IMPLEMENTATION OF MOOCS TO SUPPORT TEACHERS' TRAINING

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Abstract - This paper reviews the first results of the recently completed implementation of the EDX platform in the digital educational environment to support teachers' training. The article analysesthe trends in MOOCs development aimed to support teachers' training; discusses the results of the survey related to using MOOCs during the pandemic; considers steps of implementation of MOOCs to support teachers' training.

Keywords - MOOCs, Training Teachers, Open EDX platform.

I. INTRODUCTION

The new reality that the world educational system has faces requires academic institutions all over the world to quickly react and adjust to the challenges of today. The 2030 Agenda for Sustainable Development adopted at the United Nations Sustainable Development Summit in September 2015 contains 17 Sustainable Development Goals including a new global education goal (SDG 4). SDG 4 aims at 'ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all' [1].

In the COVID-19 pandemic, the focus of education has shifted to the use of digital educational environments and online studying in general. In order to achieve the aforementioned sustainable development goal, it is essential to provide all students with digital educational tools and expand the opportunities of non-formal learning in particular. The question of validation of non-formal learning, such as MOOC format remains open in educational institutions all over the world [2,3,4].

In March 2020 the COVID-19 Global Education Coalition was established by UNESCO. In its work the Coalition focuses on three main flagships [5]:

- connectivity,
- teachers,
- gender.

As for the first factor, the issue of Internet access remains critical all over the world. According to UNESCO, nearly 465 million children and youth, or almost 47 % of all primary and secondary do not have access to educational platforms because they do not have internet connections at home [6].
15% of the Ukrainian population faces the digital divide and does not have access to broadband Internet. Many social infrastructure facilities are not connected to fiber-optic networks. Among them,there are 16 040 educational institutions, or 40% of schools [7].

Another critical issue that educators face throughout the world is related to teachers. On the one hand, teachers bear a huge burden currently, both from the point of view of time and emotional state; on the other hand, there has arisen the challenge of training and retraining teachers in order to develop their digital skills required for the implementation of online learning.

Having analyzed various pedagogical educational institutions in Ukraine, we can state that girls constitute more than 80% of pedagogical university students and respectively, the percentage of women working in the pedagogical field is much greater than that of men. Therefore, another question to take into account is reducing the gap in training female students of pedagogical universities in the IT sphere, as basic IT skills comprise digital competencies, which are of a special need today. As noted earlier, the solution to these acute problems might be found in training and retraining of teachers and developing their digital skills using in particular MOOC instruments.

Research goal. This paper reviews the first results of the recently completed implementation of the Open EDX platform in the digital educational environment of the National Pedagogical University (NPU) with regard to the implementation of MOOCs to support teachers' training. It attempts to address the following questions:

- analyzing the trends in MOOCs development to support teachers'training;
- analyzing first results of the implementation of NPU MOOC Environment (EDX);
- presenting the results of the survey related to using MOOCs in NPU during the pandemic;

- considering the steps of implementation of MOOCs to support teachers' training in NPU.

II. ANALYSIS OF TRENDS IN MOOCS DEVELOPMENT TO SUPPORT TEACHERS' TRAINING

With the beginning of the pandemic and, consequently, the quarantine, the interest in MOOCs has increased significantly [4]. Fig. 1 demonstrates the growth in the number of users of MOOC platforms in 2020 (statistics taken from MOOC aggregator "Class Central", [8]).

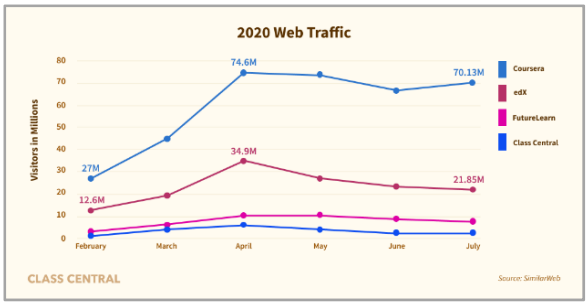


Fig. 1. MOOCs During the Pandemic
Source: https://www.classcentral.com/report/mooc-stats-pandemic/

The analysis of the courses that were the most popular in pre- and post-pandemic period (Fig.2) has shown that the following categories do not contain any courses intended to support teachers' training.



