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LEARNING LOGIC USING THE OPPORTUNITIES OF THE MOODLE PLATFORM

The modern information & computer revolution is a qualitative leap in the process of changing the ways of storing and transmitting information, including that part of it that forms human knowledge. It was preceded by such qualitative transformations as, firstly, the appearance of alphabetic writing, thanks to which knowledge was objectified; secondly, the invention of printing, which led to the depersonalization of information and made it publicly available; thirdly, the development of mass communication at the turn of the 19th and 20th centuries, which contributed to the formation of new social structures, mass society and mass culture, and, finally, fourthly, the emergence of personal computers, thanks to which instant direct access to information became possible for individual users.

In the 90s of the previous century, the network information revolution took place, during which the speed of information transfer exponentially increased, and the owners of personal computers acquired the opportunity to use the world's information resources. The beginning of the XXI century can be called the telecommunications revolution, during which access to information and communication became possible at a distance. In our time, there is a network telecommunications revolution

that connects mobile communications with the capabilities of a computer.

All these processes have serious socio-economic, political, and socio-cultural consequences. Among the socio-economic effects of the information & computer revolution, changes in the forms and content of socialization, on the one hand, and the formation of a new social structure, belonging to which is determined by qualifications in the field of information technology, are of no small importance. Sociocultural effects seem to be no less (if not more) significant. First of all, we can talk about facilitating and simplifying communication, which does not require any additional efforts and resources, except for the presence of a mobile phone and/or computer, knowledge of the alphabet and the ability to read (in parentheses, it can be noted that even without the last skill, in principle, you can do). In the process of such communication, the dehumanization of cognitive processes occurs, the beginning of which was laid by the distant first experiments of using the software as a substitute for human thinking. Direct and instant access to information, which does not require serious personal efforts to search for and acquire knowledge, has brought into life the so-called computer generations, which receive and assimilate information in a fundamentally different way than it happened before.

These generations are both the object and the subject of the educational process in modern higher education, therefore the issue of using modern information and computer technologies is not just on the agenda, but requires immediate resolution where it has not yet been done. Regardless of the desire or unwillingness of the teaching staff, students actively resort to all those resources, search engines, banks of study papers and collections of cheat sheets, solutions for typical tasks and answers to tests that are posted on the Internet and allow them to quickly and without much stress to complete assignments, and also prepare for classes and exams. The use of Internet resources in no way excludes independence of thought and creativity, but only if users are not looking for ready-made answers and solutions, but are trying to acquire knowledge

and learn how to apply them. In this regard, old trips to the library and work in the reading room do not differ significantly from working with electronic libraries at home using a computer. However, every practicing teacher is aware of the fact that ready-made answers and solutions may be enough to get a diploma, albeit with low marks.

In these conditions, it seems reasonable to construct the educational process in such a way that the use of information technologies by students instead of silently accepting it as an inevitable evil becomes one of the means of forming academic, social, personal, and professional competencies. The key here is precisely the phrase "one of the means" since there is nothing to replace traditional classroom studies, as well as personal communication with the teacher and fellow students. At the same time, modern educational platforms open up a wide range of opportunities to improve educational communication, taking into account the skill of working online and using distance learning, which current students already have by the time they enter the university.

One of the most developed and actively used distance learning management systems at present is the Moodle virtual learning environment. It allows tutors to create a vast array of educational elements and resources. In addition to standard learning elements such as lectures, assignments, and tests, the Moodle system uses a glossary, wikis, blogs, forums, workshops that diversify the learning process. It should be noted that Moodle has a well-developed communications system built-in. On the forum, you can hold discussions in groups, evaluate messages, attach files of any format to them. In private messages and comments, the student can discuss a specific problem with the teacher personally. In the chat, the discussion takes place in real-time. Grading is possible for all elements of the course, including the use of arbitrary scales created by the teacher.

The Moodle environment opens up new perspectives for both sides of the educational process: teachers get a variety of tools for managing and monitoring students' independent work, and students get new opportunities to study additional material, perform creative work, participate

in the exchange of opinions and even evaluate the work of their fellow students. In the context of the progressive reduction in classroom hours in most university disciplines, it is also important that all students of the course can answer questions, solve problems, and complete assignments, and not only those who manage to do this at seminars in the classroom. In addition, the Moodle system provides feedback and comments on the students' answers, that is, although indirect, individual communication with each student. The absolute impartiality of the marks automatically given after passing the test or completing other tasks that can be formalized is also very valuable.

Table 1 — *General structure of the "Logic" course*

Topic
Basics
Logic as a science about thinking
Concept as a form of thinking
Logical operations with concepts
Judgment a form of thinking
Complex judgments
Conclusion as a form of thinking
Types of syllogisms
Induction and analogy
Proof and refutation
Final assessment

All the listed advantages of working with Moodle can be illustrated by the example of the "Logic" course (its general structure is shown in Table 1), which was developed at BrSTU in the second semester of the 2019/2020 academic year due to the need for distance learning due to the epidemic situation and deployed on the university Moodle portal, which

in its turn was created in bounds of the learning process modernization inspired by the international project of EU Program ERASMUS+ CBHE, Enhancement of Lifelong Learning in Belarus/BELL (586278-EPP-1-2017-1-LV-EPPKA2-CBHE-JP).

The course includes lectures, tasks for seminars, interim tests, forms and chats that work during classes, and a general test for the course. Each lecture includes several sections, and there is a question after each of them, by answering which the student can move on to the next section. Seminars include standard exercises (the implementation of which requires knowledge of logical forms and the laws of their construction), as well as tasks for the independent composing of judgments and inferences and operations with them. An example of the structure of course topics is shown in Table 2.

