It will increase responsibility when learning the features of 3D printing, materials for it and 3D modelling in various programmes. When choosing methods of introducing additive technologies into the educational process, it is necessary to explore whether students have previous experience learning or working with these technologies and the previous curriculum.

Consider the constant variability and updates in the operation of 3D printers and modelling tools, and teach students to compare old and new versions of certain applications, programmes and their versions, printers and materials (as newer versions of printers, programmes or materials are not always better for certain jobs). Using courses

in additive technologies of students' choice will have a positive impact on their learning. Therewith, the basics of additive technologies and 3D modelling should be taught to all students – future designers, and in-depth study can occur at the students' discretion (Seidel & Schatz, 2019). An effective method for an in-depth study of additive technologies would be to perform control and diploma works using additive technologies in real-time.

CONCLUSIONS

The results obtained in the study demonstrate the importance of introducing additive technologies into the educational process of future graphic designers and the positive impact on their assessment of learning in general. Students see many opportunities to use additive technologies in their future work, and this, in turn, contributes to effective learning using additive technologies. The pre-experiment survey on the evaluation of the learning process demonstrates an average level of evaluation of the quality of learning (3.11–3.48, max 5). It indicates that students are not fully engaged in the learning process and that there is a need to use innovative technologies and teaching methods to increase motivation and assess the quality of learning. Considering the effectiveness of using additive technologies in the educational process and the lack of methodological support in this area, the teachers developed and approved a training course on the study of additive technologies for future graphic designers and methods of their use in teaching other subjects of the curriculum. Therefore, the methods of introducing additive technologies used in this study are the introduction of a new course on additive technologies and using additive technologies in the study of other subjects. The study of the features of additive technologies was based on conventional teaching methods.

Notably, this research involved students who had not previously explored the specifics of additive technologies during their educational programmes (independent study and use of additive technologies were possible). The experiment did not involve using additive technologies in the implementation of projects that are assessed according to the curriculum. The projects and models during the experiment were of an introductory and informative nature. Only

students from Ukraine participated in the study, without foreign students, considering the situation in the country. The survey demonstrated that students highly appreciated the value and possibilities of using additive technologies in the work of a graphic designer, and the assessment of the quality of education after the implementation of the course increased significantly ($p < 0.05$). It confirms the effectiveness of the proposed methods of introducing additive technologies into the educational process but does not exclude the need and possibility of using other methods.

The students highly appreciated the possibility of using additive technologies to improve the efficiency and effectiveness of graphic design products, the effectiveness of using additive technologies in the work of a graphic designer, and the impact of additive technologies on the work of a graphic designer. The majority of students agree that using additive technologies in the educational process allows them to optimise the learning process, accelerate the study of certain aspects of design, better understand the specifics of product manufacturing, increase their interest in learning and stimulate learning outside the classroom. It demonstrates that additive technologies facilitate extracurricular learning, which is a criterion for the positive impact of the applied technologies on learning. Most students agreed that for the effective use of additive technologies in the work of a graphic designer, it is necessary to explore the features of printers from different companies and with different principles of operation, the features of printing materials, the basics and features of 3D modelling, and to explore the progress in the development of additive technologies.

For further research, it is recommended to develop methods that allow for a deeper study of additive technologies in senior courses and to test their effectiveness, explore the effectiveness of using additive technologies in the study of certain subjects, and perform project work.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Akhavan, J., & Manoochehri, S. (2022). Sensory data fusion using machine learning methods for in-situ defect registration in additive manufacturing: A review. In *2022 IEEE international IOT, electronics and mechatronics conference*. Toronto: IEEE. doi: [10.1109/IEMTRONICS55184.2022.9795815](https://doi.org/10.1109/IEMTRONICS55184.2022.9795815).
- [2] Anuar, S., Nizar, N., & Ismail, M.A. (2021). The impact of using augmented reality as teaching material on students' motivation. *Asian Journal of Vocational Education and Humanities*, 2(1), 1-8. doi: <https://doi.org/10.53797/ajvah.v2i1.1.2021>.
- [3] Assuncao, E.G., Silva, E.R., & Pei, E. (2019). Professional training of AM at the European level. In *Additive manufacturing – developments in training and education* (pp. 211-217). Cham: Springer. doi: [10.1007/978-3-319-76084-1_14](https://doi.org/10.1007/978-3-319-76084-1_14).
- [4] Banjanin, B., Pal, M., Dimovski, V., Adamovic, S., & Lilic, A. (2020). 3D printing in the education of graphic engineering and design students. In *10th international symposium on graphic engineering and design* (pp. 457-468). Novi Sad: University of Novi Sad. doi: [10.24867/GRID-2020-p51](https://doi.org/10.24867/GRID-2020-p51).
- [5] Bernard, A., Thompson, M.K., Moroni, G., Vaneker, T., Pei, E., & Barlier, C. (2019). Functional, technical and economical requirements integration for additive manufacturing design education. In *Additive manufacturing – developments in training and education* (pp. 171-185). Cham: Springer. doi: [10.1007/978-3-319-76084-1_12](https://doi.org/10.1007/978-3-319-76084-1_12).

- [6] Calderaro, D.R., Lacerda, D.P., & Veit, D.R. (2020). Selection of additive manufacturing technologies in productive systems: A decision support model. *Gestão & Produção*, 27(3), article number e5363. doi: [10.1590/0104-530X5363-20](https://doi.org/10.1590/0104-530X5363-20).
- [7] Chen, Y., Peng, X., Kong, L., Dong, G., Remani, A., & Leach, R. (2021). Defect inspection technologies for additive manufacturing. *International Journal of Extreme Manufacturing*, 3(2), article number 022002. doi: [10.1088/2631-7990/abe0d0](https://doi.org/10.1088/2631-7990/abe0d0).
- [8] Diao, P.H., & Shih, N.J. (2019). Trends and research issues of augmented reality studies in architectural and civil engineering education – a review of academic journal publications. *Applied Sciences*, 9(9), article number 1840. doi: [10.3390/app9091840](https://doi.org/10.3390/app9091840).
- [9] Diegel, O., Nordin, A., & Motte, D. (2019). Teaching design for additive manufacturing through problem-based learning. In *Additive manufacturing – developments in training and education* (pp. 139-149). Cham: Springer. doi: [10.1007/978-3-319-76084-1_10](https://doi.org/10.1007/978-3-319-76084-1_10).
- [10] Dube, A.K., & Wen, R. (2022). Identification and evaluation of technology trends in K-12 education from 2011 to 2021. *Education and Information Technologies*, 27, 1929-1958. doi: [10.1007/s10639-021-10689-8](https://doi.org/10.1007/s10639-021-10689-8).
- [11] Ford, S., & Minshall, T. (2019). Where and how 3D printing is used in teaching and education. *Additive Manufacturing*, 25, 131-150. doi: [10.1016/j.addma.2018.10.028](https://doi.org/10.1016/j.addma.2018.10.028).
- [12] Gong, X., Zeng, D., Groeneveld-Meijer, W., & Monogharan, G. (2022). Additive manufacturing: A machine learning model of process-structure-property linkages for machining behavior of Ti-6Al-4V. *Materials Science in Additive Manufacturing*, 1(1), article number 6. doi: [10.18063/msam.v1i1.6](https://doi.org/10.18063/msam.v1i1.6).
- [13] Jiang, J., Xiong, Y., Zhang, Z., & Rosen, D.W. (2022). Machine learning integrated design for additive manufacturing. *Journal of Intelligent Manufacturing*, 33(4), 1073-1086. doi: [10.1007/s10845-020-01715-6](https://doi.org/10.1007/s10845-020-01715-6).
- [14] Jimenez, M., Romero, L., Dominguez, I.A., del Mar Espinosa, M., & Dominguez, M. (2019). Additive manufacturing technologies: An overview about 3D printing methods and future prospects. *Complexity in Manufacturing Processes and Systems*, 2019, article number 9656938. doi: [10.1155/2019/9656938](https://doi.org/10.1155/2019/9656938).
- [15] Jin, Z., Zhang, Z., Demir, K., & Gu, G.X. (2020). Machine learning for advanced additive manufacturing. *Matter*, 3(5), 1541-1556. doi: [10.1016/j.matt.2020.08.023](https://doi.org/10.1016/j.matt.2020.08.023).
- [16] Kalita, H., Zindani, D., & Kumar, K. (2019). Additive manufacturing: A tool for better education. In *Additive manufacturing technologies from an optimization perspective* (pp. 41-76). Hershey: IGI Global. doi: [10.4018/978-1-5225-9167-2.ch003](https://doi.org/10.4018/978-1-5225-9167-2.ch003).
- [17] Keller, J.M. (2010). *Motivational design for learning and performance: The ARCS model approach*. New York: Springer. doi: [10.1007/978-1-4419-1250-3](https://doi.org/10.1007/978-1-4419-1250-3).
- [18] Kumar, S., Gopi, T., Harikeerthana, N., Gupta, M.K., Gaur, V., Krolczyk, G.M., & Wu, C.S. (2023). Machine learning techniques in additive manufacturing: A state of the art review on design, processes and production control. *Journal of Intelligent Manufacturing*, 34, 21-55. doi: [10.1007/s10845-022-02029-5](https://doi.org/10.1007/s10845-022-02029-5).
- [19] Liu, J., Xu, Y., Ge, Y., Hou, Z., & Chen, S. (2020). Wire and arc additive manufacturing of metal components: A review of recent research developments. *The International Journal of Advanced Manufacturing Technology*, 111, 149-198. doi: [10.1007/s00170-020-05966-8](https://doi.org/10.1007/s00170-020-05966-8).
- [20] Loy, J. (2018). Understanding the scope for a product design education discourse on additive manufacturing. *Archives of Design Research*, 31(2), 15-23. doi: [10.15187/adr.2018.05.31.2.15](https://doi.org/10.15187/adr.2018.05.31.2.15).
- [21] Monzon, M., Paz, R., Ortega, Z., & Diaz, N. (2019). Knowledge transfer and standards needs in additive manufacturing. In *Additive manufacturing – developments in training and education* (pp. 1-13). Cham: Springer. doi: [10.1007/978-3-319-76084-1_1](https://doi.org/10.1007/978-3-319-76084-1_1).
- [22] Pelliccia, L., Bojko, M., Prielipp, R., & Riedel, R. (2021). Applicability of 3D-factory simulation software for computer-aided participatory design for industrial workplaces and processes. *Procedia CIRP*, 99, 122-126. doi: [10.1016/j.procir.2021.03.019](https://doi.org/10.1016/j.procir.2021.03.019).
- [23] Perez-Perez, M.P., Gomez, E., & Sebastian, M.A. (2018). Delphi prospection on additive manufacturing in 2030: Implications for education and employment in Spain. *Materials (Basel)*, 11(9), article number 1500. doi: [10.3390/ma11091500](https://doi.org/10.3390/ma11091500).
- [24] Prabhu, R., Miller, S.R., Simpson, T.W., & Meisel, N.A. (2020). Complex solutions for complex problems? Exploring the role of design task choice on learning, design for additive manufacturing use, and creativity. *Journal of Mechanical Design*, 142(3), article number 031121. doi: [10.1115/1.4045127](https://doi.org/10.1115/1.4045127).
- [25] Qi, X., Chen, G., Li, Y., Cheng, X., & Li, C. (2019). Applying neural-network-based machine learning to additive manufacturing: Current applications, challenges, and future perspectives. *Engineering*, 5(4), 721-729. doi: [10.1016/j.eng.2019.04.012](https://doi.org/10.1016/j.eng.2019.04.012).
- [26] Rajabalee, Y.B., & Santally, M.I. (2020). Learner satisfaction, engagement and performances in an online module: Implications for institutional e-learning policy. *Education and Information Technologies*, 26, 2623-2656. doi: [10.1007/s10639-020-10375-1](https://doi.org/10.1007/s10639-020-10375-1).

- [27] Sable-Meyer, M., Ellis, K., Tenenbaum, J., & Dehaene, S. (2022). A language of thought for the mental representation of geometric shapes. *Cognitive Psychology*, 139, article number 101527. doi: [10.1016/j.cogpsych.2022.101527](https://doi.org/10.1016/j.cogpsych.2022.101527).
- [28] Seidel, C., & Schatz, R. (2019). Continuing education and part-time training on additive manufacturing for people in employment – an approach focused on content-related and didactical excellence. In *Additive manufacturing – developments in training and education* (pp. 15-33). Cham: Springer. doi: [10.1007/978-3-319-76084-1_2](https://doi.org/10.1007/978-3-319-76084-1_2).
- [29] Stern, A., Rosenthal, Y., Dresler, N., & Ashkenazi, D. (2019). Additive manufacturing: An education strategy for engineering students. *Additive Manufacturing*, 27, 503-514. doi: [10.1016/j.addma.2019.04.001](https://doi.org/10.1016/j.addma.2019.04.001).
- [30] Wang, Y.B., Zheng, P., Peng, T., Yang, H.Y., & Zou, J. (2020). Smart additive manufacturing: Current artificial intelligence-enabled methods and future perspectives. *Science China Technological Sciences*, 63, 1600-1611. doi: [10.1007/s11431-020-1581-2](https://doi.org/10.1007/s11431-020-1581-2).
- [31] Yang, L. (2018). Introducing the state-of-the-art additive manufacturing research in education. In *Additive manufacturing – developments in training and education* (pp. 53-65). Cham: Springer. doi: [10.1007/978-3-319-76084-1_4](https://doi.org/10.1007/978-3-319-76084-1_4).

