The Effects of Using the Moodle Platform in High Technical School of Vocational Studies from Urosevac in Leposavic

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Abstract: *The aim of this research paper is to show the influence of using the Moodle platform, which served as a substitute for traditional educational process, during summer semester in 2019/2020. in High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic. The need and the idea for this research came from two reasons, the first one being that in that time period teaching process was interrupted by the decision of state bodies of Republic of Serbia, and the second one being that the Institution already had Moodle platform installed on its website. Using survey questionnaire, the research was done after utilization of the Moodle platform, in period from 16.3. to 5.6.2020. In the questionnaire students stated their experiences and observations concerning this form of distance learning. After analyzing the data set the conclusion was drawn about advantages and disadvantages of distance learning and using the Moodle platform in doing so.*

Keywords: *Information and communication technologies, Moodle platform, students, distance learning*

1. INTRODUCTION

The rapid development of new information and communication technologies (ICT) in recent years has significantly affected all spheres of human life, both individual and entire human society [1]. The Internet has changed both the way and dynamics of spreading knowledge and information in all areas. It has led to changes in many aspects of life, and thus distance learning has taken on a new dimension [2].

In 2010, the Republic of Serbia adopted the Strategy for Development of the Information Society until 2020, which, partially, talks about e-education. Development of ICT application in education needs to be achieved, among other things, for:

- Establishing a modern education system that is adapted to the needs of information society;
- Teacher training in the use of ICT;
- Raising the level of knowledge and skills for using ICT among the widest population;
- Concept development education and learning through entire life; etc. [3].

Of the many platforms used for e-learning-distance learning (Moodle, Edmodo, Sophia, etc.…) the Moodle platform is the most accepted by higher education institutions in the Republic of Serbia.

Moodle (*Modular Object Oriented Developmental Learning Environmental*) is open-source system for remote control of the learning process. This platform is used by universities and colleges to improve the teaching process [4].

Today, the Moodle platform is used in more than 200 countries around the world and its installation is available in more than a hundred languages. There is also a version in Serbian in the form of Cyrillic and Latin letters.

Today, the Moodle platform is available to everyone on the Internet [5] and can be downloaded for free.

From the school year 2016/2017. the High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic also possesses Moodle platform, which is adapted to its curriculum, Fig. 1 [6]. Its intensive (active) use began on March 16, 2020. year (after the new situation and the declaration of a state of emergency in the country [7] due to the outbreak of the COVID-19 virus), which gave the authors an idea to write this paper.

2. HISTORICAL OVERVIEW OF DISTANCE LEARNING AND USE OF THE MOODLE PLATFORM

Distance learning was first mentioned in the first half of the 19th century. The first founder of

distance learning was an English teacher of scenography Isaac Pitman, who applied this learning in 1840 in his work with his students.

The first university that offered distance learning back in 1859 is also located in England. Furthermore, the practice of distance learning, which proved to be very effective, was continued by Universities in South Africa, Germany, etc.

The use of Moodle platform in the Republic of Serbia has been very modern in the last few years. The Academic Network of Serbia (TANS) was established, which supported distance learning for the purpose of building, developing and managing the educational and scientific-research computer network of the Republic of Serbia [8].

This network provides access and use of internet and IT services in the country to educational and scientific research organizations and other users, as well as connections to national and international networks.

Figure 1. *Moodle platform of the High Technical School of Vocational Studies from Urosevac in Leposavic*

The research, conducted at the High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic, is based on an attempt to determine how much students are familiar with the effects of using the Moodle platform and to what extent and in what way they are motivated to learn from the distance.

3. RESEARCH METHODOLOGY

At High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic, a questionnaire survey has been conducted. The survey questionnaire is combination of already existing survey questionnaires that dealt with similar topics [1], [8], [9]. The questionnaire survey was supplemented with questions that authors thought would be relevant for research.

The questionnaire survey was created with the aim to be rational (for use and understanding), reliable and structured through questions that do not require too much time to complete. It took 5-10 minutes to complete the survey questionnaire.

