

Peculiarities of using Moodle learning technology in higher teacher education under the COVID-19 pandemic

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Summary

The Covid-19 pandemic was a great challenge for society. The introduction of emergency measures has completely changed our world and shaped a “new reality”. The sphere of education and science has moved into the digital space. Distance education is a forced measure for the continuation of the educational process and the training of qualified specialists. Teachers around the world began to test all sorts of tools, platforms, and devices. One of the methods was to move to the platform Moodle, which is now the most popular system for distance education. In this article, the author aims to study the peculiarities of using Moodle system in higher education. The following methods are used to obtain the results: testing, questionnaire, interview, hermeneutic and comparative methods. The author takes two experimental groups (one of which - future teachers of humanities disciplines, and the second - future teachers of mathematics), which take their training in the system Moodle for five months (one semester). The results showed that the quality of learning has not changed significantly. But students are dissatisfied with the introduction of distance education. Students and teachers note the quality of reproduction of courses on the platform Moodle, with the addition of tests and a variety of additional material, but it does not replace the live communication with the teacher. The system is more suitable for teachers of the exact sciences than for the humanities. They need live discussions in seminars, lectures, and tests that are not suitable at all. The author concluded that the system Moodle perfectly disciplines and structures courses that can be consistently passed and performed tasks, and conduct organizational communication with students, but it is impossible

to completely translate the training. Even for students who will become teachers of exact sciences.

Keywords:

remote education, learning, teaching.

1. Introduction

Our world constantly has to respond to all kinds of challenges. Armed conflicts, natural disasters, and social and economic hardships. But a couple of years ago, our planet was faced with the Covid-19 pandemic, which dramatically changed our reality. Quarantines, masking regimes, the use of antiseptics, and many other measures were introduced by many nations around the world. The new reality also affected the entire field of education. The main goal was to preserve the educational process when all pupils, students, doctoral students, and teachers were at home. The obvious and logical solution was the urgent introduction of distance education. Distance education is a new sphere of existence for the educational process, which has many tools, platforms, and learning methods. All of them are different in their principle of application and effectiveness, and in different ways, they activate pedagogical methods. There are many platforms for hosting distance learning courses, such as “ATutor”, “Pokeos”, “Clordine” and “Moodle”. Moodle (Modular Object-Oriented Dynamic Learning Environment) is the most popular system in education management. It is an

independent platform that allows a teacher to publish a complete course of any subject. For example, to learn new material thanks to lectures (in textual form) and additional graphic material, to check knowledge - take tests and attach essays for checking by the teacher [10]. But questions arise as to whether such systems really provide quality knowledge? Can they replace classical "offline" learning? Is the system suitable for teaching all areas of knowledge? And also, how to use this system?

Therefore, the purpose of our study is to analyze the peculiarities of using the Moodle system in higher teacher education.

Our topic and the purpose of the study led to the following tasks: assign and allocate experimental groups, create one version of the questionnaire for students, and create a conversation with teachers and students thanks to video conferencing Zoom.

We hope to see different attitudes to the use of Moodle for humanities students and future teachers of mathematics, to establish the shortcomings of using the system, and to establish points of growth in distance learning.

2. Literature Review

Although the Covid-19 pandemic is relatively recent, there is a fair amount of research on distance education. The scholarly literature ranges from research on the use of particular systems in education to the implementation of the latest teaching methods.

Thus, in the scientific literature, some researchers focus on certain fields of knowledge and certain teaching methods. For example, Abdula, Baluta, et al. investigate the use of the test form in teaching philosophy. Philosophy is a way of developing critical thinking, working with a large number of primary sources, and analyzing them. And students' work with tests can narrow thinking and prevent them from forming their own judgments. A study by Abdula, Baluta, et al. 2020 gives us an opportunity to analyze how best to teach and test in philosophy and whether tests can be used. In contrast to the previous authors' study, we can cite the work of Kanetaki, Stergiou et al. They studied the use of the Moodle system in teaching engineering students. They were interested in the factors that influenced learning in distance education, given that the learning process absorbs many aspects. For example, pedagogical work, learning context, online learning, and resource skills [7]. Neither Fhloinn, Fitzmaurice investigated the study of mathematics in distance learning during the Covid-19 pandemic. University work is not limited to bachelor's and master's, the university prepares PhDs and postdoctoral fellows from all disciplines. Simón, Melian, et al. studied distance education teaching specifically among doctoral students.

