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The Attitude of Teachers at Ukrainian Universities to the Use of MOOC: Survey Results

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Abstract: The research analyzed the results of a survey of teachers at Ukrainian universities on their attitude to Massive Open Online Courses (MOOC). It was found that MOOC provide possibilities for the formation of a digital educational environment, they ensure the implementation of the principles of massive character and openness in educational activities, they develop skills of independent work, critical thinking, and digital competence. There were 2,824 respondents from various universities in Ukraine who took part in the survey. It was found that, in general, teachers have a positive attitude towards online courses. It turned out that the most influential advantages of MOOC for teachers are acquiring new knowledge and receiving a certificate. The vast majority of teachers (96.53% of the total number of respondents) are fully or partially satisfied with the quality of Ukrainian online courses. At the same time, only a small part of respondents is willing to pay for online courses in Ukrainian (15.86% of respondents) and for courses which are in English (10.76% of respondents). Based on the analysis of the results obtained, we suggest directions for implementing MOOC in the educational process of universities and the ways to popularize them among teachers.

1 INTRODUCTION

In the context of society digitalization, there is a tendency to use various online resources in the educational process. A significant place among them is taken by MOOC, which are considered one of the key areas of online education reformation (Chen, 2023). This trend is also noticeable in the higher education system of Ukraine, which has been undergoing significant transformations for several years. The modernization of the content of education is caused by the technological development of society, integration into the European educational space, the need of adaptation to wartime conditions, and the growing demand for distance/blended learning.

The spread of MOOC in Ukraine was influenced by the introduction of distance learning in 2020 due

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to the COVID-19 pandemic (Shevchenko et al., 2024). At that time, MOOC integrated quite well into the educational process as an additional tool due to their practicality, accessibility and massive character. Now the relevance of online courses has only increased, as direct access to the infrastructure of some universities is limited or completely absent. As a result, some educational institutions have switched to a distance or blended learning format, and students began to receive education from different parts of the world. In such conditions, MOOC help to provide online learning, regardless of the location and life circumstances of the participants of the educational process (Kostikova et al., 2023).

MOOC are one of the effective means of non-formal education (Bobrikova et al., 2023; Salun and Zaslavska, 2024). In this way, students master additional material in order to form competencies that are not provided by the educational program for specialist training. Each user can independently choose the necessary online course and master the educational material at a convenient time. The result of completing such courses, as a rule, is a formed knowledge base and a certificate that verifies the course completion. In addition, you can take several online courses at the same time. To do this, you need to register for the necessary online courses, find time to listen to video lectures and take a test control.

At the same time, the degree of MOOC popularization among students and the introduction of online courses into the educational process of higher education institutions depends to a greater extent on teachers. They can recommend students to take a specific online course within the discipline, adhering to the principle of academic freedom. In this context, the results of a teachers' survey on the use of MOOC are studied in the works by (Griffiths et al., 2022; León-Urrutia et al., 2018; Rubaai and Hashim, 2019). On the other hand, the attitude of Ukrainian teachers to the possibilities of MOOC has not been studied enough. Considering all the above, the purpose of the research is to clarify the attitude of teachers at Ukrainian universities to the use of MOOC during their professional activities and for self-development. The results obtained will allow us to determine the preferences of teachers when choosing online courses, and to form methodological guidelines for MOOC popularization among them.

2 THEORETICAL BACKGROUND

In the context of Ukraine's support, international partners provide free support for the educational and scientific activities of teachers and students. In particular, Google is a good example of such a support. It provided free access to its software products for organizing distance and blended learning. Zoom Video Communications provided Ukrainian universities with free access to Zoom software without video conference time limits. The well-known MOOC platforms like Udemy, Coursera, edX were not left out, offering participants of the educational process access to their online courses on a free or conditionally free basis. As noted in the research by (Semerikov et al., 2023; Shevchenko et al., 2024), the most famous MOOC platforms among students of Ukrainian universities are foreign platforms such as Coursera, EdX, Cisco, and such Ukrainian online platforms as Prometheus and EdEra. Each online platform differs in the areas and number of online courses, it has its own interface, areas of monetization, etc.