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Методи впровадження адитивних технологій у навчальний процес під час підготовки майбутніх графічних дизайнерів

Анотація. Адитивні технології дають чимало можливостей для удосконалення діяльності в різних сферах, проте особливості вивчення їхньої роботи та застосування в навчальному процесі студентів, які навчаються за освітніми програмами з дизайну, досліджені мало. Мета цього дослідження – розробити методи впровадження адитивних технологій у навчальний процес підготовки майбутніх графічних дизайнерів та перевірити їхню ефективність. Для досягнення мети використано методологію змішаного дослідження. У дослідженні взяли участь студенти та викладачі Хортицької національної академії. За допомогою відеоконференцій, дискусій між викладачами розроблено та узгоджено впровадження курсу «Адитивні технології» в навчальний процес (безпосереднє вивчення особливостей 3D-друку та моделювання) і способи застосування адитивних технологій під час вивчення інших предметів. Досліджено, що до експерименту студенти практично не мали досвіду навчання чи роботи з адитивними технологіями, на основі чого складено навчальний план курсу. Вивчено оцінку студентів щодо якості навчання за шкалою «Інструктивно-методичне дослідження мотивації» до та після експерименту. Розроблено анкету, яка дає змогу вивчити думку студентів щодо ефективності використання адитивних технологій у роботі графічного дизайнера, їхні враження від методів впровадження адитивних технологій у навчальний процес. За результатами опитування з'ясовано, що більшість студентів високо оцінили вплив застосування адитивних технологій у роботі графічного дизайнера та вважають, що їх вивчення є необхідним для ефективного навчання та праці у майбутньому. Студенти також високо оцінили вміння викладачів щодо застосування адитивних технологій у навчальному процесі. Методи впровадження адитивних технологій, запропоновані в дослідженні, можна використовувати під час навчання здобувачів вищої освіти напряму 02 – Мистецтво, урахувавши особливості навчальних планів. Має перспективи також використання адитивних технологій для виконання проектних робіт, проходження практики з використанням адитивних технологій, захист кваліфікаційних робіт з виготовленням об'єктів у реальному часі

Ключові слова: проєктування; 3D-друк; моделювання; 3D-принтер; дизайнерські вироби

UDC 159.9.07

DOI: 10.52534/msu-pp1.2023.80

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Psychological features of women's codependency during the midlife crisis

Article's History:

Received: 06.12.22

Revised: 08.03.23

Accepted: 31.03.23

Suggested Citation:

Lymankina, A. (2023). Psychological features of women's codependency during the midlife crisis. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 80-86. doi: 10.52534/msu-pp1.2023.80.

Abstract. The relevance of the research is conditioned upon the rapid spread of the problem of codependency, which has a destructive impact on the psychological state, and social and personal development of a person. The purpose of the research is to determine the psychological traits of codependent women in the period of midlife crisis. The research methodology is based on the methods of critical analysis, synthesis and generalisation of scientific and methodological literature. In the course of the study, the concept of codependence is defined, and the factors of its development are identified. It has been established that the main factor that becomes a prerequisite for the emergence of codependency is upbringing in a dysfunctional family. The psychological features of women's codependency and their manifestations are described. It has been established that codependent women are characterised by low self-esteem, a desire to control others, using psychological defence mechanisms, self-sacrifice, and caring for others, forgetting about their own needs and feelings. The author analyses the midlife crisis as a factor of personality transformation and a period with a high opportunity to free oneself from codependency. It is determined that during a midlife crisis, a person tries to reassess their life, achievements, and behavioural patterns. The author argues that the midlife crisis can have both destructive consequences, including the loss of the meaning of life, and constructive ones, which are manifested in the discovery of new meanings. The results of the scientific research are designed to generalise theoretical data on the problem of codependency and identify the psychological traits of codependent women. The theoretical significance of the research lies in the systematisation of scientific approaches to the study of codependent personality and the identification of psychological traits of codependent women in the period of midlife crisis

Keywords: personality; dysfunctional family; Karpman's triangle; dependence (addiction); low self-esteem; psychological boundaries; identity

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INTRODUCTION

The problem of codependency remains one of the most pressing in modern society. The number of people suffering from both chemical and non-chemical addictions is increasing worldwide. Most foreign and Ukrainian researchers have explored codependency, pointing to the link between family dysfunction and the development of addictive behaviour. In her research, V. Bozhenko (2020) identified the psychological aspects of the phenomenon of codependent relationships in a couple. J. Lampis *et al.* (2017) explored the role of self-differentiation and dyadic adaptation in predicting codependency. A. Lymankina

(2022) identified modern approaches to understanding the definition of the phenomenon of codependency. B. Weinhold and J. Weinhold (2006) considered codependency as an acquired dysfunctional behaviour. N. Tkachenko (2022) explored the specifics of the relationship between the type of attachment and codependency in adults. Codependency, as a form of addictive behaviour, is developed in interpersonal relationships, primarily with close family members. Despite a significant number of models of addictive behaviour, the psychological features of women's codependency during the midlife crisis remain insufficiently understood.



S.-H. Chang (2018) explored a model of codependency development based on Bowen's concept of differentiation to determine the relationship between self-differentiation, codependency traits, and family withdrawal dysfunction. Z. Happ *et al.* (2022) interpret codependency as a dysfunctional pattern of relationships with others. The correlation between family members and personality type was explored by M. Orbon *et al.* (2021).

Among the Ukrainian researchers who have explored the problem of codependency, it is important to note the work of T. Vakulich (2012), in which she identified the specific features of women's codependency in the family. The influence of the family as a factor in the development of codependent behaviour has been examined by O. Nikonova (2014), O. Savchuk (2005) etc. V. Kanevskyi and S. Dovzhuk (2021) identified the role and types of emotional mechanisms that influence the development of codependency. The study of the behaviour of codependent persons is devoted to the work of V. Ivanchenko and A. Zastelo (2021) (psychological characteristics of codependents with a tendency to addictive behaviour), D. Sushko (2019) (codependent behaviour in the context of scientific research).

Despite the growing interest in the problem of codependency both in society and among scientists, there is a need for research in this area, as there is a significant lack of such studies and contradictions between the definitions of the concept of "codependency" based on clinical and theoretical generalisations, and the lack of clear psychological traits inherent in a codependent personality.

During the midlife crisis, women have the opportunity to transform their identity and "free themselves" from codependency, but it is necessary to consider the specifics of this crisis and its combination with the psychological traits of a codependent personality. This issue is not sufficiently covered in the psychological literature, which confirms its relevance.

The purpose of the research is to identify and characterise the psychological traits of codependent women in the period of midlife crisis.

Objectives of the study: to theoretically examine the specific features of the midlife crisis in women; to identify the psychological features of codependency.

ANALYSIS OF PREVIOUS STUDIES

The analysis of different theoretical approaches allows an understanding of the phenomenon of codependency both as a secondary phenomenon associated with chemical dependence and as a disorder of personality development that is developed in early child-parent relationships. In this regard, the opinion of J. Bowlby (1969) is important, who believed that the development of codependency is based on an incomplete process of separation, the lack of symbiotic relationship between mother and child, which results in the incompleteness of one of the most important stages of development in early childhood – the stage of establishing psychological autonomy. These women do not feel their psychological boundaries, do not accept their own identity, and suppress their feelings, as they constantly focus on the

desires, purposes and needs of other family members, forget about themselves, and become powerless to solve their problems and meet their needs.

A crisis is a holistic change in a person's personality caused by the appearance of neoplasms. Age-related crises are associated with qualitative changes that occur in the sphere of social relations of the individual, in the sphere of their activity and consciousness. C.G. Jung (2017) believed that during a midlife crisis, a person seeks to change the developed ideals, and behavioural patterns, and "free themselves" from the influence of others. Considerable attention to the midlife crisis was paid by E. Erikson (1950). Contemporary researchers who have examined the psychological aspects of a person's experience of a midlife crisis include H. Rud (2018), who identified the specific features of exacerbation of intrapersonal contradictions and character traits as psychological factors that influence the emergence of a midlife crisis.

Due to the significant medical and social significance of chemical dependence, researchers and professionals in the fields of medicine, psychiatry, and counselling initially focused on it, and many scientific studies have been devoted to its analysis. Codependency as an important element of the personality structure has only recently been explored by foreign and Ukrainian psychologists. Initially, studies of this phenomenon were conducted in the United States, then in Europe, and now in Ukraine. Theoretical substantiation of the concept was provided by E. Larsen (1985), who considered codependency as a character defect. According to M. Murray (2021), a codependent person is a person who sacrifices themselves. P. O'Brien and M. Gaborit (1992) associated codependency with interpersonal interaction and self autonomy. T. Cermak (1998) proposed to recognise codependency as a "mixed personality disorder" and described the criteria for its diagnosis.

Throughout life, people face age-related crises. Every time they overcome a crisis, they move to a new level of life. One of the most dangerous age crises is the midlife crisis.

A midlife crisis is associated with an internal problem characterised by a loss of meaning in life. A person falls into a state in which their personality ceases to function as it used to. Habitual patterns of behaviour cease to work and bring pleasure.

Developmental crises of adulthood have been explored mainly in Western psychology. The problem of age-related crises of the middle-aged personality was examined by C. Grof (1993), E. Erikson (1950), C.G. Jung (2017) etc. Their research examined the crisis from the perspective of individual development, professional fulfilment and personal relationships, most frequently – intra-family relationships. Individual personality development and crisis were central to the works of E. Erikson (1950) and C.G. Jung (2017), who highlighted the existential experiences of a person during this transitional period and the change in their values. O. Zubchenko (2021) examines the midlife crisis from a Jungian perspective. The study by S. Kuzikova and T. Shcherbak (2020) identifies the psychological

features of the midlife crisis. The influence of family values and standards on the ability to overcome crises and traumatic experiences of previous generations in one's life was explored by L. Hrydkovets (2017; 2018).

Analysing the works of researchers on codependency and midlife crisis, it can be concluded that they have identified the specific features of the midlife crisis in women and the psychological features of codependency.

PSYCHOLOGICAL FEATURES OF CODEPENDENCY

There is no universally accepted definition of codependency, thus it is necessary to describe the phenomenology of this condition. The following definition can be used as a general one.

A codependent personality is a person who seeks to fully control the behaviour of a close addict and does not care about meeting their own life needs.

Codependents can be: people who are married or in a love relationship with a chemically dependent person; parents, brothers and sisters of a chemically dependent person; people who grew up in dysfunctional families.

Since the early 1980s, this phenomenon has become quite relevant and has been actively explored. Many scholars have proposed their definitions, which cover this concept from one side or another. Some believed that it was a disease, while others associated it with psychological and emotional disorders.

The American researcher S. Wegsneider-Cruse (1985) believes that codependency is a constant focus of thoughts on another person and dependence (emotional, social, sometimes physical) on that person. Sometimes this addiction becomes a pathological condition that affects other relationships.

According to T. Cermak (1998), codependency is a personality disorder associated with the need to control the situation to avoid undesirable consequences: inattention to one's own needs; violation of personal boundaries; merging all interests with a dysfunctional personality. Other manifestations include depression, stress-induced somatic diseases, and denial.

Codependency has a destructive impact on a person's life, causes psychosomatic illnesses and disrupts adaptation (Koliada & Huivan, 2021). Codependency is influenced by many factors. These include living with a chemically dependent person, insufficient social support from others, and the need to overcome difficulties. The most important factor in codependency is the parental family. Codependency has its roots in childhood, and childhood trauma is a significant factor in its development. Growing up in a dysfunctional family shapes the psychological characteristics of a personality that provide the foundation for codependency.

The study by L. Berezovska *et al.* (2021) identifies two groups of factors: social (experience with addicted people) and psychological (tendency to addictive behaviour, lack of self-confidence). According to the researcher, the signs of codependency are: fear of loneliness and attempts to avoid it at all costs; the willingness of the individual to humiliate themselves and do things that are unpleasant to receive

praise; inability to make decisions independently; feeling helpless; and vulnerability.

According to B. da Costa *et al.* (2017), a codependent person has feelings of guilt, sadness, fear, regret, denial, and control of the other.

Consider the psychological features of codependency more closely. One of these traits is low self-esteem, which is fundamental to this problem and generates others. Codependent people are completely dependent on external evaluations and on relationships with other people. Due to their low self-esteem, they often criticise themselves but do not like to be criticised by others. They do not consider themselves good people, are afraid of making mistakes, and feel guilty when they spend money on themselves or indulge in some kind of entertainment (Cermak, 1998). Codependents are ashamed of the problem of a loved one's chemical dependency. They keep this problem secret. They try to hide it from their friends and acquaintances, and even from their families.

Low self-esteem drives a codependent personality when they seek to help others. As they do not believe that they can be valuable on their own, they seek to attract attention.

Codependent women try to control a dependent loved one (husband, son, etc.). They believe that they can control everything: they can "forbid" their husband to drink alcohol; they can control the perception of their family by others through a positive impression; they believe that others see their family as they portray it.

Codependents use various means to control others: persuasion, threats, advice, and coercion, they emphasise the helplessness of the dependent person. In addition, they use manipulation and guilt as a means of control. Attempts to take control of almost uncontrollable events cause depression. Codependents view the inability to achieve the purpose of control as their defeat and loss of meaning. If the defeat is repeated, it aggravates depression. Another result of controlling behaviour is frustration and anger.

"Saving" others is the "vocation" of codependents. Caring for others crosses normal boundaries. The behaviour of codependents stems from the belief that they are responsible for the thoughts, feelings, actions of others, for their choices, desires and needs, and for their well-being. They take responsibility for other people, but are completely irresponsible for their well-being: they sleep poorly, eat poorly, and do not meet their own needs. By "saving" the addict, the codependent person contributes to the addict's continued use of drugs or alcohol. Then the codependent gets angry as attempts to "save" them fail. It is a destructive form of behaviour for both the addict and the codependent.

The desire to "save" codependents is intense enough that they may do things they do not want to do. They say "yes" when they want to say "no", satisfy the needs of their loved ones when they do not ask for it and do not even want anything done for them. Codependents constantly give more than they receive from a loved one. They speak for the other, think for them, and believe that they can control their feelings. In joint activities, they do more than they would have to do. Such "care" implies the helplessness of

the other, their inability to do what the codependent loved one does for them. All of this makes the latter feel needed. When “rescuing” an addicted loved one, codependents follow certain patterns known as S. Karpman’s “Dramatic Triangle” (Fig. 1) (Karpman, 1968).