Fig. 2. Comparing the most popular MOOCs in pre- and post-pandemic period
Source: https://www.classcentral.com/report/the-second-year-of-the-mooc/

At the same time, the need for high-quality training of future teachers has become even more urgent due to the pandemic and the challenges it poses: most students have no chance to visit schools for their teaching internship during the quarantine, as the schools are closed as well. Therefore, it is necessary not only to change the approach to professional training in their future professional field (computer science, mathematics, physics, biology, PE etc.) due to the fact that Ukrainian universities mostly organize the process of studying using blended learning technologies; but also prepare them for working in online, blended and distance learning formats at schools. The ways that might help in the professional training of future teachers include:

- developing and implementing courses for training the future teachers to organize the process of online, distance and blended learning and work effectively under such conditions;
- preparing future teachers for the format of non-formal learning and the use of MOOCs in particular;
- finding out the readiness of the teachers of the pedagogical university to improve their own qualifications by means of non-formal learning and to use and develop MOOCs in particular;
- preparing the teachers of the pedagogical university (IT disciplines in particular) for training the future teachers to use and develop MOOCs by themselves.

Therefore, the authors of the following study have analyzed the number and subject area of the MOOCs intended to support teachers' training using MOOC aggregator "Class Central" [8] (Fig. 3):

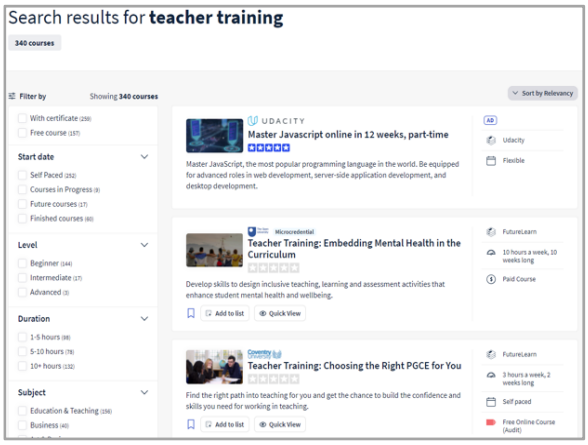


Fig. 3. Search results MOOC for teacher training
Source: https://www.classcentral.com/

The analysis of the courses found (240 courses) has shown that the percentage of the courses available in the Ukrainian language did not exceed 5%. Therefore, we found it necessary to create an environment for developing MOOCs aimed at training future teachers in Ukraine.

Also, in Ukraine we have same MOOC platforms (Prometheus, EdEraets). But they have only several MOOCs for teachers training (less than 10). That's

why NPU needsMOOCs development to support teachers' training.

III. IMPLEMENTATION OF NPU MOOC ENVIRONMENT (EDX)

Realizing the importance of online learning during the pandemic, especially in supporting teachers' training atNPU we have systematically analyzed the opportunities of using MOOCs in higher education institutions as well as the existing MOOC development platforms.

World statistics on the use of MOOCs have shown a rapid growth of MOOC platforms in recent years, in particular in the number of registered users. [Fig.4]. One third of the learners that ever registered on a MOOC platform joined in 2020 [8].

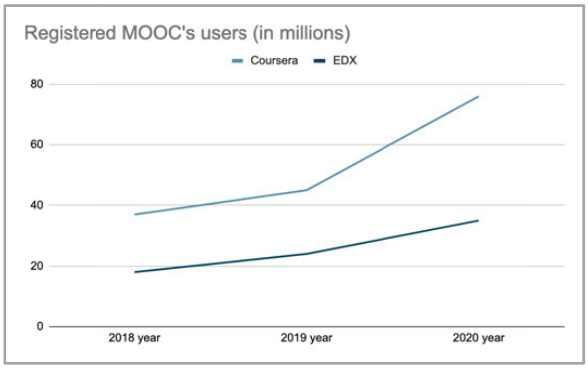


Fig. 4 Registered MOOC's users for past 3 years
Source: adapted
fromhttps://www.classcentral.com/report/mooc-stats-2019