Usually, online courses hosted on MOOC platforms consist of several elements, such as video lectures, additional learning materials, and assessment tools (Sharov et al., 2023). Video lectures provide students with access to the educational content at a time convenient for them and give a possibility to independently control the pace of the online course completion. Additional educational materials, such as presentations, informational articles, video interviews with experts help to deepen knowledge on the selected topic. Assessment tools (automated tests, practical tasks, etc.) allow checking the degree of mastery of the educational material. Based on the taken tests and educational topics, the progress of completing the online course is shown in the user's personal account (Sharov et al., 2019). Depending on the online platform and the subject of the course, the student is offered additional elements. For example, online courses on learning programming languages may contain examples of a program code with an explanation of its syntax and logic of operation, practical exercises, interactive code compilers (Sharov et al., 2021). In addition, a lot of MOOC include interactive elements to provide feedback, including discussion forums, webinars, bulletin boards. The variety of core and optional elements makes learning through MOOC more flexible and effective.

Here are some of the general features and advantages of MOOC.

Using MOOC fully ensures compliance with the principles of massive character and openness in educational activities. Any user can register for an online course and receive relevant educational content from leading universities and organizations, most often free of charge. Since each MOOC platform contains a significant number of online courses, the user can choose the most optimal online course and develop the necessary competencies (Bobrikova et al., 2023). In addition, most online courses do not have a clear schedule for completing topics, which allows users to combine study and work (Yamba-Yugsi et al., 2022).

In most cases, users take online course independently. Thus, with appropriate motivation, they develop skills of independent work, the ability to analyze the content, and critically evaluate the significance of the online course for their own self-development. Mastering online courses provides an opportunity to form skills required to work with information technologies and digital resources (Kostikova et al., 2023). In particular, this applies to the ability to process digital content, search for the necessary courses using filters, awareness of the features of the Internet browsers, etc. On the other hand, developed digital skills affect self-regulation of learning and can inspire students and teachers' desire for self-education (Saregar et al., 2024).

The use of MOOC makes it possible to realize digital transformation of the educational environment within the educational institution, which is a necessary condition for the quality implementation of educational activities (León-Urrutia et al., 2018). Online courses can be considered an additional tool for providing distance education, along with learning management systems (LMS), online conferences, video lessons, etc. Taking a certain online course while studying a certain discipline strengthens the innovative component of the course or educational program (Bobrikova et al., 2023), creates a common virtual environment, and forms a sense of social presence in students, especially in conditions of limited personal communication (Duan, 2021). To expand the possibilities of communication between users (an academic group, advanced training courses, etc.), one can use additional services such as Google, Padlets (Griffiths et al., 2022), Kahoot! etc. At the same time, MOOC can be considered a tool for academic mobility, when students gain knowledge from international specialists without the need of physical presence. In addition, we should mention the possibility of integrating MOOC into traditional educational programs. They help to diversify distance and blended learning, as well as to increase the flexibility of individual educational trajectories through the use of non-formal education (Salun and Zaslavska, 2024; Bobrikova et al., 2023).

Along with the advantages, MOOC have some weaknesses, which are explained by the specifics of online courses and distance education in general. The works by (Rubaai and Hashim, 2019; Nguyen, 2022; Salun and Zaslavska, 2024) draw attention to the following shortcomings and limitations:

– low percentage of online courses completion;
– inability of users with low-income to pay for an online course;
– low level of motivation for distance education, especially among people whose education is below a bachelor's degree;
– some online courses are of low quality;
– insufficient support of students provided by the developers of online courses;
– technical and technological limitations, such as lack of the Internet connection;
– low level of users' digital competence;
– insufficient number or absence of practical tasks, which makes studying some online courses quite difficult.