Research realization: During the school year 2019/2020, in period from 08.06. to 07.17.2020, the research of students through a questionnaire has been realized, and period from 16.03 to 05.06.2020 has been observed on the Moodle platform (until the end of the summer semester). This is because in that period students could not visit the Institution due to the ban on holding lectures caused by the COVID-19 virus.

The type of research: The research has been conducted using a questionnaire in printed and electronic form.

The sample size: 158 respondents.

Target group: Students of all years of studies (basic vocational studies (BVS), specialist vocational studies (SVS) and master vocational studies (MVS)).

The survey questionnaire consisted of 14 questions in two parts. The first part of the questionnaire consisted of 4 questions and contained basic information about students. The second part of the questionnaire was related to distance learning and contained 10 questions.

Due to the two levels of study (first: basic and specialist, second: master vocational studies) it was difficult to predict in advance which group of students will be the most covered in percentage.

4.   RESEARCH RESULTS AND DISCUSSION

This research started with idea of involving as many students as possible in order to get more realistic picture in terms of their attitudes and opinions about the effects of using the Moodle platform.

The research on use of Moodle platform has been conducted on a representative sample of 158 respondents-students of the High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic. Out of the total number of surveyed students, 7 survey questionnaires were excluded from the research due to incomplete data.

Out of 151 student respondents whose survey questionnaires were considered, even 86.1% of them were male, while 13.9% were female, Table 1.

Table 1. *Number of respondents-students per gender*

Gender	Number of respondents	Structure in %
Male persons	130	86.1
Female persons	21	13.9

The age structure of the respondents-students was 62.3% of students between 18-23 years of age, 17.2% of students between 23-28 years of age and 20.5% of students between 28 and more years of age, Table 2.

Table 2. *Age structure of respondents-students*

Age structure	Number of respondents	Structure in %
18-23	94	62.3
23-28	26	17.2
28 and higher	31	20.5

An overview of student respondents by gender as well as their age structure is shown in the Diagram 1.
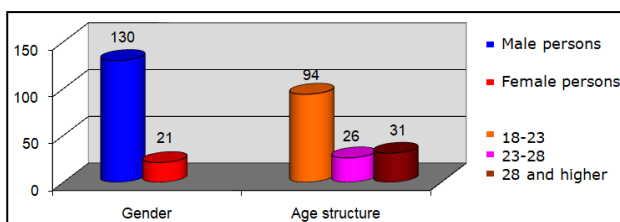

Diagram 1. *Overview of student respondents by gender as well as their age structure*

It is necessary to note that as far as high school is concerned, 45.0% of respondents-students graduated from High school, 47.7% from Technical school, while 7.3% of respondents-students graduated from one of the Vocational schools, Table 3.

Table 3. *Number of respondents-students per qualification of graduated school*

Graduated secondary school	Number of respondents	Structure in %
High school	68	45.0
Technical school	72	47.7
Other	11	7.3

Considering the number of enrolled students in different years of study, we can state that the response of respondents-students according to the enrolled levels of studies is expected. Namely, 41.1% of respondents are students enrolled in the first year of basic vocational studies, 20.6% are students enrolled in the second year and 18.5% of respondents are students enrolled in the third year of basic vocational studies.

9.9% of respondents are students enrolled in the first year of specialist vocational studies, while 4.6% are students enrolled in the first year, and 5.3% of respondents are students enrolled in the second year of master's vocational studies, Table 4.

Table 4. *Number of respondents-students per enrolled years of study*

The year of study	Number of responders	Structure in %
I (BVS)	62	41.1
II (BVS)	31	20.6
III (BVS)	28	18.5
I (SVS)	15	9.9
I (MVS)	7	4.6
II (MVS)	8	5.3

Based on Table 4 it can be concluded that in percentages there were more students from the first level of studies who participated in the survey.

An overview of student respondents after completed high school as well as by enrolled years of study is shown in Diagram 2.