With regard to this global tendency, the use of MOOCs in National Pedagogical University has been implemented along two main dimensions. The first one – the technical dimension involved purchasing a powerful server and transferring the main load of online learning to it. The second –software dimension was the development of all the components of the NPU digital educational environment:

- Distance learning systems (Moodle, Google Class etc)
- MOOC learning systems – taking steps to recognize the results of students' work at the leading non-formal learning platforms such as Coursera, EDX, Prometheus, etc.
- Implementation of our own EDX platform to enable the development of MOOC courses for teachers' training and retraining.

Work in the second dimension began with getting acquainted and analyzing successful implementations of the leading MOOC platforms. NPU became a participant of Coursera for Campus program and edX's Open Remote Access Program, which gave the students and teachers free access to the MOOCs of the platforms. With the help of these programs NPU acted as a consumer of the corresponding courses as well as administrated access to the platforms at the university level. NPU teachers began to integrate individual MOOC modules and disciplines into their own courses and use them for their own self-development and lifelong learning.

The next step was the creation and implementation of our own MOOC platform of NPU. The Open EDX platform NPU was built with [9] [10] and consist of [Fig.5, Fig.6]:

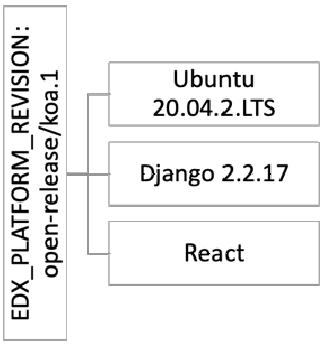


Fig.5Instalation Open EDX platform NPU
Source: Own Work

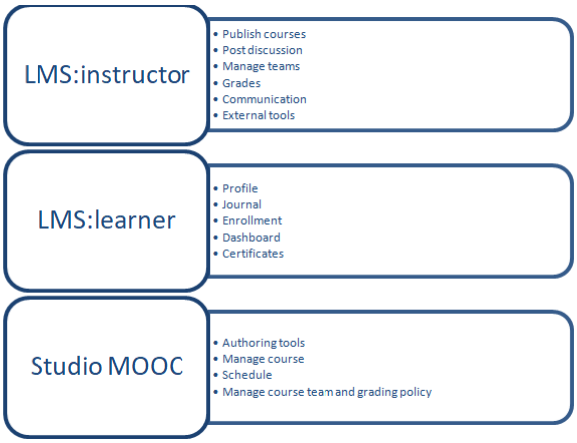


Fig.6Administrative portal Open EDX NPU
Source: Own Work

IV. THE RESULTS OF THE DIAGNOSTIC SURVEY REGARDING THE USE OF MOOCS IN NPU DURING THE PANDEMIC

The diagnostic survey was aimed at the target group connectedwiththe use of MOOCs in NPU during the pandemic. This target group consisted of 272 Ukrainian educators working at the NPU.

The online survey was developed in the Ukrainian language using Google Forms and was intended to gain the data on the Ukrainian educators' level of readiness to use MOOC in their professional activity and for lifelong learning. We guaranteed the participants that only anonymized data would be shared.The survey was conductedduring second semester 2020-2021 academic yearin the quarantine time.

The results of the survey related to using MOOCs in NPU during the pandemic from the target group are presented in Fig. 7-9 below.