Table 2 — *An example of the structure of topics that are part of the "Logic" course*

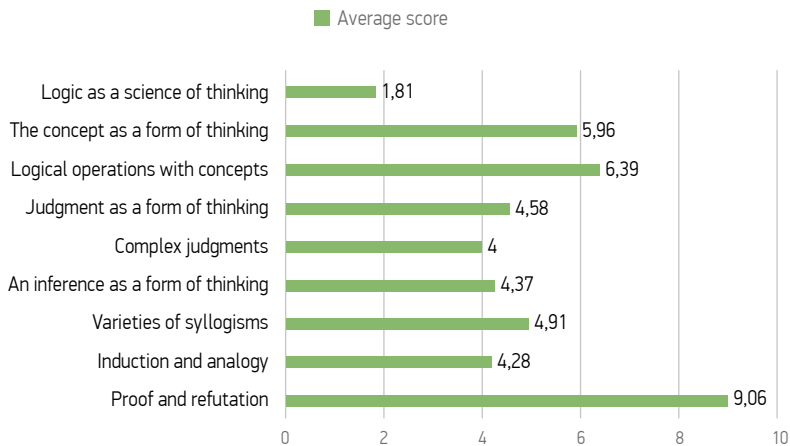| Title |
|:---:|
| ***Types of syllogisms*** |
| Lecture 7 |
| Task 7.1 for group CT-43 |
| Task 7.2 for group CT-43 |
| Task 7.1 for group II-16 |
| Task 7.2 for group II-16 |
| Task 7.1 for groups EO-13, B-54, F37 |

	Task 7.2 for groups EO-13, B-54, F37
	Task 7.1 for groups AS-53, PO-3
	Task 7.2 for groups AS-53, PO-3

Induction and analogy

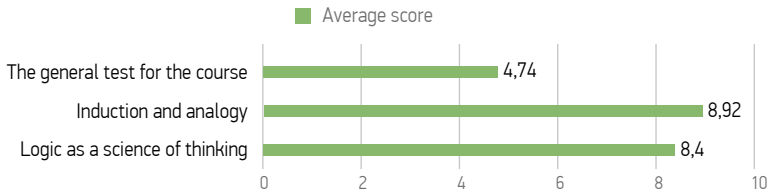|	Lecture 8
	Lecture 7

The results of students' work with lectures are shown of Figure 1.

The lecture "Proof and Refutation" should be noted separately, as it was provided for a fully independent study.

In addition to lectures, students had to pass a test for mastering the material. The test results are presented on Figure 2.

■ Average score

|	
Logic as a science of thinking	1,81
The concept as a form of thinking	5,96
Logical operations with concepts	6,39
Judgment as a form of thinking	4,58
Complex judgments	4
An inference as a form of thinking	4,37
Varieties of syllogisms	4,91
Induction and analogy	4,28
Proof and refutation	9,06

Figure 1 — *The results of students' work with lectures*

Figure 2 — *Tests results*

The following tasks were created to control independent work (the results are shown on Figure 3):

– Task 6.2 — to apply the rules;

– Tasks 6.1 and 6.3 — require independent reflection;

– Task 7.2 — the most difficult and also requires independent actions (using knowledge about polysillogisms).
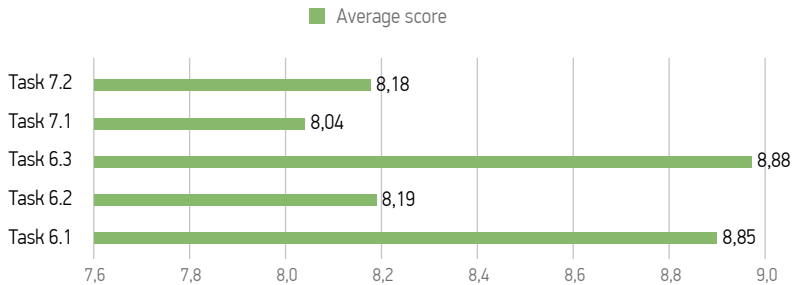
Figure 3 — *Independent work results*

At the same time, interaction with students in a virtual educational environment has certain drawbacks. In particular, the problem is the lack of direct audio and visual contact with the entire group (stream), which is only partially compensated by correspondence in chats and forums. In addition, as in any other form of distance learning, working with Moodle does not exclude students' contacts with each other in order to find out the answer from those who have already received it, and pass it off as their own, or compose their own answer according to the

model available. Logic is an academic discipline that allows you to formulate tasks in such a way that the same answers are impossible, but in the case of other humanitarian disciplines, this is rather difficult to do. In the same case, if the assignments involve expressing one's own opinion, their verification cannot be formalized in any way and requires large amounts of additional teacher time. On the other hand, Moodle includes the ability to cross-evaluate the responses of fellow students by students, and this assessment is also included in the overall result of the course.

Summing up what has been said, it can be noted that work with the help of the Moodle education management system allows you to promptly communicate to students the necessary and additional information related to the course, orient them in scientific and educational literature, make direct references to primary sources and scientific articles, diversify the forms of control and knowledge testing and involve all students in the discipline. Classroom lessons are also targeted for all these goals, but the time and organizational framework does not always allow achieving them in full. At the same time, quality education cannot be acquired without direct person-to-person interaction, during which students acquire not only knowledge but also value attitudes and norms — both within the framework of their future profession and in the broader sphere of characteristics of a person with higher education.