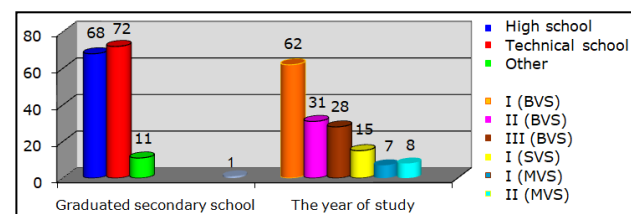**Diagram 2.** *Overview of student respondents by completed high school and by enrolled years of study*

Regarding the first part of the questionnaire where 4 questions were analyzed and compared with data available to the authors in the Information System of the High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic [10] we can state that the answers are in full

agreement with the data located in the mentioned information system. This means that the response of students who used the Moodle platform met the expectations of the authors of this paper.

Respondents-students of the first level of study who visited the Moodle platform in relation to the number of enrolled students from records of the Information System of High Technical School from Vocational Studies in Urosevac with temporary seat in Leposavic available to the authors of this paper is about 30%, while at the second level is about 70%. From this it can be seen that the total number of students who visited the Moodle platform is more than 50%, which is quite satisfactory data for the period and conditions in which the research was conducted.

The second part of the survey questionnaire was designed to deal exclusively with distance learning. From the questions to which the students gave answers, we will single separate a few of the most interesting for this research and analyze them.

To the question "Do you have experience in using the MOODLE platform?" Over 90% of respondents answered that they have no experience in using it and about 10% answered that they have already used it. This is due to the fact that in the continuation of the question there is an opportunity for comment to which 100% of respondents answered that they are familiar with this platform (distance learning) and that they used it because they were already students of some higher education institutions.

The authors believe that one of the key questions from questionnaire was "Do you think that this way of distance learning-using the MOODLE platform is given priority over the conventional way of learning (blackboards, chalks, presentations,…)?". The vast majority of students here answered (over 80%) that this way of distance learning is well conceived and asked the question why it is not used everyday, not only in our Institution but also beyond? We can conclude that this question was excellently asked by the students, but that the result was unfavorable for the simple reason that distance learning is a new part of the teaching process in the Republic of Serbia and that in the last decade it was only related to obtaining accreditation for its use by NAB (National Accreditation Body).

To the question "What do you think are the positive and what are the negative sides of using the MOODLE platform?" Most of the respondents answered that the main positive side is that they can access it regardless of time and space, so this type of distance learning is practical it becomes available to everyone no matter where they are. As the main disadvantage of distance learning, students perceived in the reduced possibility of interaction between students and professors, ie. the absence of direct social contact between all participants in the teaching process.

The Moodle platform, like all other platforms, has the ability to upgrade by installing Plug-ins. The authors tried to use it in the best possible way and installed them on the Moodle platform on the website of High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic on the domain www.vts.urosevac.com. This made it possible to obtain hundreds of relevant data for the purposes of research in this paper.

In Fig. 2 shows the number of students who visited the Moodle platform on a daily basis (in the first month of the observed period).
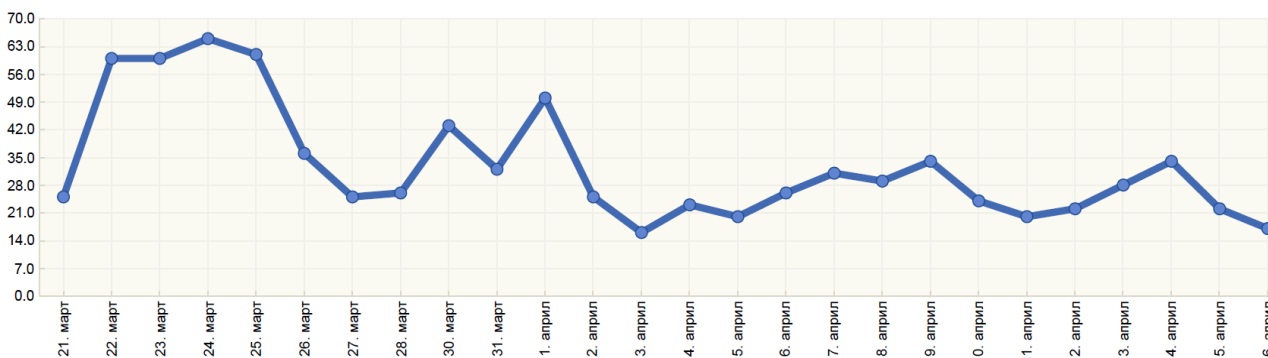

Figure 2. *Daily number of students registered on the system (first month of the observed period)*

It is very interesting to compare the number of students who accessed the Moodle platform using different electronic devices, in our case from desktops, mobile phones, mobile devices and tablets, Fig. 3. This research revealed that students mostly accessed the Moodle platform from desktop 59.92%, followed by mobile phones 35.02%, mobile devices 4.67% and finally tablets 0.39%.