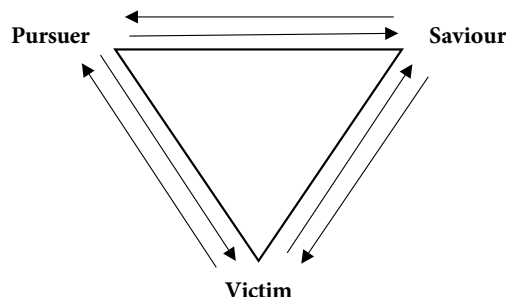


Figure 1. The dramatic triangle of S. Karpman

Source: S. Karpman (1968)

If a codependent person does not learn to identify the moments when they become a “saviour”, they will constantly allow others to put them in the position of a victim. In fact, codependent people themselves participate in the process of their own victimisation. The change of roles in the triangle evokes intense emotions. The time spent in a particular role is not fixed, it can be several minutes, days or even years.

Most of the actions of codependents are motivated by fear, which can be related to anything. When a person lives with a sense of fear, they develop a progressive tendency to stiffen their body and spirit, and fear restrains their freedom of choice. The world in which codependents live is filled with anxiety and the expectation of bad news. In such circumstances, they become more rigid and tighten their control, trying to maintain the illusion they have built.

The emotional palette of codependents, along with fear, includes other adverse emotions: shame, anxiety, despair, guilt, anger, hatred, and rage. Sometimes they have lost the skills of recognising and understanding their feelings as their attention is focused on satisfying the needs of others, and they have lost their sense of self. Codependents get used to distorting their feelings, having learnt from their parents’ home that they can only experience “allowed” feelings.

Anger plays a prominent role in the life of a codependent person. They feel hurt, vulnerable, angry and usually tend to live with someone who feels the same way. Codependents are afraid of their anger and the anger of others, thus they repress, suppress, and suppress their anger. Due to the suppression of anger, they can cry a lot, commit rash acts, be hostile, get sick, etc.

The mental state of codependents frequently includes shame and guilt. They are ashamed of their behaviour and the behaviour of their loved ones. They do not have clear personal boundaries, therefore shame can result in social isolation. To avoid shame, codependents do not visit or invite friends over.

Codependents use all forms of psychological defence: minimisation, rationalisation, displacement, but most often denial. They try to ignore the problems or pretend that

nothing serious is happening, and they easily believe lies. Sometimes they try to distract themselves with something to avoid thinking about the main problem. Denial helps codependents to live in a world of illusions, as the truth is very painful for them. Denial is the means by which they deceive themselves. Codependents deny the signs of codependency. It is this ability to deny that prevents them from motivating themselves to address their own needs, allows codependency to progress, and keeps the entire family in a dysfunctional state.

According to Yu. Kashpur (2019), in codependent relationships, loyalty takes on the meaning of an emotional burden. A codependent personality assesses the object of loyalty as a weak and helpless person who needs to be “saved”, thus, perceiving their actions through the prism of usefulness for the partner.

Thus, codependency in its various manifestations is one of the most common problems that prevent women from living a full life. Middle-aged women are particularly susceptible to this form of relationship destruction, as they feel a constant desire for approval from others, are unaware of their desires and needs, are unable to feel true intimacy and love, and tend to maintain “toxic” relationships.

FEATURES OF THE MIDLIFE CRISIS

During the midlife crisis, women with codependency can undergo an identity transformation and free themselves from codependency. Consider the specifics of this period.

Middle age is the age of mental productivity, when a person can find the strength to achieve significance in society, in the family, and in their own eyes by expanding the boundaries of their self, returning to the meaning of their life, and understanding their existential nature. At this age, needs such as the realisation of one’s creative potential, the necessity to pass on knowledge to the next generation, correction of activities, care for maintaining relationships with family and friends, and preparation for a peaceful old age become more acute (Aleksandrov, 2015). Therewith, the totality of a person’s experiences at this age is uneven. One of the specific features of middle age is the subjectivity of the individual. During this period, people frequently feel depressed and lonely. All the basic existential problems (loss of meaning, isolation, etc.) become more acute, the need to find a purpose and self-realisation sharply increases, and several specific social and psychological problems arise (maladjustment, a complete change of values, social loneliness, change of social status), depression, apathy, anxiety.

For most people, the transition to middle age goes unnoticed. A midlife crisis is typical for those who avoid introspection and use defence mechanisms of denial, trying to ignore the changes that occur in their lives (Bayer, 2010).

According to C. Grof (1993), crises have a positive impact (psychotherapeutic and developmental) on the individual and help to rid them of mental disorders such as neuroses and depression. He identified the most common signs of a crisis: anxiety, panic, the actualisation of phobias, and a reassessment of the meaning of life.

Changes in middle-aged women occur on several levels: cognitive, physiological, emotional and volitional, etc. During a period of normative crisis, women go through a period of critical self-evaluation and reassessment of what has been achieved in their lives up to this point, analysing the authenticity of their lifestyle. The critical period can be successful if, as a result of overcoming the symptoms of the crisis, the individual finds more productive ways of interacting with others, and new patterns of behaviour, i.e. uses the crisis for personal development.

Codependent women, after a difficult experience in a dysfunctional family and destructive addictive relationships, may feel the need to change their lives and form their lifestyle, a model of behaviour different from that developed in childhood, during the midlife crisis. During this period, a woman strives to be an individual, not like her mother and grandmother, she tries to change her loyalty to her family. In addition, she tries to change codependent relationships by developing a new identity.

Women with codependency during the midlife crisis may be disappointed in their chosen profession, as their choice of education may have been influenced by their parents' opinion and they have no interest in specialisation. Relationships with the opposite sex may be unsuccessful due to the tendency to love addiction (codependency) or avoid addiction (counterdependency), and difficulties may arise in establishing close, trusting relationships (Sorokina, 2014).

In the self-awareness of a person of this age, age reflection can be traced as a consequence of a decrease in self-esteem and a negative attitude towards one's abilities and potential. In addition, the spiritual experiences of the individual are actualised: current values and meaning are revised, the previous ones are frequently devalued, and new ones have not yet been established in the individual's mind, which manifests itself in a sense of meaninglessness of existence and loss of hope.

The midlife crisis results in a reassessment of one's choices: spouse, career, and life purposes, and sometimes it leads to divorce and a change of profession (Breusenko, 2000). For a woman with codependency, this period can be particularly crisis-ridden, as resistance to necessary changes increases due to rigidity. Therefore, it is important to support a woman at this moment. It is very important that they understand that they have their own needs and interests and that they should implement themselves as a person. Overcoming the age crisis, a codependent person transforms their identity, developing new opinions and beliefs, and a new model of behaviour.

Thus, it can be said that a midlife crisis can have a detrimental effect on a person and can help them get rid of codependency by reassessing their own life and building a new model of interaction with others. This conclusion was made based on an analysis of the literature on the midlife crisis. According to this statement, it can be said that during this period, it is necessary to help the codependent, to teach them to live for themselves, and not just to please others.

If a codependent's mid-life crisis is particularly acute, they need help from a psychologist who will help them learn to control themselves, and manage their emotions, which will gradually lead to a rethinking of their own lives and building a new model of behaviour through an identity transformation.

CONCLUSIONS

In the course of the theoretical study, it was determined that the phenomenon of codependency is a very common and understudied phenomenon today, which has not yet been clearly defined. The majority of both foreign and Ukrainian researchers only describe it, but the interest of researchers in this phenomenon is growing, which allows them to accumulate and systematise theoretical and empirical data.

The author identifies the main psychological features of codependency, which include: low self-esteem; the desire to control, care for and "save" others; distortion of feelings; a tendency to denial; psychosomatic diseases caused by stress, depression, etc.

In addition, the research has established that in the period of middle age, a person comes to understand the need for change, but that this change should already occur at the individual level and be expressed in self-development, self-learning, self-education, and self-realisation. Everything that happens to a person at the physical and psychological level must be understood by the individual, and the result of this process can either advance the personality to a qualitatively new level or lead to anxiety, depression, neurosis and other disorders that do not allow the individual to realise themselves in a new age period.

The analysis of the thematic literature has identified that a midlife crisis is not necessary for every individual. This period has a positive impact on personal growth and transformation. Codependent individuals are the most susceptible to this age-related crisis, as they are the ones who experience serious emotional breakdowns. A codependent person is always trying to satisfy the needs of a significant other by sacrificing themselves, and in times of crisis they resort to analysing their lives and realising their helplessness, thus, the crisis can be very acute, but overcoming it will help them to "free themselves" from codependency.

Based on the above, it can be concluded that the purpose of the research has been achieved. The scientific originality of the research is that the understanding of the specific features of the midlife crisis in codependent women is expanded and the psychological features of codependency are identified. Areas for further research include conducting an empirical study to determine the level of codependency, self-esteem, and anxiety in middle-aged women.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Aleksandrov, Yu.V. (2015). *Psychology of development*. Kharkiv: Panov A.M. IE.
- [2] Bayer, O.O. (2010). *Personal life crises*. Dnipropetrovsk: Dnipropetrovsk National University.
- [3] Beattie, M. (1990). *Co-dependents' guide to the twelve steps*. New York: Prentice Hall.
- [4] Berezovska, L.I., Sakhon, V.O., & Pavlik, U.V. (2021). Socio-psychological factors of personality predisposition to form interdependent relationships. *Bulletin of the National Defense University of Ukraine*, 1, 28-35. doi: [10.33099/2617-6858-2021-59-1-28-35](https://doi.org/10.33099/2617-6858-2021-59-1-28-35).
- [5] Bowlby, J. (1969). *Attachment and loss*. New York: Basic Books.
- [6] Bozhenko, V.H. (2020). [Psychological aspects of the phenomenon of codependent relationships in a couple](#). In *Achievements of modern psychological science and practice: materials of the reports of the participants of the II All-Ukrainian scientific and practical conference of students, postgraduates and young scientists* (pp. 7-9). Vinnytsia: Vasyl Stus Donetsk National University.
- [7] Breusenko, O.A. (2000). [Dynamics of the values-senses sphere of personality in the existential crisis condition](#) (PhD thesis, Taras Shevchenko Kyiv National University, Kyiv, Ukraine).
- [8] Cermak, T.L. (1998). *Diagnosing and treating codependence*. New York: Hazelden Publishing.
- [9] Chang, S.-H. (2018). Testing a model of codependency for college students in Taiwan based on Bowen's concept of differentiation. *International Journal of Psychology*, 53(2), 107-116. doi: [10.1002/ijop.12271](https://doi.org/10.1002/ijop.12271).
- [10] Da Costa, B., Marcon, S.S., Paiano, M., Sales, C.A., Maftum, M.A., & Waidman, M.A.P. (2017). Feelings and codependent behavior in the family of illicit drugs users. *Acta Scientiarum. Health Sciences*, 39(2), 175-181. doi: [10.4025/actascihealthsci.v39i2.27781](https://doi.org/10.4025/actascihealthsci.v39i2.27781).
- [11] Erikson, E.H. (1950). Growth and crises of the "healthy personality". In M.J.E. Senn (Ed.), *Symposium on the healthy personality* (pp. 91-146). New York: Josiah Macy Foundation.
- [12] Grof, C. (1993). *The thirst for wholeness: Addiction, attachment, and the spiritual path*. New York: HarperCollins.
- [13] Happ, Z., Bodó-Varga, Z., Bandi, S.A., Kiss, E.C., Nagy, L., & Csókási, K. (2022). How codependency affects dyadic coping, relationship perception and life satisfaction. *Current Psychology*. doi: [10.1007/s12144-022-02875-9](https://doi.org/10.1007/s12144-022-02875-9).
- [14] Hrydkovets, L.M. (2017). [Determinants of the family structure as a system of influence on the character of the individual's life](#). *Herald of the Kyiv Institute of Business and Technologies*, 3, 19-24.
- [15] Hrydkovets, L.M. (2018). [The psychological impact of the traumatic experience of previous generations on the level of mental health of descendants](#). *Herald of the Kyiv Institute of Business and Technologies*, 3, 9-12.
- [16] Ivanchenko, V.I., & Zastelo, A.O. (2021). [Psychological features of the personality with a tendency to addictive behavior and codependents](#). In *Society and personality in modern communication discourse: Materials of the 3rd All-Ukrainian scientific and practical conference* (pp. 240-244). Zaporizhzhia: National University "Zaporizhzhia Polytechnic".
- [17] Jung, C.G. (2017). *Modern man in search of a soul* (Reprint ed.). Eastford: Martino Fine Books.
- [18] Kanevskiy, V.I., & Dovzhuk, S.V. (2021). Emotional mechanisms of formation of interdependence. *Habitus*, 30, 128-131. doi: [10.32843/2663-5208.2021.30.22](https://doi.org/10.32843/2663-5208.2021.30.22).
- [19] Karpman, S.B. (1968). [Fairy tales and script drama analysis](#). *Transactional Analysis Bulletin*, 7(26), 39-43.
- [20] Kashpur, Yu.M. (2019). The psychology of fidelity in codependent relationships. *Psychology and Psychosocial Interventions*, 2, 49-54. doi: [10.18523/2617-2348.2019.2.49-54](https://doi.org/10.18523/2617-2348.2019.2.49-54).
- [21] Koliada, N.V., & Huivan, K.A. (2021). [Features of the phenomenon of codependence in modern psychology](#). In *Social and humanitarian aspects of the development of modern society: Materials of the IX All-Ukrainian scientific conference of students, graduate students, teachers and employees* (pp. 369-374). Sumy: Sumy State University.
- [22] Kuzikova, S.B., & Shcherbak, T.I. (2020). Psychological peculiarities of the middle age crisis. *Scientific Bulletin of Kherson State University. Series: Psychological Sciences*, 2, 132-138. doi: [10.32999/ksu2312-3206/2020-2-18](https://doi.org/10.32999/ksu2312-3206/2020-2-18).
- [23] Lampis, J., Cataudella, S., Busonera, A., & Skowron, E.A. (2017). The role of differentiation of self and dyadic adjustment in predicting codependency. *Contemporary Family Therapy*, 39, 62-72. doi: [10.1007/s10591-017-9403-4](https://doi.org/10.1007/s10591-017-9403-4).
- [24] Larsen, E. (1985). *Stage II Recovery: Life beyond addiction*. San Francisco: Harper & Row.
- [25] Lymankina, A.I. (2022). Modern approaches to understanding the definition of the "codependency" phenomenon. *Scientific Bulletin of the Uzhhorod National University. Series: Psychology*, 3, 62-65. doi: [10.32782/psy-visnyk/2022.3.12](https://doi.org/10.32782/psy-visnyk/2022.3.12).
- [26] Murray, M. (2021). *Prisoner of another war: A remarkable journey of healing from childhood trauma* (2nd ed.). Bellingham: Vivo Publications.
- [27] Nikonova, O.Yu. (2014). [Prevention of violence in an addicted family: from the experience of the gender school of parenting](#). *Scientific journal of M.P. Drahomanov National Pedagogical Dragomanov University. Series 12: Psychological Sciences*, 44, 37-43.
- [28] O'Brien, P., & Gaborit, M. (1992). Codependency: A disorder separate from chemical dependency. *Journal of Clinical Psychology*, 48(1), 129-136. doi: [10.1002/1097-4679\(199201\)48:1<129::aid-jclp2270480118>3.0.co;2-c](https://doi.org/10.1002/1097-4679(199201)48:1<129::aid-jclp2270480118>3.0.co;2-c).
- [29] Orbon, M.C., Basaria, D., Dewi, F.I.R., Gumarao, M.S., Mergal, V.C., & Heng, P.H. (2021). Codependency among family members as predicted by family functioning and personality type. In *International conference on economics, business, social, and humanities (ICEBSH 2021)* (pp. 1388-1393). Atlantis Press. doi: [10.2991/assehr.k.210805.218](https://doi.org/10.2991/assehr.k.210805.218).