***Q**.: What MOOC platforms do you use in your professional activity?*
Survey responses on using MOOC platformin professional activityare shown in Fig. 7 (multiple answers are possible, that is why the total responses can be more than 100%):

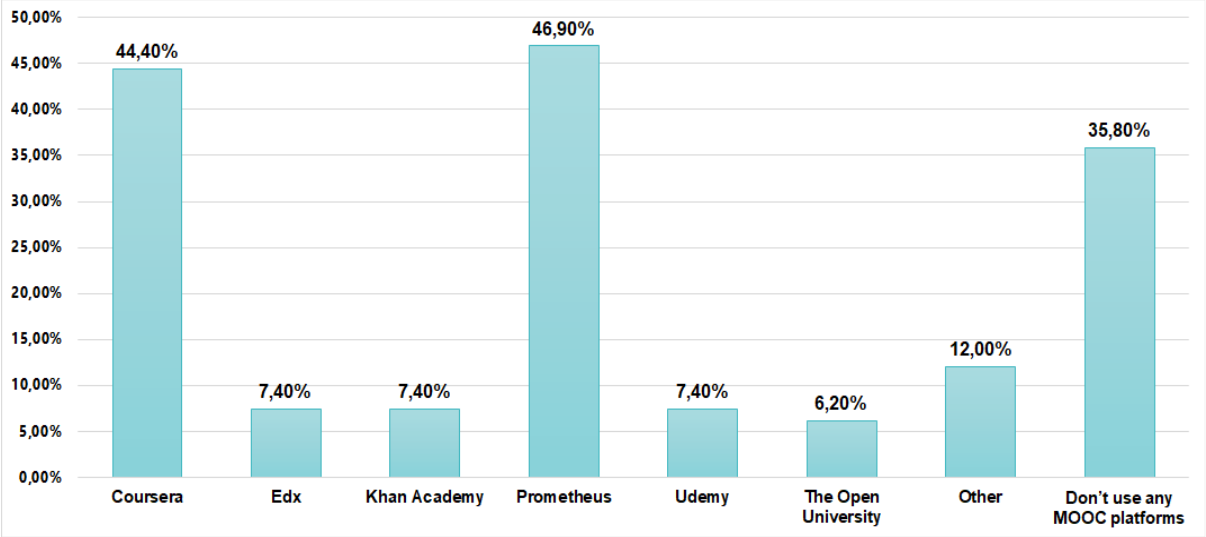


Fig. 7Survey responses on using MOOC platformin professional activity
Source: Own Work

As we can see from Fig. 7, a significant part of NPU teachers (35.8%) do not use MOOCs in their professional activity.

***Q**.: What MOOC platforms do you use for self-learning?*
Survey responses on using MOOC platformfor self-learningare shown in Fig. 8(multiple answers are possible, that is why the total responses can be more than 100%):