In our opinion, in order to popularize MOOC at universities, great attention should be paid to teachers. They can both increase students' cognitive interest in using online courses, and use MOOC for their own self-development. Being a user of an online course, teachers can: a) critically evaluate the effectiveness of the proposed teaching methods; b) improve their own training courses based on the educational content of the online course; c) enrich their own methodological tools; d) expand the range of their own professional and general competencies (Sharov et al., 2019).

At the same time, teachers encounter some limitations and shortcomings when using MOOC. Since a significant number of online courses are presented in English, some Ukrainian teachers experience language barriers. This affects the choice of an online course for further implementation in the educational process. Certificates of successful completion are not always accepted as a proof of advanced training, or a certificate after completing the course is not provided at all. This negatively affects the motivation and desire of teachers to take an online course (Salun and Zaslavska, 2024). Some online courses are paid, so not all teachers can take them and choose a free option for training. The implementation of an online course in a certain discipline involves its preliminary processing, monitoring the way students are taking the online course, and considering the results (certificate) as a

certain number of points within the educational discipline. These actions increase the workload of teachers, who sometimes simply do not have enough time for additional work (Rubaai and Hashim, 2019). As the research by (León-Urrutia et al., 2018) points out, sometimes the efforts spent on developing and delivering an online course exceeds the benefit the teacher receives for the result obtained.

3 RESEARCH METHODS

Awareness of teachers' attitudes towards the use of online courses during their professional activities and for their own self-development will make it possible to form a list of recommendations for a more effective use of MOOC in the educational process. To achieve the goal of our research, a diagnostic method (questionnaire) was used. With the help of Google Forms, we made a special questionnaire, which was distributed among teachers of Ukrainian universities.

It contained eight closed-ended questions:

Q1: Do you use Massive Open Online Courses for your own self-development?

Q2: Do you use Massive Open Online Courses in your professional activities?

Q3: What advantages of MOOC encourage you to take online courses?

Q4: Would you take a useful online course for which a certificate is not provided upon completion?

Q5: Are you satisfied with the quality of online courses located on Ukrainian online platforms?

Q6: Are you ready to take an interesting and useful online course in English?

Q7: Are you willing to pay to study an online course with the quality content in Ukrainian?

Q8: Are you willing to pay to study an online course with the quality content in English?

The questionnaire was published at the end of June in 2022-2023 academic year, when teachers no longer had a teaching load. It was open for a month, so all interested teachers could answer the questions. To ensure anonymity, the questionnaire did not include the name and patronymic of the respondents, as well as the name of the university. Since each respondent could fill out the form and send it only once, the number of respondents coincides with the number of questionnaires received. Quantitative calculations and visualization of the received data were carried out with Google Forms.

4 RESULTS AND DISCUSSION

There were 2,824 teachers working in Ukrainian higher education institutions who took part in the survey. When processing the answers to questions Q1 and Q2, it was revealed that MOOC are mostly used by teachers for their own self-development. This was noted by 2,508 respondents, which is 88.8% of the total number of respondents. At the same time, 2,105 respondents use MOOC in their professional activities, which is 74.5% of the total number of respondents. The obtained quantitative indicators allow us to state that online courses are quite popular among teachers. This can be explained by such advantages of MOOC as the opportunity to take an online course to improve one's qualifications, as well as to use online courses as an additional tool for studying the discipline. In order to determine the priority advantages of MOOC that encourage teachers to take online courses, the answers to the closed question Q3 were processed (Figure 1).

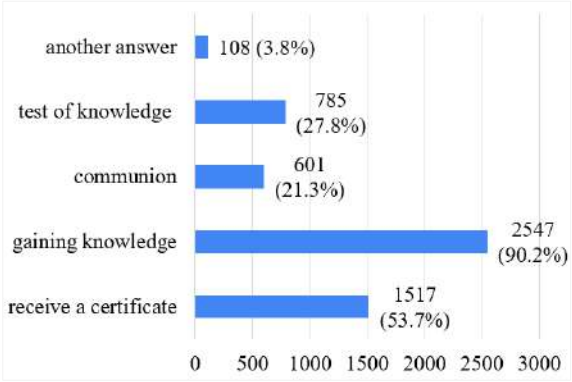

Figure 2: Advantages of MOOC that encourage teachers to take online courses.