- [30] Rud, H. (2018). [Psychological aspects of a person's experience of a mid-life crisis](#). *Humanitarium*, 40(1), 75-86.
- [31] Savchuk, O.M. (2005). [Social and psychological correction of co-dependant condition of women, who were abused in families](#) (PhD thesis, H.S. Kostyuk Institute of Psychology, Institute for Social and Political Psychology at the Academy of Pedagogical Sciences of Ukraine, Kyiv, Ukraine).
- [32] Sorokina, O.A. (2014). *The psychology of addiction*. Kamianets-Podilskyi: Buinytskyi O.A. IE.
- [33] Sushko, D.D. (2019). Co-dependency in the context of the scientific research. *Scientific journal of M.P. Drahomanov National Pedagogical Dragomanov University. Series 12: Psychological Sciences*, 8, 107-112. [doi: 10.31392/NPU-nc-series12.2019.8\(53\).11](#).
- [34] Tkachenko, N.V. (2022). [The specifics of the relationship between attachment type and codependency in adults](#). *Scientific Collection "InterConf"*, 136, 217-222.
- [35] Vakulich, T.M. (2012). [Women codependency in the family as psychological problem](#). *Scientific Bulletin of the Lviv State University of Internal Affairs. Psychological Series*, 2(2), 3-11.
- [36] Wegsneider-Cruse, S. (1985). *Choice-Making for co-dependents, adult children, and spirituality seekers*. Florida: Health Communication.
- [37] Weinhold, B.K., & Weinhold, J.B. (2006). *Breaking free of the co-dependency trap*. San Francisco: New World Library.
- [38] Zubchenko, O.V. (2021). [Midlife crisis in Jungian literature](#). In *Jungian counseling: Theory and practice: Proceedings of the IV international scientific online conference* (pp. 10-12). Kyiv: "KROK" University.

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Психологічні риси співзалежності жінок у період кризи середнього віку

Анотація. Актуальність дослідження зумовлено стрімким поширенням проблеми співзалежності, яка деструктивно впливає на психологічний стан, соціальний та особистісний розвиток людини. Мета статті – визначити психологічні риси особистості співзалежних жінок у період кризи середнього віку. Основу методології дослідження становлять методи критичного аналізу, синтезу та узагальнення науково-методичної літератури. У процесі дослідження визначено поняття співзалежності та з'ясовано чинники її формування. Установлено, що головний чинник, що стає передумовою виникнення співзалежності, – це виховання в дисфункціональній сім'ї. Охарактеризовано психологічні риси співзалежності жінок та їхні прояви. Установлено, що співзалежні жінки характеризуються низькою самооцінкою, прагненням контролювати інших, застосуванням психологічних механізмів захисту, самопожертвуванням, вони піклуються про інших, забуваючи про власні потреби та почуття. Проаналізовано кризу середнього віку як чинник трансформації особистості та період з високою можливістю звільнитися від співзалежності. Визначено, що в період кризи середнього віку особистість намагається переоцінити своє життя, досягнення, модель поведінки. Обґрунтовано думку про те, що криза середнього віку може мати не лише руйнівні наслідки, серед яких втрата сенсу життя, а й конструктивні, які проявляються у віднайденні нових смислів. Результати наукової статті спрямовано на узагальнення теоретичних даних проблеми співзалежності та визначення психологічних рис співзалежних жінок. Теоретичне значення статті полягає в систематизації наукових підходів до вивчення співзалежної особистості та визначенні психологічних рис особистості співзалежних жінок у період кризи середнього віку

Ключові слова: особистість; дисфункціональна сім'я; трикутник Карпмана; залежність (залежний); низька самооцінка; психологічні кордони; ідентичність

UDC 159.923.4:616.89-008.441.1

DOI: 10.52534/msu-pp1.2023.87

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Differences in the psychological portrait of a sociopath, sociophobe and introvert

Article's History:

Received: 23.11.22

Revised: 28.02.23

Accepted: 31.03.23

Suggested Citation:

Spytska, L. (2023). Differences in the psychological portrait of a sociopath, sociophobe and introvert. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 87-93. doi: 10.52534/msu-pp1.2023.87.

Abstract. The relevance of the problem is the need to highlight specific differences in the psychological portraits of a sociopath, sociophobe and introvert to distinguish clearly between seemingly similar concepts. The purpose of the research is to detail the specific features of human mental states, to establish the differential characteristics of a sociopath, sociophobe and introvert, and to distinguish each of these states as a separate independent component of the human psyche. Statistical and analytical methods were used to obtain the necessary results. The main markers of sociophobic behaviour are considered, and it is noted that they can manifest themselves with varying intensity depending on the severity of the symptoms of sociophobia. The author presents a psychological portrait of a sociopath and defines the typology of sociopathy. The main features of an introverted personality are identified, the advantages that introverts have in comparison with extroverts and the main forms of their maladjustment are considered. The specific framework of each concept examined is highlighted, and the differences between them are indicated. It is substantiated that introversion appears in humans from birth and is associated with the specific structure of the brain, while sociopathy and sociophobia are acquired throughout life as a result of psychological and physiological trauma. It is identified that a sociophobe and a sociopath differ in psychological characteristics, as a sociophobe is afraid of people, and a sociopath hates people. It is proved that, unlike sociophobia and sociopathy, introversion is not a mental disorder, but an element of a healthy psyche. The practical significance of the research is that the results will help to distinguish the psychological states of a person, to understand and differentiate the analysed concepts more clearly, to preliminarily determine one's psychological state, to establish a specific framework for a simplified psychologist's conclusion, and to identify important details and features of the manifestations of a sociopath, sociophobe and introvert

Keywords: society; mental health; psyche; personality; psychological trait; mental disorder; phobia

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INTRODUCTION

The presence of sociopathic, sociophobic, and introverted tendencies in humans in the modern world is quite common due to the prevalence of mental trauma, traumatic upbringing style, special perception of the world, and other factors that could lead to the emergence and development of such traits in humans (Shirayev & Levy, 2020). However, most people cannot say for sure which trait is inherent in the person (for example, possible introversion, sociophobia, sociopathy, certain psychological character-

istics of the person), which can result in a false statement that will lead to disappointing consequences. If a person incorrectly identifies an inherent trait, it can result in erroneous conclusions by the psychologist when working with them, which may affect the further effectiveness of sessions with a specialist.

In addition, people with these traits may have different perceptions of the world, their own lives, and society, but the characteristics of the traits themselves are very similar.



Thus, it is necessary to explore the differences in the portraits of a sociopath, a sociophobe and an introvert in more detail.

The authors' source base includes the following researchers who examined the subject from different angles: V.V. Moskovchenko (2016) explored the features of social anxiety and sociophobia in adolescents, and analysed the behaviour of students with sociophobia through surveys; Yu. Chystovska *et al.* (2019) analysed the features under which anxiety disorders and sociophobia occur, and indicated possible options for improving the mental state of a person with anxiety traits; S.U. Ibragimov (2022) explored sociophobia as a medical condition and correlated anxiety disorder with suicidal thoughts in people; M. Loppies *et al.* (2020) analysed the impact of students' introversion on the learning process; M. Johnson (2021) examined the features of sociopathy and separated it from the concepts of psychopathy and autism; L.E. Christie (2020) analysed murderers with mental disorders in her work and identified possible causes of sociopathy and psychopathy in people; D. Petric (2022) distinguished between the concepts of introversion, extraversion and ambivalence, and identified their main features.

The main purpose of the research is to identify the distinctive features in the portraits of a sociopath, sociophobe and introvert, to establish their common points and individual characteristics of the manifestation of each of the features in a person separately, and to identify the psychological features of their manifestation in everyday life and society in general. The originality of the research is to explore the differences between psychological portraits of a person, to establish the characteristics and features of sociopathy, sociophobia and introversion inherent in each of the human character traits, and to analyse the concepts, to clearly distinguish them from each other for a more visual distinction between the concepts, to highlight their differences for further use of the terms in the correct variations, which will help to draw clear conclusions regarding the portrait of psychological traits of a person.

MATERIALS AND METHODS

In the course of writing this research, the author has examined thoroughly the characteristic features of psychological portraits of a sociopath, sociophobe and introvert, analysed their characteristics, statistical indicators of their presence in people's lives, statistical data on individual manifestations of these psychological portraits, and highlighted the main details that distinguish these concepts from each other, establishing a clear framework between them to determine the differences between the psychological components of a person. In addition, statistical and analytical research methods were used. Based on the statistical method, the research collects statistical data on the number of sociopaths, sociophobes and introverts to determine the percentage of psychological traits of a person, and interprets the indicators with the main manifestations of psychological characters. The analytical method has become the foundation for examining the manifestations of psychological factors in people of the modern world. The author analyses the opinions

and statements of scientists, and statistical indicators for additional collection and use of information in the study, which helped to identify the percentage of human psychological traits in society. The combination of all research methods allows for a comprehensive study of the subject of establishing differences between the portraits of a sociopath, sociophobe and introvert by exploring the components separately from each other as integral parts of the human psyche, which helped to identify the characteristic features of psychological elements in human behaviour and well-being.

To establish a clear framework for the research and a more structured study of the subject, the research was divided into three main stages, namely: establishing the main characteristics and specific features of sociopathic behaviour, determining the percentage of people who have this psychological trait, and identifying the characteristic features that can distinguish this component from other similar mental traits of a person; identifying the characteristics of the psychological portrait of a sociophobe, analysing its statistical indicators, and highlighting specific features inherent in the trait to establish a clear framework and distinguish it from sociopaths and introverts; identifying the psychological characteristics of an introvert, which are the main manifestations of the human psyche indicator, reviewing the statistical features of the manifestation of the psychological trait among people, and identifying specific features that only introverts have.

RESULTS

Main characteristics and features of sociophobic behaviour

Social phobia, or social anxiety disorder, is one of the most common types of human anxiety disorder. With sociophobia, a person may experience anxiety and fear, discomfort and anxiety when they hear judgement, evaluation and scrutiny of the person, which can occur in public speaking, interviews, in a group of people, etc (Kim *et al.*, 2022). The everyday activities that a person faces every day in the presence of other people can cause feelings of anxiety and possible anxiety about being judged or humiliated.

When faced with uncomfortable situations in society, sociophobes can experience such intense anxiety that it seems that the person is no longer able to control themselves. Such levels of fear and anxiety can prevent a person from engaging in normal social activities, going to work or other places where other people are present. Other people who do not have psychological problems may be able to perform these activities but will feel very afraid or anxious when they do (National Institute of Mental Health, 2022). In general, there are several degrees of severity of the symptoms of social phobia that a person experiences during the manifestations of the disorder, as presented in Fig. 1. If a sociophobe participates in social situations and events, the person may feel anxious several weeks beforehand, and they avoid places that symbolise and evoke adverse emotions and fear. Notably, a person with a social anxiety disorder may not experience anxiety at all when interacting with society but only when it is necessary to become a leader in a group, speak, compete, or make a speech.

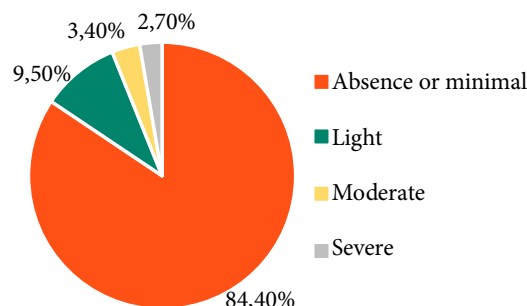


Figure 1. Severity of symptoms of social phobia

Source: Terlizzi and Villarroel (2020)

Social anxiety disorder can appear in late childhood (14-18 years old) and look like normal teenage shyness, fear of interaction with society, etc. Notably, women are more likely to develop social phobia than men, which can be seen at a young age. In the absence of certain treatment and work with a psychologist, social phobia can accompany a person throughout their life, and the symptoms and specific features of the psychological condition can become stronger and more unpleasant with age for the person (Starcevic, 2009).