Distance education requires the material and technical support of students and teachers. But, unfortunately, everyone's material and social situation is

different, such inequality is observed not only among students, but also between regions, cities, and villages. For example, Mhandu, Mahiya et al. studied the introduction of distance learning in the local village. Thus, it turned out that not all students had computers, some students did not live on their own and it became more difficult to study, and they also exhibited treasure for the interruption of the Internet. Studies like this lead us to believe that student sampling and location play an unimportant role. And it also raises the question of educational accessibility and the right to "education" among the population. Saroia, Gao back in 2018 began studying students' intention and desire to use mobile devices while studying in Sweden. This practice helps students get higher scores on exams.

Distance education does not have 100% implementation and many researchers are exploring partial implementation. Yes, the term "hybrid" education, or blended system, has come into scholarly usage. In 2017, Benabid studied the use of Moodle in hybrid education. Crozier studied open education for students, which we believe makes science, and scholarly sources more accessible, opens boundaries for students, and affects the reduction of student debt.

Students' attitudes toward distance learning, and the success of its implementation is an important research topic. The results of practical research opens us the way to modernize the learning process, to restructure the platforms, and to look for new ways to use scientific and technological achievement. Such studies include the works of Jacques, Ouahabi et al., Kuleva, Veljkovic Alexander, Stankovic, Ndinisa, Dlamin.

In addition to research on the effectiveness of evaluation of the introduction of distance learning, there are works that address this area on the technical side. Yes, Costello, Johnston, et al. were engaged in a study of error correction in the Moodle system. The pedagogical component of this research was just in the role of the educator. Teachers and developers become one community. Gourlay, Littlejohn, et al. studied being a teacher while working in distance education, which is about literacy. Literacy is an event [5].

Distance education has a variety of ways to implement and tools to use. It expands the field of action and changes the teaching methodology. Nemtinov, Borisenko, et al. investigated the improvement of professional competencies through the use of a virtual learning environment. The authors believe that the creation of a virtual environment leads to new ways of communication [12]. For example, taking web-quests helps to identify students' interests and aptitudes. In our opinion, such systems renew and attract students' attention. In the pluralism of technology, students should be "invited" into the world of science and show that it is interesting and can be modern.

The primary source for using the Moodle system was the official website of Moodle - Open-source learning platform | Moodle.org.

3. Methodology

In our work, we use two research methods: quantitative and qualitative. We take two groups of students to conduct the study. One is a humanities group. The second is a technical group (teachers of mathematics). Representatives of the humanities and mathematics were students of the 3rd year. We purposely did not invite first-year students into our study. Students who just came to universities are not familiar with “offline” learning, they have not adapted to classical learning and almost immediately switched to online learning. Third-year students have already gone through an adaptation period, got used to the university community, and acquired some qualifications.

We investigated students' and teachers' attitudes toward using Moodle through its application in a particular discipline.

The humanities group has 18 students. Mathematicians have 21 students. Gender equality in humanities students is almost observed: 10 girls and 18 boys. In the technical group, there is an advantage on the male gender. 16 guys and 5 girls. During the study we used the following empirical methods: statistics, testing, survey, and conversation. As well as a hermeneutical, comparative method to analyze and interpret the results of the study.

The experiment was conducted during one academic semester (5 months) and included five stages. The first stage was the selection of experimental groups. The second –is the consultation of teachers on the experiment, and familiarization with the training program, forms, and evaluation criteria. The third stage is a questionnaire of our own design, which includes closed and open questions of using the Moodle system, the quality of the course, wishes, and other issues. The fourth stage was a conversation with the teachers about the lectures. The conversation was 40 minutes with a teacher of humanities. And 30 minutes with the teacher of the exact specialty. The conversations with the students lasted 25-30 minutes. All were conducted in Zoom. There was no specific list of questions. We allocated certain areas of discussion and followed the movement of the conversation. Additionally, we asked students questions based on their answers to the questions on the questionnaires. Stage Five - Analysis of student exam results, questionnaires, and conversations.