According to the survey results (see Figure 1), the most influential factor motivating teachers to take or use online courses in class is gaining knowledge. This was reported by 2,547 respondents, which is 90.2% of the total number of respondents. Online courses can also be used to test their own knowledge or the knowledge of students, as noted by 785 (27.8%) respondents. You can check your level of knowledge using test tasks, which are included in almost every online course. More than half of the respondents (1,517 teachers, 53.7%) noted that they take online courses in order to receive a certificate. In our opinion, most often it is related to the opportunity to receive a certificate proving advanced training. In addition, certificates of completion of professional and useful online courses are one of the means of

popularization of the teacher professional and academic activities.

At the same time, a certificate is not always issued upon completion of an online course, or this document does not contain the necessary information (number of credits, seal, signatures of developers, etc.). In order to determine the willingness of teachers to take such courses, we asked them question Q4. Based on a quantitative analysis of the responses, we found out that 2,096 (74.2%) respondents are ready to take a useful online course, even if a certificate is not provided for its completion. This indicator is higher than the number of respondents (1,517 teachers) who take online courses for the sake of a certificate. This gives grounds to argue that gaining knowledge is more important than a certificate after successful completion of the course.

In our opinion, teachers of Ukrainian universities mainly pay attention to online courses that are located on domestic MOOC and provide the content in Ukrainian. At the same time, our own practical experience of using MOOC made it possible to identify the low quality of some online courses. In order to find out the teachers' opinion of the quality of online courses in Ukrainian, they were asked question Q5 (Figure 2).

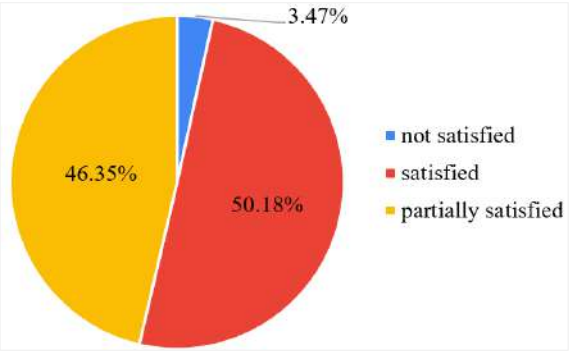

Figure 2: Teachers' satisfaction with the quality of online courses in Ukrainian.

As we can see in Figure 2, half of the respondents (50.18%, 1,417 teachers) are satisfied with the quality of online courses in Ukrainian. Almost the same number of respondents (46.35%, 1,309 teachers) are partially satisfied with the quality of online courses. That is, 2,726 teachers are satisfied or partially satisfied with the quality of online courses in Ukrainian, which is 96.53% of the total number of respondents. This quantitative indicator positively characterizes courses in Ukrainian in the context of their quality. At the same time, 98 respondents (3.47%) indicated the low quality of online courses taught on Ukrainian MOOC. This may indicate the presence of a small number of low-quality online courses that need to be improved or removed from domestic online platforms. However, these issues are to be handled by MOOC developers, who should monitor the quality of online courses (Chen, 2023) in order to attract a larger target audience.

It should be noted that the number of online courses in English, taught on well-known foreign online platforms, is much bigger than the number of online courses on Ukrainian MOOC (Sharov et al., 2023). Accordingly, the range of topics of online courses in English is much broader. Therefore, to improve your qualification, it is worth taking not only online courses in Ukrainian, but also to master resources in English.

To determine the willingness of Ukrainian teachers to take online courses in English, they were asked question Q6. According to the survey results, 1,645 teachers (58.3% of the total number of respondents) expressed their willingness to take online courses taught in English. At the same time, foreign language competency is an important component of a modern specialist training, and much attention is given to its formation at higher education institutions of Ukraine (Symonenko et al., 2023). This is explained by several factors. To study for a master's degree, students must successfully pass an exam in a foreign language. Also, a foreign language course is a mandatory component of bachelor training. Teachers participate in international projects, where knowledge of a foreign language is a prerequisite. In our opinion, mastering an online course in English will help not only to obtain professional knowledge in a certain subject, but also to develop foreign language competency.