In addition, people living with their families are at risk of social phobia. According to G. Kastrati *et al.* (2022), some parts of the brain are responsible for fear and anxiety, and genetics can affect the functioning of these parts of the brain. The amygdala is responsible for the expression of fear and aggression, and for species-specific defensive behaviour, and plays a role in the development and retrieval of emotional and fear-related memories. Through additional studies of the body and brain in sociophobes, scientists and psychologists can identify new features of the treatment of mental disorders.

Psychological portrait of a sociopath

A sociopath is a term used to describe a person with a severe form of antisocial personality disorder. Sociopaths do not have a fully functional conscience and tend to manipulate, exploit, or even abuse other people. Other sociopathic traits include charm, impulsivity, poor emotional

control, and a tendency to behave illegally, immorally, or violently (Johnson, 2019).

Sociopaths are people with mental disorders and severe antisocial personality disorder (called ASPD). It is estimated that about 30% of people with ASPD are sociopathic (Johnson, 2019), and these are individuals who have a history of behavioural problems, criminal convictions, aggression or violence towards others, and difficult relationships that manifest in misunderstandings, defensiveness, and conviction of their own opinions. In addition, some sociopaths have narcissistic traits, which makes them particularly dangerous and manipulative. In addition, many people with this trait have drug or alcohol problems and have a pattern of irresponsible or impulsive decision-making that has caused problems in their work, life, and relationships.

Notably, there are 3-5% of sociophobes among the population. In addition, it is noted that about three out of 100 men and one out of 100 women are sociopaths. 70 per cent of all sociopaths are fatherless children, and the rest do not have a father or mother due to divorce. Between 15% and 25% of prisoners demonstrate signs of sociopathy (notably, this data does not go beyond global statistics) (Johnson, 2019).

The signs of a sociopath are not always obvious, especially as some sociopaths have become very adept at deceiving, charming and manipulating others to get what they want (Table 1). Due to this, it can be very difficult to spot a sociopath in your life, especially if they are someone you don't know very well or don't interact with regularly.

Table 1. Sociopathy typology

Types of sociopaths	Additional disorders	Features
Nomadic	Schizoid and avoidant features	Quick to adapt in difficult situations, insightful, impulsive, adventurous
Vicious	Sadistic and paranoid features	Dangerous people, including serial killers, who have malicious, sadistic and cruel intentions and can suspect treason
Greedy	Passive-aggressive features	They can express themselves adversely towards other people; their reaction to the phrases and actions of society is greedy, stingy, and self-serving
Risky	Hysterical features	They can take great risks, pursue dangerous activities, and are characterised by gambling, courage, recklessness
Protector of reputation	Narcissistic features	Reacts vividly to adversity and adverse comments from others, with a desire to be restless and threatening

Source: Allen *et al.* (1971)

Children who do not receive caring attention from their caregivers tend to grow up learning that they must take care of themselves as no one else will. Some children who experience abuse, violence and manipulation from an early age may model this behaviour in their conflict resolution (Frazier *et al.*, 2019).

In addition, research has demonstrated that it is possible to develop sociopathy through trauma or damage to the frontal lobes of the brain, which can occur as a result of head trauma or advanced conditions such as dementia and lead to certain antisocial behaviours (Mendez *et al.*, 2011). People who demonstrate signs of sociopathy do not choose to be “evil”, as in many cases they live with ASPD, a condition that develops as a result of a combination of genetic and environmental factors, including childhood abuse and neglect.

Psychological characteristics of an introvert

Introversion as a psychological preference, or personality trait, is a special characteristic of a person who gets more energy and pleasure when doing any work alone. Introverts usually find common ground with themselves or have a few close friends with a similar worldview, and they can sometimes spend time in small groups of people. Introversion as a concept of personality trait appeared in the works of C. Jung more than 100 years ago. At that time, the psychologist explored the characteristics of introverts as people who use their energy only for themselves and extroverts, on the contrary, as people who give their energy to others (Geyer, 2012).

Introversion is the opposite of extraversion, as extraversion occurs in people whose thoughts are completely opposite to the worldview of introverts. Extroverts can be energised and energised by talking to and interacting with people, thus, they are considered social people, and they can spend time alone with themselves but need it less than introverts. In addition, extroverts can act more quickly and

efficiently in any situation, while people with introversion first think through each step in advance. Therefore, it can be stated that introversion and extraversion are quite different concepts of personality, as there are people who can be completely introverted or extroverted or in between, but it is impossible to belong to both groups simultaneously. Therefore, people can usually identify themselves as either more introverted or more extroverted (Taylor, 2020). As for the specific characteristics that may be inherent in a person with introversion, the following should be mentioned.

Introversion as a positive human characteristic. People can think about introverts adversely and indicate that they may feel uncomfortable in society, feel insecure and awkward around other people, but this opinion is not always true. People with introversion can be happy and have an interesting life, as they are not dependent on others and their opinions, and do not need additional energy from them due to the ability to regulate their emotions and energy independently.

Introversion is difficult to change. Introverts are frequently encouraged to change to be more like other people. However, notably, introversion is practically the main character trait of a person, thus, an introvert will do nothing to conform to the standards of society and will most likely remain themselves.

Introverts are sociable and outgoing. Some introverts can be full-fledged leaders, responsible for setting the mood and establishing warm relationships between people in the group. Thus, contrary to extroverts, introverts cannot be in the spotlight for a long time, but they know the extent and limits of this.

The cause of introversion and other personality characteristics has no clear answer. Jung believed that a person did not choose their personality, but instead there was an interaction of biological and unconscious factors (Geyer, 2012). Table 2 presents the characteristics of a person with introverted traits.

Table 2. Characteristic features of introversion in humans

Main features	Positive qualities	Forms of maladjustment
Difficulty in socialising Emotional coldness Communicating with older people Low physical and intellectual activity	Cold mind A knack for thinking outside the box Passion Ability to work independently Analytical skills	Antisocial behaviour Fighting for justice Designing fantasies

Source: Tuovinen *et al.* (2020)

The thinking of a modern person may indicate a difference in the brains of introverts and extroverts, namely, primarily through blood flow and neurotransmitters in particular places. Such theory arose from a study that demonstrated that extroverts can rest at a lower level of arousal, which indicates the need to receive energy from others, as this would make extroverts feel better. Therewith, introverts have a higher level of arousal, which indicates the possibility of overload when relaxing in a group of people (Geyer, 2012; Dong *et al.*, 2022).

Brain scans may indicate that the amygdala and the adjacent nucleus accumbens play a role in introversion. These parts of the brain are responsible for emotions and reinforcing a stable level of behaviour through the action of a chemical in the brain, namely dopamine. Extroverts can experience a large influx of dopamine when meeting new people, which is not the case with introverts. It could indicate that being introverted or extroverted is a birth trait (Miller *et al.*, 2020), rather than being conditioned by childhood trauma, family problems, or other individual factors.

DISCUSSION

Based on the study, it may seem that the concepts of socio-phobia, sociopathy and introversion have similarities, as they relate to a person's individuality and a particular altered image and sense of society. However, it is not. Yu.Yu. Chystovska *et al.* (2019) indicated that due to anxiety, a person's mental state changes and can develop from ordinary stress to a potential problem or disease, such as social phobia, addiction, depression, the pathogenesis of somatic disorders, etc. In addition, it is emphasised that social phobia can occur in different degrees of severity and manifest itself in different ways, and the only reliable way to cure social phobia or improve a person's psychological state is to work with the family and establish harmonious relationships between its members. Notably, social phobia can have different characteristics and severity depending on the person's personality and character, but in general, the symptoms of social anxiety disorder are the same for all people, otherwise, there is a possibility that the person has a different mental feature. The family can indeed be a good treatment for a sociophobe, but to completely solve the problem and identify the causes of its occurrence, it is necessary to conduct therapy with a psychologist who can help a person on a professional level.

Moskovchenko (2016) noted that anxiety can be perceived by a person to varying degrees, depending on their worldview, self-esteem, and relationships with others and parents. According to the research, delinquent adolescents tended to tolerate possible doubts, fear and anxiety more easily, while the normative group was more vulnerable, which once again demonstrates the possibility of different feelings of anxiety and manifestations of sociophobia. It is true, as most people with social phobia experience it in a mild form, while some can experience it moderately, and others have severe social phobia, which is influenced by external factors and the person's general well-being. In addition, the subject of socio-phobia was considered by S.U. Ibragimov (2022), noted that people with severe social phobia may have suicidal tendencies and thoughts, which indicates the need for psychological assistance to a person. Notably, it is possible, but suicidal tendencies may not always occur only in people with severe social phobia, as this factor may depend on the influence of the environment, self-esteem and self-respect.

Regarding sociopathy, L.E. Christie (2020), analysing the character of murderers, wrote that most of them had developed a feature of sociopathy, namely maliciousness when a person can harm others, can be cruel and react sharply to adverse actions against them. However, this process is curable and can be stopped, and with psychiatric treatment at an early stage of sociopathy, further development of sadistic tendencies should not occur. In addition, M. Johnson (2021) examined sociopathy, namely, she separated this concept from psychopathy and autism, as these features of the human mental state were previously identified and confused. However, the identification of

the difference between the concepts allowed for providing a clear description of sociopathy and indicating that, unlike psychopathy and autism, sociopathy is a less problematic psychological illness that can be worked on together with a psychologist without additional medication. The author's opinion can be agreed with, as sociopathy is not such a serious diagnosis compared to other psychological disorders, but it can develop into a more complex form or even more serious psychological problems. With the timely intervention of a psychologist, sociopathy can take on mild forms, and with intensive therapy, this psychological state will cease to occupy a significant part of the human mind.

The subject of introversion was considered by M. Loppies *et al.* (2020), who noted that introversion can affect a person's learning process, complicating it due to problems in work and contact with society. Thus, problems in the educational process may arise, but introverts may not fully affect the development of a person, since, as indicated in the study, introverts are distinguished by the qualities of non-standard thinking, high productivity when working independently, and a cold mind that can set a person up for results, despite the possible opinions of others. D. Petric (2022) indicated in her study that an introvert, contrary to their position, can lead a group, establish companies, actively participate in social projects, and speak in public, which is typical of an extrovert. It is indeed possible when an introverted person is ready to expand their capabilities and leave their comfort zone, but not every introvert may be capable of such steps. If a person wants to do this, but cannot overcome themselves and their will, then it is worth working with a psychologist who will help to correct the situation and help them achieve their purpose.

Summarising the study and researchers' opinions on the differences between the psychological portraits of a sociophobe, sociopath and introvert, it can be stated that, in general, scientists consider the difference between the concepts, focusing on the main characteristics of each psychological feature. The research has demonstrated that the differences between sociophobia, sociopathy and introversion are quite significant, which excludes the possibility of combining the concepts into a single unit since the areas of features are quite different and individual. The subject can be further explored by analysing the manifestation of psychological traits at different ages, exploring possible ways in which psychological features such as sociophobia and sociopathy can arise in a person, and how introversion is born in a person, which can help to further discover new ways to solve psychological problems. In addition, it is possible to establish the specific features of the influence of psychological traits on a person's mental health and general well-being to improve the manifestations of sociophobia, sociopathy and introversion and to analyse which features of society influence the emergence of anxiety, fear, discomfort and other human conditions on the emergence of these factors and their manifestations.

CONCLUSIONS

Based on the results of the research, it can be concluded that the concepts of sociophobe, sociopath and introvert do have common features, including a person's "immersion" in themselves, distorted perception of the world and society around them, adverse feelings in society, etc. However, they have differences that distinguish them and make the concept of human features different. These differences include the following statements.

1. Sociophobes most frequently do not like to appear in public, be a leader, or spend time in a large company. In crowded places, a sociophobe may experience fear, panic, and anxiety, which puts them in an uncomfortable position. In addition, sociophobia is an acquired character trait that occurs with human development.

2. Sociopaths generally do not like strangers, considering them alien, mean, and evil. In society, a sociopath may experience panic, anger, and aggression towards others. In addition, sociopathy appears with the development of a person, mainly due to traumas associated with the influence of society on a person.

3. Introverts feel uncomfortable with other people, especially with a large group of people, avoid public speaking and do not like to draw attention to themselves. Introverts may experience panic and fear in society or when talking to people. Introversion is an innate character trait that a person receives at birth.

In addition, it can be stated that the people who have these portraits can be radically different, and the work of these people with a psychologist can have different nature and other features in the way they conduct conversations, solve problems, overcome complexes, etc. The main results of the research are to identify the features inherent in the

psychological portrait of a sociopath, sociophobe and introvert, namely: sociopathy and sociophobia differ from introversion in that they are not components of a healthy human psyche; sociopaths are characterised by a complete disregard for the country's legislative provisions, moral and social standards; sociophobes have a characteristically pronounced behaviour in society, through which they can demonstrate certain emotions and feelings; introverts are characterised by behaviour associated with the inner world of a person, namely, a person relies only on themselves, without regard to the opinions of society.

Further development of the subject of establishing the differences between the psychological portraits of a sociophobe, sociopath and introvert can be continued by conducting a study that can demonstrate the characteristics of a person with the traits of sociophobia, sociopathy and introvert separately from each other to provide more specific explanations for the behaviour of people with these psychological traits. In addition, it is possible to track how these traits manifest themselves and affect a person's life in society at different ages, namely: children, adolescents, adults aged 18-25, adults aged 25-45, and people over 45. It is possible to analyse the specific features of the emergence of these traits, what influences their rooting in the psychology of each person and how to avoid a strong influence of traits on the behaviour, state and social life of people with sociophobia, sociopathy and introverts.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST

None.