Also, one of the useful data that can be obtained by installing Plug-ins is that we can see from which web browser students access the Moodle platform the most. The survey questionnaire showed that students of the High Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic mostly use the Chrome browser (latest version), Fig. 4 (83.27%). This data indicates the fact that students follow modern events in the ICT era.
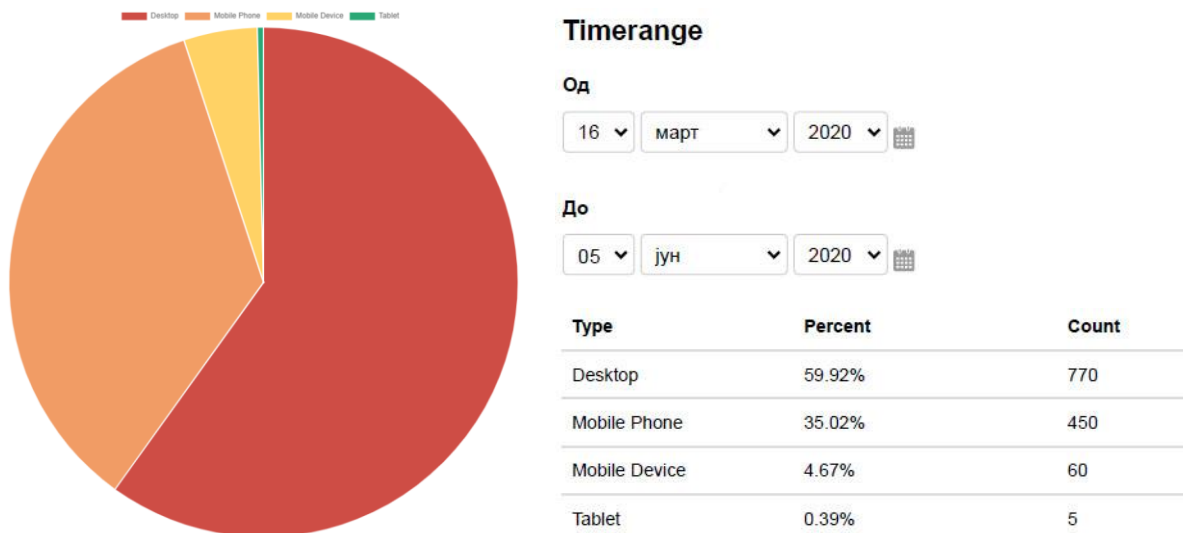
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Type	Percent	Count
Desktop	59.92%	770
Mobile Phone	35.02%	450
Mobile Device	4.67%	60
Tablet	0.39%	5

Figure 3. *Device types, Legend: Type, Percent, Count-total, Desktop computer, Mobile Phone, Mobile Device and Tablet*