A significant advantage of online MOOC is their accessibility to a significant number of users. At the same time, an online course can have different ways of monetization: a) fully paid content, b) part of the educational content is paid, c) the educational content is free, but you have to pay for the certificate, etc. As a result, not all users are willing to pay for an online course. This can affect the completion of courses, and it also increases the gap between users with different financial capacities (Gershon et al., 2021). With this in mind, we asked teachers to answer question Q7 (willingness to pay for quality courses in Ukrainian) and Q8 (willingness to pay for quality courses in English). The graphical representation of the results obtained is shown in Figure 3 and Figure 4.

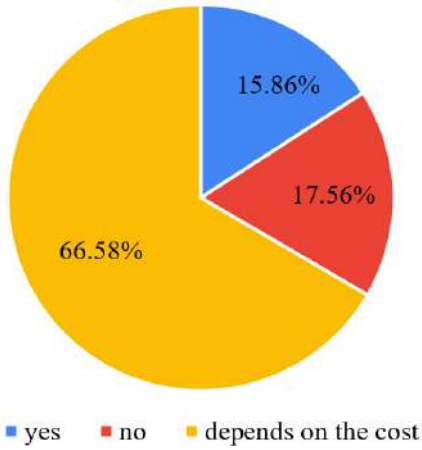

Figure 3: Willingness to pay for online courses in Ukrainian.

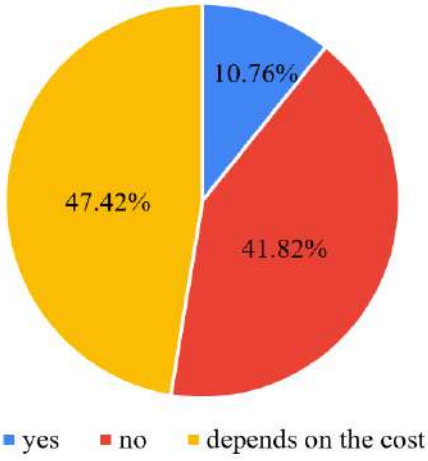

Figure 4: Willingness to pay for online courses in English.

As we can see from Figure 3 and Figure 4, only a small part of teachers is willing to pay for the educational content. This figure is 15.86% (448 respondents) for online courses in Ukrainian and 10.76% (304 respondents) for online courses in English. A significantly larger difference in the figures means the refusal of teachers to pay for online courses. Thus, 496 surveyed teachers will not pay for online courses in Ukrainian, which is 17.56% of the total number of respondents. Almost 2.5 times more teachers (1,181 respondents, 41.82%) will not pay for the high-quality content in English. In our opinion, the main barriers to pay are the high cost of online courses (at least for Ukrainian teachers) and language barriers. At the same time, a significant part of those surveyed is willing to consider the requirement to pay for an online course if they are satisfied with the cost. This was stated by 1,881 teachers for online courses in Ukrainian and 1,339 teachers for online courses in English, which is 66.58% and 47.42% of respondents, respectively, from the total number of respondents.

In our opinion, MOOC are a valuable source of useful information that can be used in the educational process and for self-development. At the same time, any educational technology, including learning with MOOC, has its own special features. In particular, this concerns access to the educational content, since not all online courses are free. The analysis of the survey results (see Figure 3 and Figure 4) indicates a low willingness of teachers to pay for online courses, especially those in English. On the other hand, not all teachers are ready to use online courses in their classes due to overload (León-Urrutia et al., 2018) or lack of experience in their implementation.