REFERENCES

- [1] Allen, H., Lindner, L., Goldman, H., & Dinitz, S. (1971). [Hostile and simple sociopaths: An empirical typology](#). *Criminology*, 9(1), 27-47.
- [2] Christie, L.E. (2020). Psychopaths, sociopaths and the psychotic mind. In C. Bloom (Ed.), *The Palgrave handbook of contemporary Gothic* (pp. 467-484). Cham: Palgrave Macmillan. [doi: 10.1007/978-3-030-33136-8_28](#).
- [3] Chystovska, Yu.Yu., Kharchenko, T.H., & Zhurakhivskiy, I.O. (2019). Features of the onset and course of anxiety disorders and their psychotherapy. *Theory and Practice of Modern Psychology*, 6 (Vol. 1), 117-120. [doi: 10.32840/2663-6026.2019.6-1.24](#).
- [4] Dong, J., Xiao, T., Xu, Q., Liang, F., Gu, S., Wang, F., & Huang, J. (2022). Anxious personality traits: Perspectives from basic emotions and neurotransmitters. *Brain Sciences*, 12(9), article number 1141. [doi: 10.3390/brainsci12091141](#).
- [5] Frazier, A., Ferreira, P.A., & Gonzales, J.E. (2019). Born this way? A review of neurobiological and environmental evidence for the etiology of psychopathy. *Personality Neuroscience*, 2, article number e8. [doi: 10.1017/pen.2019.7](#).
- [6] Geyer, P. (2012). Extraversion – introversion: What C.G. Jung meant and how contemporaries responded. In *AusAPT Biennial Conference*. Melbourne. Retrieved from https://www.researchgate.net/publication/264782791_Extraversion_-_Introversion_what_CG_Jung_meant_and_how_contemporaries_responded.
- [7] Ibragimov, S.U. (2022). Sociophobia as a common problem of modern society. [Sectoral research XXI: Characteristics and features: Collection of scientific papers "SCIENTIA" with proceedings of the III International scientific and theoretical conference](#) (Vol. 3; pp. 70-72). Chicago: European Scientific Platform.
- [8] Johnson, M. (2021). Psychopath, sociopath, or autistic: Labeling and framing the brilliance of Sherlock Holmes. In M. Johnson, & C. Olson (Eds.), *Normalizing mental illness and neurodiversity in entertainment media: Quieting the madness* (pp. 83-95). London: Routledge. [doi: 10.4324/9781003011668](#).
- [9] Johnson, S.A. (2019). Understanding the violent personality: Antisocial personality disorder, psychopathy, & sociopathy explored. *Forensic Research & Criminology International Journal*, 7(2), 76-88. [doi: 10.15406/frcij.2019.07.00267](#).
- [10] Kastrati, G., Rosen, J., Fredkinsin, M., Chem, X., Kuja-Halkola, R., Larsson, H., Jensen, K., & Ahs, F. (2022). Correction: Genetic influences on central and peripheral nervous system activity during fear conditioning. *Translational Psychiatry*, 12, article number 95. [doi: 10.1038/s41398-022-01964-4](#).

- [11] Kim, S.S.Y., Liu, M., Qiao, A., & Miller, L.C. (2022). "I want to be alone, but I don't want to be lonely": Uncertainty management regarding social situations among college students with social anxiety disorder. *Health Communication*, 37(13), 1650-1660. doi: [10.1080/10410236.2021.1912890](https://doi.org/10.1080/10410236.2021.1912890).
- [12] Loppies, M., Badrujaman, A., & Sarkadi. (2020). Profile of extrovert and introvert personality and the implications in problem based history learning. *Social, Humanities, and Educational Studies (SHEs): Conference Series*, 3(2), 221-232. doi: [10.20961/shes.v3i2.46243](https://doi.org/10.20961/shes.v3i2.46243).
- [13] Mendez, M.F., Shapira, J.S., & Saul, R.E. (2011). The spectrum of sociopathy in dementia. *The Journal of Neuropsychiatry and Clinical Neurosciences*, 23(2), 132-140. doi: [10.1176/jnp.23.2.jnp132](https://doi.org/10.1176/jnp.23.2.jnp132).
- [14] Miller, J.R., Cheung, A., Novilla, L.K., & Crandall, A. (2020). Childhood experiences and adult health: The moderating effects of temperament. *Heliyon*, 6(5), article number e03927. doi: [10.1016/j.heliyon.2020.e03927](https://doi.org/10.1016/j.heliyon.2020.e03927).
- [15] Moskovchenko, V.V. (2016). [Features of social anxiety and social phobia within delinquent adolescents](#). *Law and Safety*, 2, 129-134.
- [16] National Institute of Mental Health. (2022). *Social anxiety disorder: More than just shyness*. Retrieved from <https://www.nimh.nih.gov/sites/default/files/documents/health/publications/social-anxiety-disorder-more-than-just-shyness/social-anxiety-disorder-more-than-just-shyness.pdf>.
- [17] Petric, D. (2022). The introvert-ambivert-extrovert spectrum. *Open Journal of Medical Psychology*, 11, 103-111. doi: [10.4236/ojmp.2022.113008](https://doi.org/10.4236/ojmp.2022.113008).
- [18] Shiraev, E.B., & Levy, D.A. (2020). *Cross-cultural psychology: Critical thinking and contemporary applications* (7th ed.). Abingdon: Routledge. doi: [10.4324/9780429244261](https://doi.org/10.4324/9780429244261).
- [19] Starcevic, V. (2009). Social anxiety disorder (social phobia). In *Anxiety disorders in adults: A clinical guide* (2nd ed.; pp. 150-200). Oxford: Oxford University Press. doi: [10.1093/oso/9780195369250.003.0008](https://doi.org/10.1093/oso/9780195369250.003.0008).
- [20] Taylor, M. (2020). Personality styles: Why they matter in the workplace. *Economic Alternatives*, 1, 148-163. doi: [10.37075/EA.2020.1.08](https://doi.org/10.37075/EA.2020.1.08).
- [21] Terlizzi, E.P., & Villarroel, M.A. (2020). Symptoms of generalized anxiety disorder among adults: United States, 2019. *NCHS Data Brief*, 378. Retrieved from <https://www.cdc.gov/nchs/data/databriefs/db378-H.pdf>.
- [22] Tuovinen, S., Tang, X., & Salmela-Aro, K. (2020). Introversion and social engagement: Scale validation, their interaction, and positive association with self-esteem. *Frontiers in Psychology*, 11, article number 590748. doi: [10.3389/fpsyg.2020.590748](https://doi.org/10.3389/fpsyg.2020.590748).

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Відмінності в психологічному портреті соціопата, соціофоба та інтроверта

Анотація. Актуальність досліджуваної проблеми полягає у необхідності виділити конкретні відмінності в психологічних портретах соціопата, соціофоба та інтроверта для чіткого розрізнення схожих на перший погляд понять. Мета наукової статті – деталізувати особливості психічних станів людини, встановити диференційні характеристики соціопата, соціофоба та інтроверта, а також виокремити кожен із цих станів як окрему незалежну складову частину людської психіки. Для отримання необхідних результатів використано статистичний та аналітичний методи. Розглянуто основні маркери поведінки соціофоба та наголошено на тому, що вони можуть проявлятися з різною інтенсивністю залежно від тяжкості симптомів соціофобії. Представлено психологічний портрет соціопата та визначено типологію соціопатії. З'ясовано основні особливості інтроверсивної особистості, розглянуто переваги, якими володіють інтроверти, якщо порівнювати їх з екстравертами, та основні форми їхньої дезадаптації. Виділено конкретні рамки кожного досліджуваного поняття та вказано відмінності між ними. Обґрунтовано, що інтроверсія з'являється в людини від народження та пов'язана з особливостями будови головного мозку, а соціопатія та соціофобія набуваються впродовж життя внаслідок психологічних та фізіологічних травм. Виявлено, що соціофоб та соціопат відрізняються психологічними характеристиками, адже соціофоб побоюється людей, а соціопат ненавидить людей. Доведено, що, на відміну від соціофобії та соціопатії, інтроверсія – це не психічний розлад, а елемент саме здорової психіки. Практичне значення дослідження полягає у тому, що його результати допоможуть виокремити психологічні стани людини, чіткіше зрозуміти та диференціювати аналізовані поняття, попередньо визначити власний психологічний стан, встановити конкретні рамки для спрощеного висновку психолога, а також визначити важливі деталі та особливості проявів соціопата, соціофоба та інтроверта

Ключові слова: соціум; ментальне здоров'я; психіка; особистість; психологічна особливість; психічний розлад; фобія

UDC 378.4:005.8(599.5)
DOI: 10.52534/msu-pp1.2023.94

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State management of education and training in Vietnam

Article's History:

Received: 01.12.22

Revised: 07.03.23

Accepted: 31.03.23

Suggested Citation:

Tuan, L.K. (2023). State management of education and training in Vietnam. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology"*, 9(1), 94-101. doi: 10.52534/msu-pp1.2023.94.

Abstract. The relevance of the research is due to the fact that nowadays, public administration is a rather important factor that affects any social system, in particular, the structure of education and upbringing. Since the development of the education system is directly related to the development of the education mechanism itself, it is necessary to take measures to reform the state management of education. The purpose of the study was to find out how the level of state management of the education system in Vietnam affects the future profession and success of students. To achieve the goals and objectives, the following methodological approaches were used: the analysis method, the theoretical approach, the systematic approach, the deduction method, the induction method, and others. The article reveals and analyses the concept of "state management of education and training". Modern methods of modernization of public administration in the field of education and training in Vietnam are also defined. It was revealed how important the educational sector is for the formation of the state. The results of the survey were analysed, which showed what factors should be added to improve the education system. The peculiarities of the implementation of state administration in the activity of a modern general educational institution are considered. The main components of the state model of management of education and training in educational institutions are defined, the purpose of public education in modern Vietnam is highlighted, as well as the criteria on which the quality of the education system depends. With the help of methods of analytical and statistical analysis, the features of the state administration system in the field of education and training were studied. The need to modernize education and training management is substantiated. It has been proven that the quality of education is related to the effectiveness of management. The educational process is considered as an important characteristic of the state's competitiveness. The obtained research results provide an opportunity to determine effective ways to improve the quality of education management

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Keywords: methods of providing the educational process; education system; modernization; distance learning; survey

INTRODUCTION

Since ancient times, the goal of education has been the development of the intellectual potential of the student, the qualitative application of his knowledge, and new skills in various fields of activity. The purpose of the research is to study the structure of public education in Vietnam and to identify how it affects the successful profession of students. L.T. Văn and H.A. Tuan (2022) stated that the state policy of Vietnam is a grant to create certain conditions that can

provide a decent standard of living for citizens. One of the important conditions for the implementation of this policy is the creation of the spiritual and humanitarian foundations of social activity, in which education plays one of the main roles. Another important goal was to meet the needs of the state, the individual, and society. The modern education system, a professional, pedagogical society, is in search of new methods and forms of education all over the world.



The education system is the main aspect that contributes to the development of the country.

M. Deng and Y. Cao (2018) proved that the quality of education has a great influence on the level of competitiveness of the country. The sphere of education and training is a rather complex social and technological system in which a wide variety of non-formalized information processes are carried out. State management in the field of education and training is a system of state authorities, state institutions, officials, and organizations that interact with each other in the process of performing functions, the purpose of which is to ensure the activities and development of the educational industry.

D. Carr *et al.* (2020) proved that the effective functioning of education is impossible without serious financial investments from the country. It is necessary to take into account the fact that the payback of financial investments is different in different sectors of the national economy and the nature and timing of their return. Education is a sphere of long-term financial investments that contribute to the development of the state in educational, scientific, technical, intellectual, and human resources. The main rule in the context of the growing role of education in the socio-economic development of the state is the problem of improving the management of education, and strengthening the material and technical base, if this is higher education, then it is important to mention the expansion of opportunities for authorizing the financial activities of subjects of higher education, that is, higher educational institutions. L.K. Tuan (2022) demonstrates that creating conditions for higher education institutions to be financially autonomous will make an important contribution to improving training quality and that the State is the creator of an autonomous environment for higher education institutions through a state management role. State management of education has specific features, due to the ways of setting and achieving socially significant goals in certain conditions of a controlled educational environment.

The state of the education system is included in the calculation of the global competitiveness index. This index is based on 9 “pillars”, which have a decisive impact on labour productivity and the competitiveness of the national economy. Namely, the position of state institutions in the country, the microeconomic climate, the state of infrastructure, higher education, market efficiency, higher education, innovation, and the level of technological development of business practices and strategies. Education is the main trigger on the road to success. To increase the level of the country's competitiveness, it is necessary to form a system of continuous education, “life-long education”. Continuous education is the growth of the general and professional educational potential of a person throughout his life, which is provided by a system of state and public institutions and meets the needs of the individual and society. This type of education takes several forms. Formal education contains institutionalized educational organizations. Non-formal education characterizes educational activities that are not

related to formal education and do not set the goal of assessing students (Katsamunska, 2020; Davies *et al.*, 2000).

J.S. Pounder and C.-M. Wo (2000) found out that the competence-based approach of education, as a field of activity, needs to be modernized in management, as well as to increase its efficiency. At the same time, educational authorities must ensure the transition to a qualitative state that contributes to the achievement of goals based on the optimal use of all resources, the newest results of education, and ensuring its high quality. In this important process, educational leadership must play a decisive role. A holistic educational process management system does not always take into account the necessary components, such as non-formal education, the relationship, an organic combination of general and vocational education, openness, and at the same time, conservatism of education. The education management system should provide a person with the opportunity to choose an equal assessment and determine education not by its receipt, but by actual results. The successful implementation of any professional education is based on such principles as the mutual work of the organization of education and self-education, stimulating the unity of education with practical activities, and others.