4. Results

Before beginning the study, we invited the dean's offices of the faculties (where the experimental groups study) the average grade of the entire group for the

previous semester and compared it with the average grade of the actual semester spent on distance learning (Table 1)

Table 1: Average grade point average of groups

Group	Humanities	Mathematicians
Number of students	18	21
Average grade (previous semester)	86,83	84,24
Average grade current semester	86,90	84,85

Author's elaboration

Indicators increased by a small percentage. Humanities students increased by 0.08%. In mathematics students by 0.72%.

We obtained the results of the evaluation after teaching the courses subjected to the experiment (Table 2). The maximum score for both groups is 100 points. 40 points for the exam. Humanities students: 15 points for essays, 30 points for seminar work, and 15 points for lecture attendance. Math students: three 10-point quizzes and two 15-point tests. The exam included two open-ended questions (for humanities students) and one open-ended question, three problems for technical students.

Table 2: Student evaluations after the course

Group	Humanities	Mathematicians
90-100 scores	9	9
70-80 scores	5	8
60-50 scores	4	5
Not passed	0	0

Author's elaboration

Comparing the results of the average scores of the whole group and analyzing the scores for the courses, which are experimental for us, we see that distance education qualitatively did not affect the assimilation of the material. The reasons were established after questioning and talking to students and teachers.

Results of humanities students:

4 out of 18 students are satisfied with the introduction of distance education.

2 out of 18 considered distance education a normal practice for humanities students.

18 of 18 had the material and technical basis for learning.
15 of 18 considered text-based lectures, not the norm and supported Zoom lectures.

18 of 18 consider the idea of introducing tests to be bad (it was not part of the course evaluation) and recognize the advantage of writing essays.

Results of mathematics students:

6 out of 21 students are satisfied with the introduction of distance education.

16 out of 21 consider distance education a normal practice. Unless you count online laboratory work.

21 of 21 had the facilities to teach.

15 of 21 thought text lectures were a good option.

21 of 21 recognized the comfort of the tests.

After talking with students, we were able to establish the positive aspects of using Moodle (according to students of two specialties):

The Moodle system structures the course components well. They correspond to classic methodological developments, which allow you to comfortably “walk” through the course. A big advantage is the attachment of literature and supplementary materials for the course. By textuality, the courses lack live interaction with classmates and instructors. A textual lecture can be reread, but there is more benefit from live instruction. That's why humanities students used Zoom for lectures and seminars. The lecture texts on the platform were used to reinforce the material. Also, thanks to the Zoom system, the mathematics students of the specialty had consultations and analysis of test papers. Humanities students were comfortable attaching essays on the platform, but they note that they could have just sent them to the mail. And they also express negative feedback on tests and give good feedback on essays and written exams. Prospective math teachers made no comments about the test. The role of teachers deserves special attention. The students consider the figure of the instructor to be key in mastering the material, so they were happy to listen to the instructor even on Zoom.

After talking with teachers, we were able to establish the following facts. According to the humanities teacher, the Moodle system makes the educational process transparent and structured, which is a necessary component in quality and consistent knowledge acquisition. Deadlines are set, course materials and descriptions are attached, which makes it understandable for a person from the outside, and students will now have no opportunity to forget about handing in papers or writing exams. Unfortunately, in a written lecture, it is impossible to make any assumptions, add examples, or any elements that might come up in teaching. There is no opportunity for a little impromptu writing. Such lectures are “without a soul”.

The instructor of mathematics students also notes positively the possibility of course design, communication with students, such as the publication of announcements, as well as the laying out of additional material. Lectures can be supplemented with charts, and diagrams. In offline mode, this was not often the case, because sometimes the classrooms were not equipped with projectors. In online mode, lectures are more intense. It is also comfortable to conduct tests and their automatic evaluation. Barring a lack of live communication, the Moodle system is suitable for teaching the course.