In this regard, we can give several recommendations that could improve this situation. First, it is to introduce a flexible system of discounts for the academic community, including collective subscriptions for universities. This direction has already been implemented by well-known MOOC such as Udemy, Coursera, edX, which have offered universities some online courses on a free basis. To remove the language barrier for online courses in English, it is worth introducing subtitles and localized materials. This will facilitate the users' perception of the educational content taught in a foreign language. Some online platforms, for example Udemy, already provide such an opportunity. Cooperation between universities might be useful when it comes to the integration of online courses into the programs of teachers' professional development. It is appropriate to consider certificates of completion of an online course as proof of advanced training. This direction can be implemented at the level of internal regulatory documents of the university. An effective direction for popularizing MOOC is to hold various events where specialists demonstrate the possibilities of online courses and provide methodological guidelines for their effective use. A similar idea is found in the work by (Stutchbury et al., 2025), which points out the importance of workshops on the development and implementation of MOOC.

If we consider the use of MOOC in the educational process, we support the opinion of researchers (Nguyen, 2022) about the usefulness of online courses as an additional educational tool when studying a discipline. In this context, teachers have a great responsibility, since they must find a balance between traditional and online learning, communication in the classroom and use of communication tools (Kostikova et al., 2023). It is also necessary to take into account the desire of students to learn in this way. Therefore, it is necessary

to apply certain mechanisms to encourage students to take MOOC. For example, to accept certificates of completion of an online course as current grades for the subject (Yamba-Yugsi et al., 2022). It is appropriate that teachers should provide informational support for students during the online course (Jansen et al., 2020), if such a need arises. Of special importance is the content of an online course (Goh et al., 2018). Therefore, teachers should select the courses which will be interesting and useful for students' learning and development.

5 CONCLUSIONS

Thus, the introduction of Massive Open Online Courses into the system of higher education of Ukraine is an important direction of digitalization of educational activities, which provides non-formal education, contributes to the formation of a modern academic environment capable of meeting the challenges of society. By adhering to the principles of massive character and accessibility, each user can access the educational content depending on their preferences. The use of MOOC allows users to develop digital competencies and critical thinking skills, and to be aware of current trends in the development of science.

In order to find out the attitude of Ukrainian teachers to the use of MOOC during their professional activities and for their own self-development, a survey was conducted with the help of Google Forms. The analysis of the survey results confirmed the positive attitude of teachers to the use of online courses. The most influential advantages of MOOC for teachers were gaining knowledge (90.2% of respondents) and receiving a certificate (53.7% of surveyed teachers). The majority of teachers (2,726 respondents, 96.53% of the total number of respondents) are satisfied or partially satisfied with the quality of online courses in Ukrainian. 58.3% of respondents reported their willingness to take high-quality online courses in English. At the same time, only a small part of teachers (15.86% of respondents) is willing to pay for the educational content in Ukrainian. Even fewer teachers (10.76% of respondents) are willing to pay for online courses in English.

In order to attract teachers to take online courses and implement MOOC in the educational process, it is necessary to develop effective mechanisms to increase the motivation of teachers and students. In further research, it is planned to consider the directions of popularizing MOOC among teachers in more detail and verify their efficiency.

REFERENCES

Bobrikova, Y., Boiko, A., Karpenko, O., Chepil, M., & Taranenko, Y., 2023. Informal Online Education: Teacher-worker in Modern Conditions. *Journal of Higher Education Theory and Practice, 23*(5), 33-43.

Chen, H., 2023. Influencing Factors of the Quality of MOOCs Based on the KANO Model. *International Journal of Emerging Technologies in Learning, 18*(17), 20-32.

Duan, P., 2021. The social presence of online education: how MOOC platforms in China cope with collective trauma during COVID-19. *Asian J Commun, 31*(5), 436-451.

Gershon, S. K., Ruipérez-Valiente, J. A., & Alexandron, G., 2021. MOOC Monetization Changes and Completion Rates: Are Learners from Countries of Different Development Status Equally Affected. In C. Meinel (Eds.), *EMOOCs 2021* (pp. 169-179).