MATERIALS AND METHODS

This study in the field of state management of education and training was carried out through the use of methodological approaches that reveal both the theoretical and practical aspects of the study. The theoretical approach reveals the concept of “state management of education and training” and what role the learning mechanism plays in the formation of the state. Using a functional methodological approach, modern methods of modernizing state management in the field of education and training were identified, as well as the interaction of which elements of the system it is possible to maintain a high level and quality of the education system. Thanks to the introduction of the method of logical analysis into scientific work, the purpose of public education in modern education and the criteria that affect the quality of the education system were analysed. With the help of a systematic approach, the main factors were identified that are important characteristics of the competitiveness of the state, namely the quality of education, and the effectiveness of managing the educational process. Using the method of analytical and statistical analysis, the features of the state management system in the field of education and training were analysed. Using the method of analysis, the survey results were studied, which showed what factors need to be added to improve the education system. The method of induction, in turn, based on the identified inherent elements of the object of study, allows fully characterizing it through the prism of the identified aspects. The axiomatic methodological approach provided an opportunity to identify new ways to improve the quality of education management. In the course of using the comparison method, the main components of the state model of education and training management in educational

institutions were compared and analysed. Thanks to the use of the synthesis method, which, based on the theoretical and practical aspects of the work carried out, provided an opportunity to achieve the goal of the study, namely, that the study analysed the features of the state management system in the field of education and training. Using the deduction method, it was proved that the development of the education management system is directly related to the development of the very mechanism of education.

Also, the survey was conducted by the author of the article among Vietnamese students from various faculties, specializations, and courses of higher educational institutions. The survey was conducted online, anonymously, with participants' consent, and ethical considerations were observed. A total of 416 individuals participated in the survey, including students from the first to fourth courses, 298 males and 118 females. The survey included questions on further education and improving the learning process. The participants were asked if they planned to continue their education after graduation and in what form. The survey was conducted with the aim of identifying trends and preferences among students in terms of further education and to gather information on how to improve the learning process.

RESULTS

In this article, the term state management was considered as a specific activity in the system of social production of products and services. At the same time, the concept of state management in the field of education and training is determined by the functions that play a role in the country's economic system. In modern conditions, an important feature of education management is that problem-solving should be based not only on the level of the educational system but can also be a segment of state policy in this area. The main feature of educational authorities is that they are obliged to form the directions of educational policy, as well as to determine the directions that certain authorities are obliged to implement, which will be supported at the material methodological normative levels by attracting public attention. Also, directions to which certain governing bodies will remain neutral, but at the same time not express a negative attitude, or take the opposite position, in other words negative, while expressing it in every possible way. The modernization of education at present is the central task and the main idea of educational policy. The concept of modernization of education can be described as a comprehensive renewal of all parts of the educational system by the requirements of the present time, while maintaining and increasing the number of the best traditions of education. The learning process needs to be diverse.

The main modern trends in world development that have made significant changes to the education system are changes in the pace of development of society, namely acceleration, the purpose of which is to prepare people for life at a fast pace, the transition to an information society, and also makes it possible to expand the scope of intercultural interaction, democratization society, providing new

opportunities for political and social choice, in connection with which it is necessary to increase the level of people's readiness to make decisions, increased competition, an increase in the level of the economy, the need to improve the qualifications of teachers, the growth of their professional mobility, the growth of the value of the human resource. In developed countries, its indicator is 70-80% of national wealth (Davies *et al.*, 2000), in connection with which there is an intensive development of education. A wave of deep reform of the education system is taking place in many states, namely the USA, Great Britain, countries of Eastern Europe, China, South America, and Southeast Asia. The world processes of modernization of education have also affected public education, because of this factor, modern state policy in the field of education and training is characterized by continuous development and implementation of measures to reform it. After analysing the issues of state management of the education system, it is worth concluding that the process is carried out in a complex manner.

The main feature of modern state management of education is that it should be interconnected with socio-political finance, economic and legal aspects. State and regional higher educational institutions, the professional and pedagogical community, and local governments are active subjects of educational policy, as they should be interested in the development of education. It is worth highlighting the goal of modernizing state management in the field of education and training, namely, to create a mechanism for the sustainable development of the education system, ensuring it is by current trends, the social and economic needs of the country, the demands of society, the individual, and the state. To achieve this goal, it is necessary to solve such problems as achieving a new quality of preschool, general and vocational education, ensuring state guarantees of accessibility and equal opportunities for obtaining a full-fledged education, raising the social status and professionalism of teachers, and strengthening state support.

T. Gerton and J.P. Mitchell (2019) revealed that the modernization of education needs support from the President, government, and regional and oral leadership of the society. The development of the education management system should take place in the mode of a fruitful dialogue between all subjects of educational policy. Next, it is worth mentioning the education itself and the problems that contribute to the deterioration of the quality of education. Therefore, after analysing the material, the term "education" can be defined as the process of changing and educating a person, as well as giving him qualities that he did not have before. The purpose of education is to form specialists who know how to use methods and tools in the necessary branches of science but also to educate people who know how to act and apply their knowledge in new conditions, namely in a competitive market economy. Consider the symptoms that indicate disadvantages in the quality of educational activities. The first is a violation of the "just in time" rule, this is a violation of the deadline, late delivery, debt, or absence from exams and tests. This problem

can manifest itself both in students and teachers. The next symptom is the lack of satisfaction with the quality of educational services on the part of teachers. Further, it is worth mentioning the high percentage of results that are rated as satisfactory and unsatisfactory, as well as the minimum number of high scores. Important factors are the low motivation of the teacher to conduct the educational process.

The high quality of education is the high satisfaction of stakeholders, namely students, teachers, and employers, with the quality of educational services, a positive impact on society, and high satisfaction of teachers and employees of an educational institution with their work. Improving the quality of education is not just an effort, but also a specific type of activity that proceeds according to its own laws. If they are not taken into account, then the reverse process can be achieved, that is, deterioration. The problem of underachievement and unsatisfactory grades are outdated approaches to training and management. Process management is an improvement methodology. It must be understood that the requirements for the process must match its capabilities, in which case it is necessary to evaluate the capabilities of the process and check whether the capabilities meet the requirements. By tightening the requirements, it is impossible to achieve a result due to the fact that if the process and requirements are possible, contradictions enter, as a result of which the share of effects begins to increase. Given this, it is worth concluding that the more stringent the requirements, the more defects. To improve the results, it is necessary to improve the capabilities of the process in terms of the average result and

dispersion of the results. It is required to make sure that the improvement process is running, and only after that, it is possible to introduce new requirements that correspond to the new process capabilities.

The quality of a process is improved when its ability serves to produce the desired result the first time and without defects. Stability is the most important property of the process. It cannot be achieved by compensating for worse results or by achieving only better results. It is impossible to influence the course of a stable process without preliminary analysis. Volitional management interventions can bring the system out of a stable state. The consequence of this can be disruption of the process and poor results. To manage a process means to ensure its stability and capabilities to the requirements. The quality of education can only be improved by adopting the methodology of the process approach.

A survey was conducted among students of higher institutions on the topic of further education and improving the learning process. The first question was: "Are you going to continue your education after graduation? In what form?" A positive trend was recorded in the construction of students' plans after graduation with a bachelor's degree. Most of the participants, and this is 68%, are going to continue their studies at the magistracy, after completing their undergraduate studies and receiving education. Only 7% answered that they were not going to continue their education after graduation. About 10% voted as possible, but have not decided yet. 11% of respondents voted that they plan to get a second higher education, and only 4% percent chose the answer option "postgraduate study" (Fig. 1).

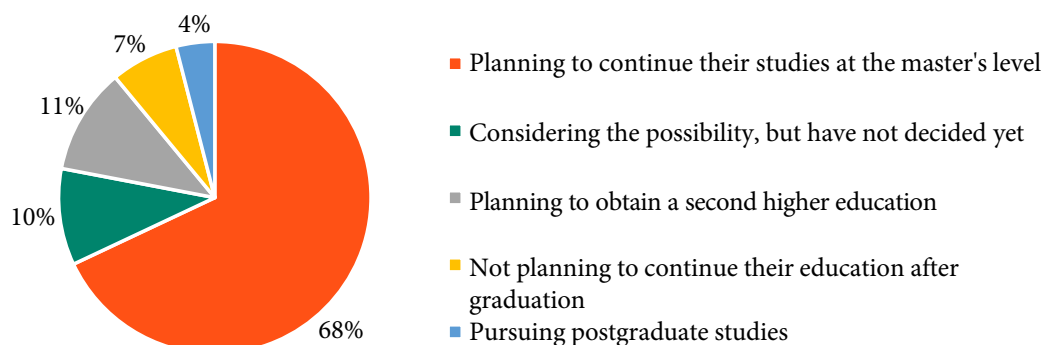


Figure 1. Percentage of students' responses to:
"Are you going to continue your education after graduation? In what form?"

The results of the survey are related to the fact that every year, students become more conscious of obtaining professional knowledge and skills. There are many reasons why students continue their education after a bachelor's degree. Someone is already employed and believes that the existing knowledge is not enough for him to do his job effectively, someone plans to become a researcher, professor, or teacher. Students understand that studying for a master's degree opens up new opportunities, knowledge, and skills and that this is a good way to develop a career. When

selecting a candidate for a job, employers give preference to employees who have a master's degree over those with a bachelor's degree.

The next question was: "What would you add to the learning process to raise the level of education?" With the help of the results, the following indicators were identified, aimed at reforming the educational system. Students believe that it is necessary to add work experience in the third year due to the fact that the application of practice only in the fourth year is not enough to use the acquired

knowledge. Graduates understand that it is important for employers that they have more practical experience. The result of the second practice will lead to more experience for their further employment. The indicator was 25% of all participants. The second factor was the solution of specific

life tasks and problems, and this is 40% of all participants. Students argue that it is necessary to conduct more business games and solve specific life tasks and problems. In addition, the last indicator is excursions to state institutions, which amounted to 35% of respondents (Fig. 2).

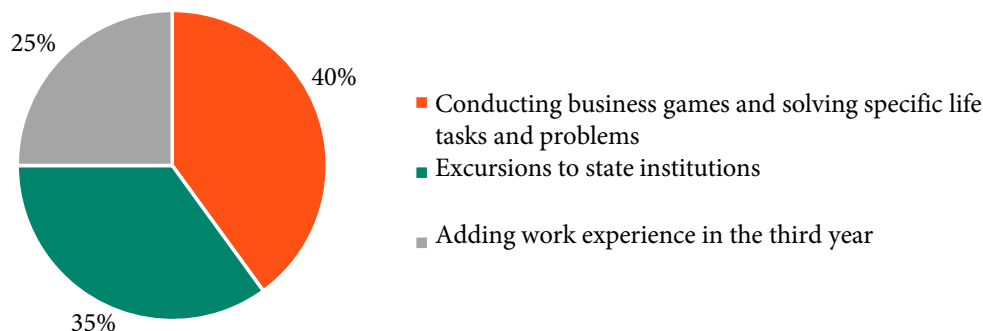


Figure 2. Percentage of students' responses to:
"What would you add to the learning process to raise the level of education?"

Students believe that it is also necessary to diversify the learning process with excursions to state and municipal institutions. These events are best carried out in the first two years so that the student observes the professional and understands what work he will have to do in the future. From this, it is worth concluding that in the first year, the student receives a visual representation of the scope of his future activity, and in the next three years, he receives a practical one.

DISCUSSION

The research highlights the need to modernize the management of education and training. One of the ways to improve its efficiency is through the case study method (Tuan & Cuong, 2019), which affects the quality of training. This method allows students to comprehend specific situations and develop more effective ways of solving problems using their knowledge and skills. The conflict method is another innovative way of learning that is based on the path of cognition and constructing rational activity, allowing students to master conflict reality. This method provides activity of the nature of learning and activates cognitive processes, communication, and analytical skills, forming the skills of collective interaction.

The findings of this study are consistent with previous research in Vietnam. For example, a study by D.-L. Le *et al.* (2023) found that satisfaction with short-term online courses is affected by various factors, including self-motivation, course content, and the use of appropriate teaching methods. Another study by T.X. Do *et al.* (2022) examined the factors influencing e-learning system usage during the COVID-19 pandemic in Vietnam. The research found that factors such as system quality, perceived usefulness, and compatibility with learners' needs are critical in determining e-learning system usage. C.-N. Duc *et al.* (2022) conducted a literature review of the project-based teaching method in Vietnam's education and identified the method's strengths and weaknesses. The authors concluded

that the method could be an effective approach to enhance students' practical skills and engagement. T. Tran *et al.* (2022) explored the opportunities and challenges of the fourth industrial revolution for educational innovation in Vietnam. The authors highlighted the need to invest in educational infrastructure and modernize teaching methods to align with the fourth industrial revolution's demands. Another studies by T.T.T. Minh (2022) and T.T.T. Minh and N.D. Hong (2022) examined the factors affecting blended learning effectiveness in Vietnamese universities. The author found that factors such as course design, interaction, and collaboration significantly influence blended learning effectiveness. N.M. Tri and L.T. Hoa (2022) discussed the renovation of higher education in Vietnam, focusing on the case of Ho Chi Minh City. The authors highlighted the need for institutional autonomy, quality assurance, and internationalization to enhance the competitiveness of higher education institutions in Vietnam. M.Q. Nguyen and J. Albright (2022) studied the political economy of education reforms in Vietnam and identified various challenges and opportunities in the country's education sector. The authors emphasized the importance of balancing the economic and social benefits of education reforms.

One of the factors that could influence the success of state management of education is academic staff's participation in university governance. This issue was explored by P.T.T. Hai and L.T.K. Anh (2022) in their study, which aimed to examine academic staff's participation in university governance and its practical problems. The authors conducted a survey among academic staff members from three universities in Vietnam to investigate their perceptions of their involvement in university governance. The findings indicated that academic staff members were willing to participate in university governance but faced several practical problems, such as lack of time, inadequate training, and unclear roles and responsibilities. The authors recommended that universities should provide more

opportunities for academic staff members to participate in university governance and offer appropriate training and support to enhance their capacity. Another crucial factor in the state management of education is financial autonomy, which has been addressed by L.K. Tuan (2022) in his study on financial autonomy of universities from the perspective of revenue and expenditure. The author analysed the financial data of Vietnamese universities and found that financial autonomy is essential for universities to achieve their objectives and meet their needs. However, financial autonomy in Vietnamese universities is limited, and they heavily rely on state funding. The author recommended that universities should diversify their revenue sources and improve their financial management practices to achieve greater financial autonomy.