5. Discussion

The Covid-19 pandemic has completely overflowed our world, our reality. Distance education, which was a polemical topic, once became practical. Schools and universities were forced to move to online learning to support and advance the learning process. Although the topic of “remote” education began back in 2018 when the research was conducted in Sweden on students' willingness to join mobile education by Saroia, Gao [14]. And in these couple of years, researchers from all over the world have managed to devote their work to the evaluation of distance learning and the quality of the learned material. In our work we tried to study the peculiarities of using Moodle as the most popular system in the world Moodle - Open-source learning platform | Moodle.org on the example of students who acquire teaching skills and in the future will be teachers. We took students who in the future will be teachers of humanities and articulate subjects. Even at the beginning of the study, we were sure that humanities students would prefer live communication and learning with a teacher, but we did not expect this from math students. And there were other doubts related to the present. Today's young people are very deep into the digital world, their attention span and memorization skills are not the same as those of previous generations. Clipped thinking makes its own adjustments to the existence, but as our study showed, students demand the attention of the instructor, and this is primarily due to the specifics of learning.

Abdula, Baluta, Kozachenko, and Kassim had a similar study. They studied test-taking while studying philosophy. The conditions are the same - forced distance education and the need for knowledge testing. The problem is that philosophy, according to the researchers (and we agree with them), should form critical thinking, and cultivate general cultural competencies [1]. Because of this, the reduction of the philosophy course has not had a good effect. Among the methods of development of critical thinking in the framework of philosophy, researchers refer to: creating situations of choice, writing opinions, conducting a dialogue, and the right to correct errors. But, from our point of view, tests are not capable of

such functions. Therefore, the instructor of our study refused to administer the tests at all. If we take the History of Philosophy course, that is one thing. The student should know at what time this or that philosopher lived, what concept he invented, or what term he introduced into scientific circulation. But that's not philosophy, that's not what's important for critical thinking and humanities knowledge, that kind of path won't give a synthesis of ideas, and thoughts, or give an impetus to thinking. And Abdula, Baluta, Kozachenko, Kassim also emphasize at the end of their study that this is not a 100% option for testing knowledge, that it should not be the only one and you cannot go completely to Moodle[1].

We want to highlight a positive trend among students. Who needs an instructor themselves. For them, he is not a manager of the Moodle platform with the function of teaching a course. For them, he is a teacher, an assistant in interpreting texts, a seminar moderator, and a support in understanding the topic. Once again, we note that math students also noticed the role of the instructor. We can assume that this is because of the speed and ease of communication. Kuleva, in her article, focuses specifically on establishing online communication between students and instructors. According to the author, the response in the chat may not be instantaneous, but the question is large and difficult to formulate [8]. It can also be about feelings of loneliness and an "identity crisis" when faculty and students are already used to the academic environment [5]. Thus, we agree with Benabid, who viewed education in Moodle from the side of hybrid education[2].

The teacher's role can also be to use certain teaching methods. This is the opinion of Kanetaki, Stergiou, et al [7]. In their study, they found that the introduction of the latest teaching techniques can be a qualitative response to forced distance learning. Thus, distance learning opens the field for rethinking various techniques. For example, Nemtinov, Borisenko, et al. introduce web quests for student interest and professional interest. As NíFhloinn, and Fitzmaurice respondents show, students, do not expect too much in distance education and are grateful to their instructors for new practices and new ways of learning[13].

In our study, we paid attention to the teachers, because they are one of the "administrators" of the system and its users. Both teachers noted the good structural part of Moodle for teaching courses. And there were no complaints about the course. A very interesting study by Costello, Johnston, et al. who saw this platform as a place of communication and collaboration between teachers and developers [3]. They became one society working for the benefit of education. Such research, combined with ours (the conclusion to establish a different approach to humanities disciplines) allows for an expansion and refinement of the platform to meet the needs of humanities, science, and technology teachers and future scientists. Finding the weaknesses of the platform - we make it better.