Griffiths, M. A., Goodyear, V. A., Armour, K. M., 2022. Massive open online courses (MOOCs) for professional development: meeting the needs and expectations of physical education teachers and youth sport coaches. *Phys Educ Sport Pedagogy, 27*(3), 276-290.

Goh, W., Ayub, E., Wong, S. Y., Lim, C. L., 2018. The importance of teacher's presence and engagement in MOOC learning environment: A case study. In *2017 IEEE Conference on e-Learning, e-Management and e-Services* (pp. 127-132).

Jansen, R. S., Leeuwen, A., Janssen, J., Conijn, R., Kester, L., 2020.. Supporting learners' self-regulated learning in Massive Open Online Courses. *Comput Educ, 146*, 103771.

Kostikova, I., Holubnycha, L., Marmaza, O., Budianska, V., Pochuieva, O., Marykivska, H., 2023. Real Country Experiences: On-line Teaching in Wartime After Pandemic in Ukraine. *International Journal of Interactive Mobile Technologies, 17*(3), 123-134.

León-Urrutia, M., Cobos, R., Dickens, K., 2018. MOOCs and their influence on higher education institutions: Perspectives from the insiders. *Journal of New Approaches in Educational Research, 7*(1), 40-45.

Nguyen, L. Q., 2022. Learners' satisfaction of courses on Coursera as a massive open online course platform: A case study. *Front Educ (Lausanne), 7*, 1-11.

Rubaai, N., Hashim, H., 2019. Polytechnic ESL lecturers' acceptance of using massive open online course (MOOC) for teaching english as a second language (ESL). *International Journal of Innovative Technology and Exploring Engineering, 8*(9), 114-121.

Salun, M., Zaslavska, K., 2024. MOOCs and their contribution to nonformal learning in the realities of Ukrainian business education. *Proceedings of Socratic Lectures, 11*, 120-125.

Saregar, A., Kirana, L. J., Asyhari, A., Anugrah, A., Fitri, M. R., Panse, V. R., 2024. Technology and Digital Literacy: Interrelationships and the Impact of Acceptance with Self-regulated Learning. *E3S Web of Conferences, 482*, 04006.

Semerikov, S. O., Vakaliuk, T. A., Mintii, I. S., Didkivska, S. O., 2023. Challenges facing distance learning during martial law: results of a survey of Ukrainian students. *Educational Technology Quarterly, 4*, 401-421.

Sharov, S., Kolmakova, V., Sharova, T., Pavlenko, A. (2021). Analysis of MOOC on Programming for IT Specialist Training. *TEM Journal, 10*(4), 1884-1894.

Sharov, S., Liapunova, V., Sharova, T., 2019. Analysis of the opportunities of the Prometheus platform for the professional development of future teachers. *TEM Journal, 8*(4), 1469-1476.

Sharov, S., Yekimov, S., Sharova, T., Derkachova, O., Kolomoiets, H., 2023. Using online courses at an agrotechnological university. *E3S Web of Conferences, 452*, 07015.

Shevchenko, V., Malysh, N., Tkachuk-Miroshnychenko, O., 2024. Distance learning in Ukraine in COVID-19 emergency. *Open Learning: The Journal of Open, Distance and e-Learning, 39*(1), 4-19.

Stutchbury, K., Ebubedike, M., Amos, S., Chamberlain, L., 2025. Professional development in the digital age: supporting improvements in teacher education through MOOCs. *Open Learning, 40*(1), 67-90.

Symonenko, S. V., Zaitseva, N. V., Osadcha, K. P., Kuzminska, O. H., 2023. English language training for IT professionals at Ukrainian universities: pedagogical conditions and content. *CEUR Workshop Proceedings*, 3535, 94-112.

Yamba-Yugsi, M., Atiaja, L. A., Luján-Mora, S., Eguia-Gomez, J. L., 2022. Determinants of the Intention to Use MOOCs as a Complementary Tool: An Observational Study of Ecuadorian Teachers. *Sustainability (Switzerland*), 14(22), 15189.