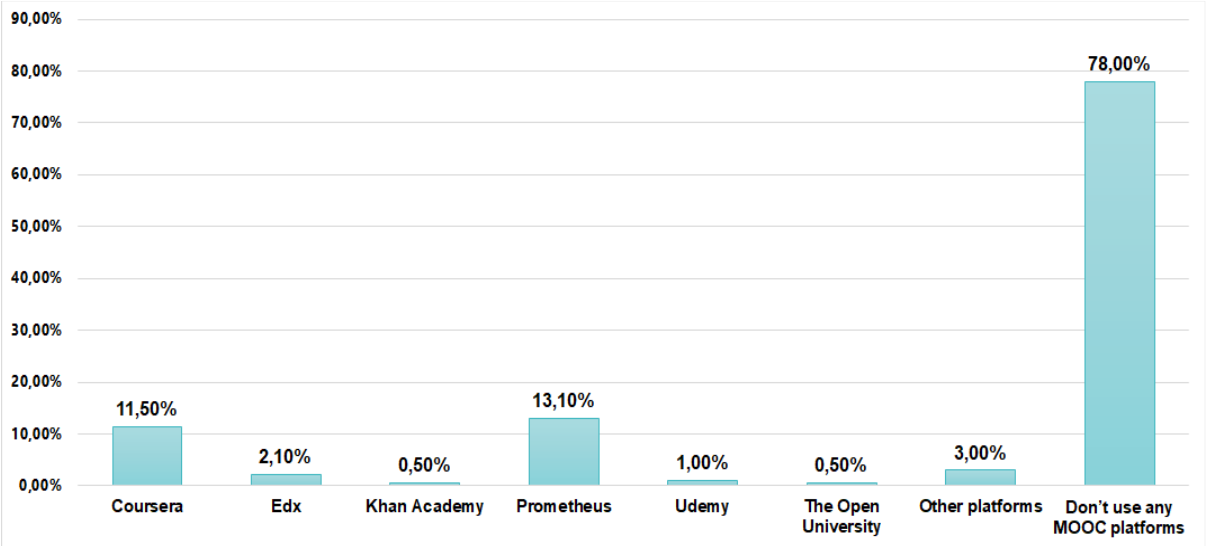


Fig.8 Survey responses on using MOOC platformfor self-learning
Source: Own Work

Fig. 8demonstratesthat 78% of NPU teachers do not use MOOCs for self-learning.
The answers to the next question are consistent with the previous two: almost 48% of the teachers cannot recommend MOOCs to their students as they do not use the platforms themselves. (Fig. 8)

***Q**.: Do you recommend MOOCsto your students?*
Survey responses on recommendationMOOC for studentsare shown in Fig. 9 (multiple answers are possible, that is why the total responses can be more than 100%):

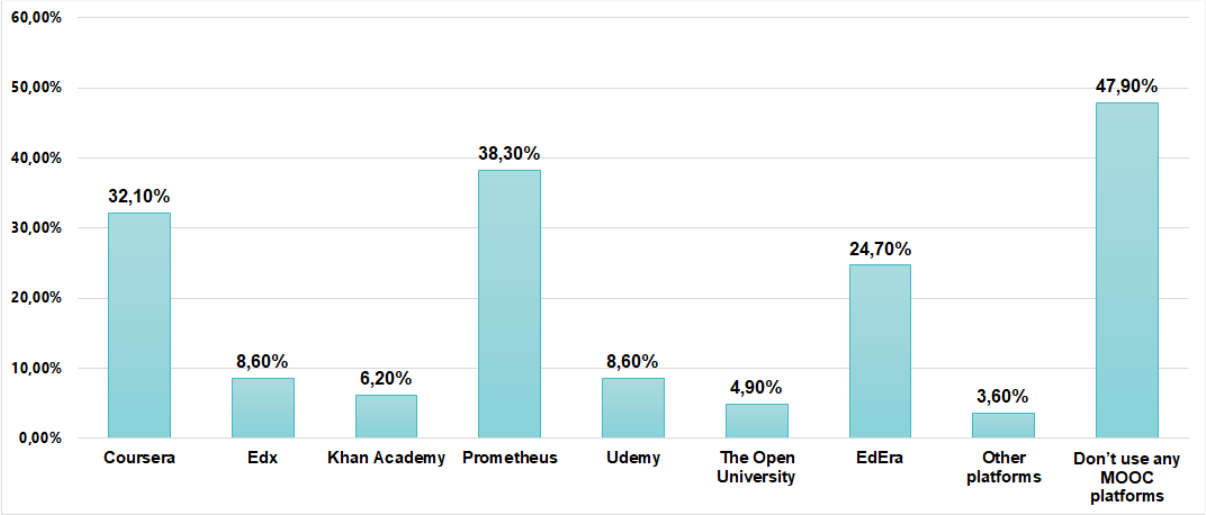


Fig.9 Survey responses on recommendationMOOC for students
Source: Own Work

The results of the survey have shown that there is a huge gap in the use of MOOCs to support teachers' training in NPU.

V. CONCLUSION AND DISCUSSION

To address this issue, the authors of present research as staff of the Center for Digital Educational Technologies of the National Pedagogical University takes the following steps:

1. Monitoring the teachers to estimate their level of readiness to develop and use MOOCs in their professional activity;
2. Introducing a training module devoted to the development and use of MOOCs in digital competence courses for the NPU teachers;
3. Preparing the NPU teachers for creating their own MOOCs (creating a video recording studio, establishing a unified structure for MOOCs created in NPU, developing MOOCs aimed at future teachers' training);
4. Implementing the use of MOOCs by students for non-formal learning;
5. Developing the mechanism of recognizing the results of students' non-formal learning.

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