Distance education makes it more open to students. The materials that are made available can exceed their standard number, and the variety of resources is astonishingly diverse. Not only primary sources can now be transmitted, but also videos and images. This possibility is actively used by teachers at the department of fine arts at Kharkiv National Pedagogical University named after G.S. Skovoroda. According to their experience, it is impossible to teach students without visual material, and the Moodle system allows you to increase the amount of material and increase the time for its acquaintance. Even before the pandemic, Crozier analyzed what can cause students to be indebted and how it can be overcome. He finds the way out just in open education, which can be implemented in the Moodle system through the publication of articles by teachers and other resources [4]. Also, the results of the study showed that the introduction of distance education qualitatively did not affect the indicators of success. Such "sustainable" results include the study of Jacques, Ouahabi et al. In it, the authors also note the absence of negative experiences from the introduction of distance education and "unharmful" evaluations of technical students[6].

Analyzing the topic of distance education, we cannot ignore the material and technical conditions of the students. All of our students had full access to computers and telephones. But students in small towns could hardly show 100% provision. A similar thing was encountered in a study by Mhandu, Mahiya et al. In their work, students noted the lack of computers, lack of access to resources, internet outages (like our students), as well as many other points [9]. Ndzinisa, and Dlamini emphasize the uneven distribution of digital infrastructure [11]. Therefore, our study should also have a different look if we had chosen a different sample. For example, special attention could be paid to Ph.D. and doctoral training. As Simón, Melian.

The peculiarity of using the Moodle system lies in the mobility of education. Yes, students can take classes wherever and whenever they want. But in our study such rules were broken, there was no possibility at all because students wanted live lectures in Zoom. Although we can't ignore the advantage of "free" studies. Veljković Aleksandra, Stanković noticed the students' enthusiasm to take the course whenever and wherever[16].

By the example of our study and the analysis of the robot of many other scholars, we can accentuate the solidarity of students and teachers. Such positive results can be seen in the study of the quality of teaching, the introduction of the latest teaching methods, and the analysis of the Moodle system. Separate attention (in other studies) may deserve students and doctoral students. Our work has shown that Moodle is not ideal for humanities students. Structured courses, lectures through texts supplemented with images, videos, and graphs, separate places to attach essays and quizzes, etc. The structure of the system is convenient, clear, and transparent, but does

not meet the functions of humanities education. Such results may be related to the number of people in the group. Perhaps if we conducted research on the flow (100-150 people), then the system Moodle was very convenient for the teacher because it is very difficult to manage such a flow, but still, seminars would be held in a small group. As a rule, the common subjects for the whole stream are non-core and general subjects. For example, psychology, political science, sociology, and philosophy. The number of visitors can reach even 200 people, and a platform like Moodle is necessary. The teacher publishes an announcement - students see it. The system has prescribed deadlines and forms of control, everything is transparent and open. So, we can make another assumption that the Moodle system is great for a huge number of audiences. And this is another area of growth in our research. Overall, we are satisfied with the results of the study and will try to further investigate the topic presented, taking into account our observations, conclusions, and comments.

6. Conclusion

Exploring the topic of using Moodle during the Covid-19 pandemic in higher education pedagogy, we can conclude:

Distance education is a necessary and necessary measure during the global pandemic of Covid-19. It cannot fully replace classical education because of the personal, human factor, which we have seen in the example of humanities students.

Distance education has not shown a negative result on the assimilation of material and mastery of new skills, but this is because of the large role of the teacher, who does become a “teacher” rather than a course manager.

The feature of the Moodle system lies in the qualitative construction of the course structure. You do not lose the logic of learning. You can supplement the course with additional material: videos, images, graphs, tables, etc. The advantage is that many formats are supported. It is also worth noting that the system is communicative in nature: posting announcements, forums, and chats. The student is always in the educational “process”.

But in spite of the advantages. Humanities students switch to Zoom because “communication” is a necessary component in mastering the humanities. Public speaking, answering, and discussing texts - it requires live communication. As research has shown, even technical majors working with numbers also require communication with the instructor.