Furthermore, M. Kelemen and J. Jevčák (2018) examined the security management education and training of critical infrastructure sectors' experts. The authors analysed the current status of security management education and training in the critical infrastructure sectors and identified the challenges and opportunities for improvement. The authors found that security management education and training in critical infrastructure sectors face several challenges, such as inadequate funding, limited access to resources, and lack of a comprehensive curriculum. However, the authors also identified several opportunities for improvement, such as the increasing demand for security management experts, the availability of technology, and the development of international standards. The authors recommended that universities should offer comprehensive security management education and training programs that meet the needs of critical infrastructure sectors. Y. Sermet and I. Demir (2020) provided new perspectives on virtual and augmented reality and their potential applications in education and training. The authors analysed the current status of virtual and augmented reality technology and identified the opportunities and challenges for its use in education and training. The authors found that virtual and augmented reality technology can enhance the learning experience by providing a more immersive and interactive environment. M.R. Davies *et al.* (2000) discussed serving the state: global public administration education and training. J. Shaturaev (2021) examined financing and management of Islamic (Madrasah) education in Indonesia. These studies provide insights into various aspects of education and training, indicating the diverse factors that influence the education system.

These studies demonstrate the importance of modernizing the education system to keep up with the fast-paced changes brought about by technology and globalization. It is clear that factors such as financial autonomy, the use of technology in teaching and learning, and the adoption of innovative teaching methods like project-based and case-study approaches are crucial to improving the quality of education. Additionally, the studies show that students are increasingly aware of the importance of education in shaping their future careers, with many opting to pursue further education such as master's degrees. It is clear that

state management of education plays a significant role in the success of students and the competitiveness of the country. Therefore, it is important for the government to take steps to reform and modernize the education system to ensure that it meets the changing needs of students and the country as a whole.

CONCLUSIONS

The study showed that in modern times, the educational process is provided very effectively, but it needs to be improved. In this regard, ways to improve its efficiency were considered. One of them is the case study method, which affects the quality of training, in other words, the method of analysing and solving specific situations. Its main characteristic is that students are offered a description of a specific situation that they need to comprehend. This description reflects theoretical and practical issues. The given task does not have unambiguous solutions; these students, have to look for more effective ways to solve the task, using the knowledge and skills that they already possess. In this study, an innovative way of learning was considered, namely the conflict method. It is based on the path of cognition and the way of constructing rational activity. Its purpose is to master the conflict reality. The use of this method provides the activity of the nature of learning, and also allows activating cognitive processes, and develop communication, and analytical skills forming the skills of collective interaction.

The survey conducted by the author among Vietnamese students found that most students are going to continue their education after graduation. The results are due to the fact that every year, students become more conscious of obtaining professional knowledge, and they also understand how education affects their future careers and success. The study showed that when choosing a candidate for a job, employers give preference to employees with a master's degree in education. After analysing the opinion of students, it can also be noted that it is necessary to diversify the learning process with excursions to state and municipal institutions. The study has some limitations, including the sample size and the fact that it was conducted among Vietnamese students only. Therefore, caution should be exercised when applying these findings to other contexts, and further research is necessary to validate these results.

Also, the term "competitiveness of the country" was considered. This term evaluates how a country shapes its economic future. This indicator assesses economic data and impacts, which are important factors influencing the stable growth of non-economic phenomena. To increase the level of the country's competitiveness, it is necessary to form a system of continuous education, "life-long education". The term "life-long education" can be described as the growth of a person's general and professional educational potential, which is accompanied throughout life. The most effective method of developing the education system is through corporate universities. Their task is to ensure the alternation of practical activities with the opportunity to gain

fundamental knowledge. Possible directions for further research include investigating the effectiveness of implementing corporate universities and continuous education programs to enhance competitiveness, as well as exploring the impact of educational excursions on students' learning outcomes.

None.

None.

ACKNOWLEDGEMENTS

CONFLICT OF INTEREST

REFERENCES

- [1] Carr, D., Kappagoda, M., Boseman, L., Cloud, L.K., & Croom, B. (2020). Advancing diabetes-related equity through diabetes self-management education and training: Existing coverage requirements and considerations for increased participation. *Journal of Public Health Management and Practice*, 26 (S2), S37-S44. [doi: 10.1097/PHH.0000000000001109](https://doi.org/10.1097/PHH.0000000000001109).
- [2] Davies, M.R., Greenwood, J., & Walkley, N. (Eds.). (2000). *Serving the state: Global public administration education and training*. London: Routledge. [doi: 10.4324/9781315196824](https://doi.org/10.4324/9781315196824).
- [3] Deng, M., & Cao, Y. (2018). Innovation and effect evaluation model of education and training outsourcing of state-owned enterprises under big data. *Educational Sciences: Theory & Practice*, 18(6), 3017-3027. [doi: 10.12738/estp.2018.6.201](https://doi.org/10.12738/estp.2018.6.201).
- [4] Do, T.X., Tran, H.T.L., & Le, T.T. (2022). Factors influencing the E-learning system usage during the COVID-19 pandemic in Vietnam. *PLoS ONE*, 17(12), article number e0278109. [doi: 10.1371/journal.pone.0278109](https://doi.org/10.1371/journal.pone.0278109).
- [5] Duc, C.-N., Thi, P.-N., Hoang, T.-N., Thanh, T.-N.T., & The, T.-N. (2022). A literature review of the project-based teaching method in the education of Vietnam. *International Journal of Educational Methodology*, 8(3), 567-584. [doi: 10.12973/ijem.8.3.567](https://doi.org/10.12973/ijem.8.3.567).
- [6] Gerton, T., & Mitchell, J.P. (2019). Grand challenges in public administration: Implications for public service education, training, and research. *Journal of Public Affairs Education*, 25(4), 435-440. [doi: 10.1080/15236803.2019.1689780](https://doi.org/10.1080/15236803.2019.1689780).
- [7] Hai, P.T.T., & Anh, L.T.K. (2022). Academic staff's participation in university governance – a move towards autonomy and its practical problems. *Studies in Higher Education*, 47(8), 1613-1626. [doi: 10.1080/03075079.2021.1946031](https://doi.org/10.1080/03075079.2021.1946031).
- [8] Katsamunská, P. (2020). [Selected national approaches for achieving global standards in public administration. Education and training](https://doi.org/10.1080/15236803.2019.1689780). *Smart Cities and Regional Development Journal*, 4(2), 85-94.
- [9] Kelemen, M., & Jevčák, J. (2018). Security management education and training of critical infrastructure sectors' experts. In *New trends in aviation development 2018: Proceedings of the XIII International scientific conference* (pp. 68-71). Košice: IEEE. [doi: 10.1109/NTAD.2018.8551687](https://doi.org/10.1109/NTAD.2018.8551687).
- [10] Le, D.-L., Giang, T.-V., Ho, D.-K., & Pham-Huynh, H.-N. (2023). Factors affecting the undergraduate student's satisfaction in short-term online courses: A case study of Vietnamese pedagogical students. *European Journal of Contemporary Education*, 12(1), 105-117. [doi: 10.13187/ejced.2023.1.105](https://doi.org/10.13187/ejced.2023.1.105).
- [11] Minh, T.T.T. (2022). Factors affecting blended learning effectiveness: A study in Vietnamese universities. In *ICFET'22: Proceedings of the 8th International conference on frontiers of educational technologies* (pp. 52-57). New York: Association for Computing Machinery. [doi: 10.1145/3545862.3545871](https://doi.org/10.1145/3545862.3545871).
- [12] Wo, C.-M., & Pounder, J.S. (2000). Post experience management education and training in China: A critical assessment of demand and supply. *Journal of General Management*, 26(2), 52-71. [doi: 10.1177/030630700002600204](https://doi.org/10.1177/030630700002600204).
- [13] Nguyen, M.Q., & Albright, J. (Eds.). (2022). *The political economy of education reforms in Vietnam*. London: Routledge. [doi: 10.4324/9781003244776](https://doi.org/10.4324/9781003244776).
- [14] Sermet, Y., & Demir, I. (2020). Virtual and augmented reality applications for environmental science education and training. In L. Daniela (Ed.), *New perspectives on virtual and augmented reality: Finding new ways to teach in a transformed learning environment*. London: Routledge. [doi: 10.4324/9781003001874-17](https://doi.org/10.4324/9781003001874-17).
- [15] Shaturaev, J. (2021). Financing and management of Islamic (madrasah) education in Indonesia. *Zeszyty Naukowe Politechniki Częstochowskiej Zarządzanie*, 42, 57-65. [doi: 10.17512/znpcz.2021.2.05](https://doi.org/10.17512/znpcz.2021.2.05).
- [16] Minh, T.T.T., & Hong, N.D. (2022). Students' awareness of the application of information and communication technologies in teaching and learning to increase learning efficiency: A case study at universities of Vietnam. In *ICEMT'22: Proceedings of the 6th International conference on education and multimedia technology* (pp. 162-168). New York: Association for Computing Machinery. [doi: 10.1145/3551708.3551758](https://doi.org/10.1145/3551708.3551758).
- [17] Tran, T., Nguyen, C.H., & Nguyen, L.T.M. (Eds.). (2022). *Educational innovation in Vietnam: Opportunities and challenges of the fourth industrial revolution*. London: Routledge. [doi: 10.4324/9781003202424](https://doi.org/10.4324/9781003202424).
- [18] Tri, N.M., & Hoa, L.T. (2022). [Renovating higher education in Vietnam: A case Ho Chi Minh City](https://doi.org/10.4324/9781003202424). *Res Militaris*, 12(2), 515-525.
- [19] Tuan, L.K. (2022). Financial autonomy of universities from the perspective of revenue and expenditure. *International Journal of Management*, 13(2), 19-31. [doi: 10.34218/IJM.13.2.2022.004](https://doi.org/10.34218/IJM.13.2.2022.004).

- [20] Tuan, N.D., & Cuong, N.H. (2019). Technical and vocational education and training (TVET) in Vietnam. In B. Bai, & Paryono (Eds.), *Vocational education and training in ASEAN member states. Perspectives on rethinking and reforming education* (pp. 229-256). Singapore: Springer. [doi: 10.1007/978-981-13-6617-8_10](https://doi.org/10.1007/978-981-13-6617-8_10).
- [21] Van, L.T., & Tuan, H.A. (2022). Abolition or maintenance? French and British policies towards Vietnamese and Malay traditional education during the last decades of the nineteenth Century. *SUVANNABHUMI*, 14(2), 177-206. [doi: 10.22801/svn.2022.14.2.177](https://doi.org/10.22801/svn.2022.14.2.177).

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Державне управління освітою та навчанням у В'єтнамі

Анотація. Актуальність дослідження зумовлено тим, що нині державне управління – досить вагомий чинник, який впливає на будь-яку суспільну систему, зокрема на структуру навчання та виховання. Оскільки розвиток системи освіти безпосередньо пов'язаний з розвитком самого механізму освіти, необхідно вжити заходів щодо реформування державного управління освітою. Метою дослідження було виявити, наскільки рівень державного управління системою освіти у В'єтнамі впливає на майбутню професію та успішність студентів. Для досягнення поставлених цілей і завдань використовувалися такі методологічні підходи: метод аналізу, теоретичний підхід, системний підхід, метод дедукції, метод індукції та інші. У статті розкрито та проаналізовано поняття «державне управління освітою і навчанням». Визначено сучасні методи модернізації державного управління у сфері освіти та навчання у В'єтнамі. Виявлено, наскільки освітня галузь важлива для становлення держави. Проаналізовано результати опитування, що показали, які чинники необхідно додати для покращення системи освіти. Розглянуто особливості впровадження державного управління в діяльність сучасного загальноосвітнього навчального закладу. Визначено основні складники державної моделі управління освітою та навчанням у навчальних закладах, висвітлено мету народної освіти в сучасному В'єтнамі, а також критерії, від яких залежить якість системи освіти. За допомогою методів аналітичного та статистичного аналізу вивчено особливості системи державного управління у сфері освіти й навчання. Обґрунтовано необхідність модернізації управління освітою і навчанням. Доведено, що якість освіти має зв'язок з ефективністю менеджменту. Розглянуто освітній процес як важливу характеристику конкурентоспроможності держави. Отримані результати дослідження дають можливість визначити ефективні шляхи підвищення якості управління освітою

Ключові слова: методика забезпечення навчального процесу; освітня система; модернізація; дистанційне навчання; опитування

**НАУКОВИЙ ВІСНИК
МУКАЧІВСЬКОГО ДЕРЖАВНОГО УНІВЕРСИТЕТУ
СЕРІЯ «ПЕДАГОГІКА ТА ПСИХОЛОГІЯ»**

Науковий журнал

Том 9, № 1. 2023

Заснований у 2015 р. Виходить чотири рази на рік

Оригінал-макет видання виготовлено
у редакційно-видавничому відділі Мукачівського державного університету

Відповідальний редактор:

М. Ковінько

Редагування англomовних текстів:

А. Кравченко

Комп'ютерна верстка:

О. Глінченко

Підписано до друку 31.03.2023 р. Формат 60*84/8

Умовн. друк. арк. 11,8

Тираж: 300 прим.

Адреса видавництва:

Мукачівський державний університет
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**SCIENTIFIC BULLETIN
OF MUKACHEVO STATE UNIVERSITY
SERIES “PEDAGOGY AND PSYCHOLOGY”**

Scientific Journal

Vol. 9, No. 1. 2023

Founded in 2015. Published four times a year

The original layout of the publication is made
in the publishing department of Mukachevo State University

Managing Editor:

M. Kovinko

Editing English-Language Texts:

A. Kravchenko

Desktop Publishing:

O. Glinchenko

Signed for print 03/31/2023. Format 60*84/8

Conventional printed pages 11.8

Circulation 300 copies

Publishing Address:

Mukachevo State University
89600, 26 Uzhhorodska Str., Mukachevo
Transcarpathian region, Ukraine
E-mail: info@pp-msu.com.ua
<https://pp-msu.com.ua/en>