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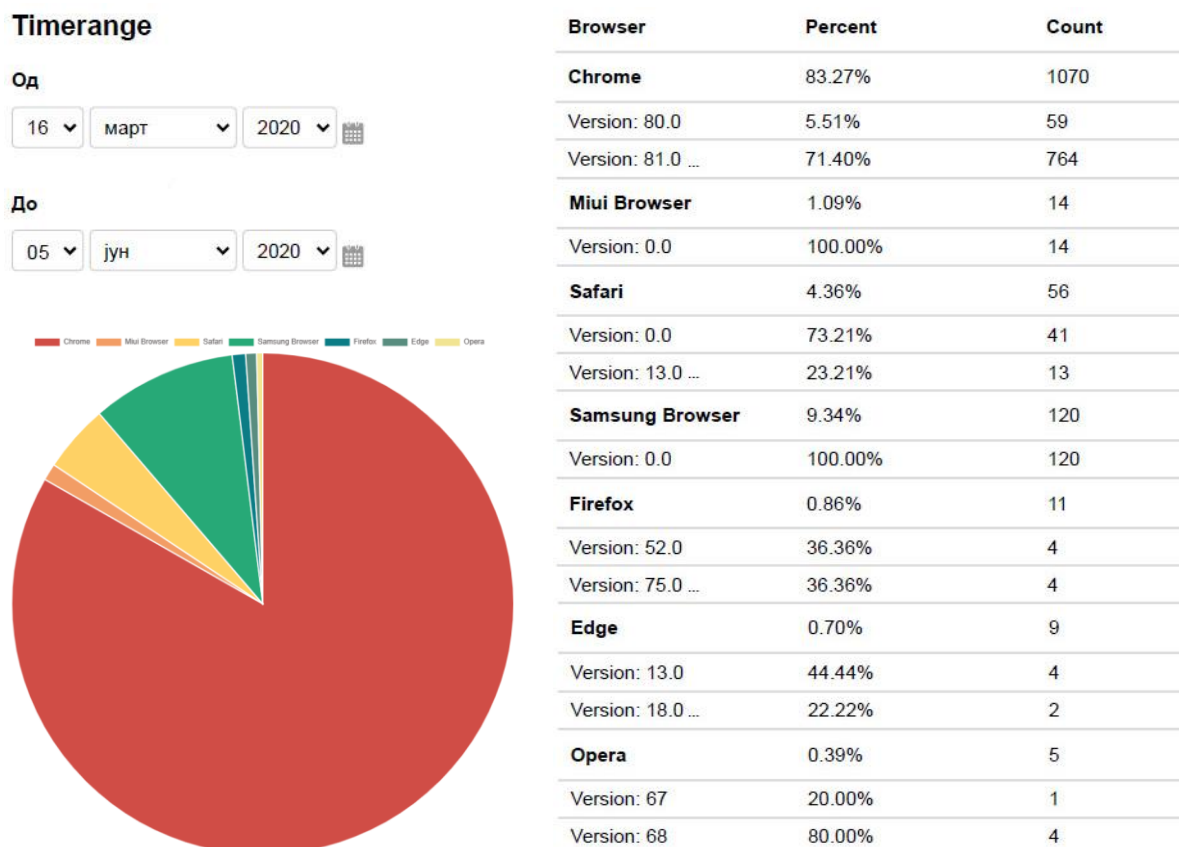| Browser	Percent	Count
Chrome	83.27%	1070
Version: 80.0	5.51%	59
Version: 81.0 …	71.40%	764
Miui Browser	1.09%	14
Version: 0.0	100.00%	14
Safari	4.36%	56
Version: 0.0	73.21%	41
Version: 13.0 …	23.21%	13
Samsung Browser	9.34%	120
Version: 0.0	100.00%	120
Firefox	0.86%	11
Version: 52.0	36.36%	4
Version: 75.0 …	36.36%	4
Edge	0.70%	9
Version: 13.0	44.44%	4
Version: 18.0 …	22.22%	2
Opera	0.39%	5
Version: 67	20.00%	1
Version: 68	80.00%	4

Figure 4. *Overview of the number of student-respondents displayed using the Browser browser*

5.   CONCLUSION

Distance learning as one of the areas of e-learning is becoming a significant part of education system. In the future, it will represent the future of education and teaching. Use of modern information and communication technologies is increasingly relevant in all spheres of education.

The Moodle platform as one of the distance learning platforms is available at all times to all students who have access to the Internet wherever they are.

Based on the survey and analysis of research results, the authors believe that distance learning through the Moodle platform can be implemented in the teaching process as an additional teaching tool that would enhance the learning process and contribute to greater student motivation. For this purpose, all employed teachers at the High

Technical School of Vocational Studies from Urosevac with temporary seat in Leposavic will be proposed to use the Moodle platform for their subjects in order to improve the teaching process.

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