References

- [1] Abdula, A., Baluta, H., Kozachenko, N., Kassim, D. (2020). Peculiarities of using of the Moodle test tools in philosophy teaching. Arnold E. Kiv, Mariya P. Shyshkina, 306–320. <http://elibrary.kdpu.edu.ua/xmlui/handle/123456789/3867>
- [2] Benabid, F. (2017). Une plateforme Moodle dans une formation hybridediplômante : étude de l'évolution des usages. *International Journal of Technologies in Higher Education*, 14(2), 24. <https://doi.org/10.18162/ritpu-2017-v14n2-02>
- [3] Costello, E., Johnston, K., & Wade, V. (2019). Crowded house: an analysis of how the Virtual Learning Environment Moodle is built via bug tracker participants. *Interactive Learning Environments*, 1–11. <https://doi.org/10.1080/10494820.2019.1678488>
- [4] Crozier, H. (2018). Promoting Open Access and Open Educational Resources to Faculty. *The Serials Librarian*, 74(1–4), 145–150. <https://doi.org/10.1080/0361526x.2018.1428470>
- [5] Gourlay, L., Littlejohn, A., Oliver, M., & Potter, J. (2021). Lockdown literacies and semiotic assemblages: academic boundary work in the Covid-19 crisis. *Learning, Media and Technology*, 46(4), 377–389. <https://doi.org/10.1080/17439884.2021.1900242>
- [6] Jacques, S., Ouahabi, A., & Lequeu, T. (2020). Remote Knowledge Acquisition and Assessment During the COVID-19 Pandemic. *International Journal of Engineering Pedagogy (iJEP)*, 10(6), 120. <https://doi.org/10.3991/ijep.v10i6.16205>
- [7] Kanetaki, Z., Stergiou, C., Bekas, G., Troussas, C., & Sgouroupolou, C. (2021). Analysis of Engineering Student Data in Online Higher Education During the COVID-19 Pandemic. *International Journal of Engineering Pedagogy (iJEP)*, 11(6), 27–49. <https://doi.org/10.3991/ijep.v11i6.23259>
- [8] Kuleva, M. (2020). The Impact of Covid-19 Pandemic on the Evaluation of the effectiveness of online distance learning. *Pedagogy*, 92(7), 74–83.
- [9] Mhandu, J., Mahiya, I. T., & Muzvidziwa, E. (2021). The exclusionary character of remote teaching and learning during the COVID-19 pandemic. An exploration of the challenges faced by rural-based University of KwaZulu Natal students. *Cogent Social Sciences*, 7(1). <https://doi.org/10.1080/23311886.2021.1947568>
- [10] Moodle - Open-source learning platform | Moodle.org. (n.d.). <https://moodle.org/?lang=ru#slide4>
- [11] Ndzinisa, N., & Dlamini, R. (2022). Responsiveness vs. accessibility: pandemic-driven shift to remote teaching and online learning. *Higher Education Research & Development*, 1–16. <https://doi.org/10.1080/07294360.2021.2019199>
- [12] Nemtinov, V. A., Borisenko, A. B., Morozov, V. V., & Nemtinova, Y. V. (2021). Increasing the Level of Professional Competence Using a Virtual Educational Environment. *VyssheeObrazovanie v Rossii = Higher Education in Russia*, 30(3), 104–113. <https://doi.org/10.31992/0869-3617-2021-30-3-104-113>
- [13] Nifhloinn, E., & Fitzmaurice, O. (2021). Any advice? Lessons learned by mathematics lecturers for emergency remote teaching during the COVID-19

- pandemic. *International Journal of Mathematical Education in Science and Technology*, 1–7. <https://doi.org/10.1080/0020739x.2021.1983049>
- [14] Saroia, A. I., & Gao, S. (2018). Investigating university students' intention to use mobile learning management systems in Sweden. *Innovations in Education and Teaching International*, 56(5), 569–580. <https://doi.org/10.1080/14703297.2018.1557068>
- [15] Simón, Y. V., Melian, I. G. G., & Silva, C. D. (2022). Blended learning for doctoral training in the context of the COVID-19 pandemic. *Revista Tempos e Espaços Em Educação*, 15(34), e16685. <https://doi.org/10.20952/revtee.v15i34.16685>
- [16] Veljković Aleksandra, A., Stanković, S., Golubović-Ilić, I., Herodek, K. (2020). The differences in students' attitudes about online teaching during covid-19 pandemic. *Pedagogy*, 92(7), 205–210.

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