Specific Features of MOOCs Implemention in Curriculm

Julia Gambeeva[1]
jgambeeva@bk.ru

Ekaterina Sorokina[2]
eisorokina@sevsu.ru

Irina Semyonkina[2]
isemyonkina@mail.ru

Sofia Nalichaeva[1]
espritsn@yandex.ru

[1] Lomonosov Moscow State University, (Branch in Sevastopol), Sevastopol, Russia, 299001
[2] Sevastopol State University, Sevastopol, Russia, 299053

Abstract

The advancement of the MOOC inevitably leads to the formation of a new educational paradigm with the maximum use of modern information technologies. Universities strive to modernize their educational environment, enhance technological efficiency, introduce innovation, and emphasize vocational guidance, openness, flexibility and accessibility.
The purpose of the paper is to determine the most significant factors influencing the success of the implementation of the MOOC in the structure, content and organization of the educational process at the university level.
Research methods included questionnaires, developed by our research group and aimed at identifying the specific features of attitudes towards MOOCs; interviews; focus group workshops. The data were processed using statistical data processing methods, using correlation analysis and factor analysis, analyzing the statistical significance of differences.
On the basis of the research results we have reached conclusions about the social need of students for new-type knowledge, adapted to the requirements of digital generation. Students and teachers (faculty members) have different attitudes to the inclusion of MOOCs in the educational process. The teachers have better understanding the MOOC format, but they are less inclined to replace the traditional full-time format.
In general, the majority of respondents have a positive attitude towards online courses and teachers (faculty members) are willing to use the MOOC format in the context of the blended model of the educational process.

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1 Introduction

Today the system of education is undergoing significant changes, caused byeconomic progress, rapid development of information technologies and the expansion of the available information field. The key educational trend is digitalization, which affects the labor market and requires the formation of new competencies, as well as the modernization of the education system on the whole.

On the basis of the digitalization processes of the educational system, the following technological trends have emerged and are developing:

adaptive learning -– an optimized teaching model that maximally takes into account individual abilities and needs of the student, integrates information and pedagogical technologies to provide active interaction between the subjects of education;

artificial intelligence, virtual and augmented reality is an extension of the physical and living space of a person with objects, created with the help of digital devices, which have visual representation. According to experts, in a few years, artificial intelligence, simulators and virtual reality in the educational space will replace textbooks and transform the methodology of an educational system based on compulsory learning. In 3-7 years, it will be difficult to identify whether the student or his/her smart phone has completed the task. It is assumed that traditional approaches, which form the basis of the modern teaching methods, will disappear, and artificial intelligence will design individual learning paths.

behavioral analytics -– analysis and motivation of the student's activity in the framework of education digitization for the development of personal learning paths [O'Fa17].

gamification -– introduction of game elements into the educational process, gradual complication of tasks, creation of fascinating characters and dynamic storylines; application of a surprise effect (new attribute or twist in the storyline) [End13, Lee11].

mass open online courses (MOOCs) are free or shareware online courses that can take various forms and involve mass use. Today it is one of the most popular and actively developing models of digital learning.

Online courses enable students to choose what they like and gain knowledge in a short period of time, anywhere, for less money. That is why leading universities are modernizing the educational process and integrating MOOCs with the curriculum [Mul15, Hol14].

This research work is focused on the introduction of MOOCs into curriculum. Among the prerequisites for the use of online courses in the basic educational courses we should mark out the following [Tsa16a]:

– expansion of educational opportunities and individualization of education;
– flexibility of educational planning;
– generating students' motivation for self-education;
– reducing the cost of implementing educational programs in terms of ineffective;
– forms of interaction with students;
– application of innovative educational technologies;
– attracting leading Russian and international teachers, leading practitioners and; – experts;
– creating a transparent system for evaluating training results.

However, despite all the above mentioned advantages, MOOCs have a number of specific features related to their new format, important equally for students, teachers and the university administration [Kal14]. Due to the fact that MOOCs belong to innovative forms of distance learning, some organizational, administrative and psychological barriers may arise in the course of development and implementation of MOOCs in the educational process[Law12]. The psychological component, that influences the inclusion of MOOCs in educational programs, is of particular interest.

Informational, communicative and emotional overloads lead to the development of psychological stress among students and teachers. So, teachers have professional fears in the process of course design, recording video lectures. And course participants may experience various adverse psychological states and reactions in the course of training, if courses are monotonous, insufficiently structured, have insufficiently developed feedback, which can lead to a decrease in the motivation and quality of learning.

2 Task

To study and analyze the specific features of introducing MOOCs in the structure, content and organization of educational process at the university level. Evaluate the specific features of using MOOCs in the curriculum of the university.

To analyze data with the purpose of defining specific attitudes of students, teachers to MOOCs as well as the necessity of implementing online courses in the curriculum of the university.

To consider conditions for the inclusion of online courses in the curriculum of universities and identify models of digital educational environment of the university, mediated by online strategies that improve the quality and results of education.

3 Development Of Methodology

3.1 Technique Design

As part of solving the problems at the stage of studying the features of introducing mass open online courses (MOOCs), a study was conducted using original questionnaires aimed at identifying the characteristics of the students and teachers' attitude to MOOCs.

The questionnaire consisted of questions aimed at identifying the specifics of teachersa nd students' attitude to the implementation of MOOCs in the educational process:

– do teachers and students know about the existence of MOOCs;
– what online platforms are well known;
– what do they know about MOOCs;
– opinion on the need to include MOOCs in the learning process;
– ideas about the advantages and disadvantages of MOOCs;
– assessment of MOOC impact on the educational process;
– teachers' motivation and willingness to develop MOOCs;
– integral relation to MOOCs.

The data (questionnaire) were collected and processed on the basis of the branch of Moscow State University in the city of Sevastopol and the Crimean Federal University named after V.I. Vernadsky. The data were processed using mathematical statistics methods, including the calculation of averages, percentage ratings, correlation coefficients (r-Pearson), analysis of the statistical significance of the differences between indicators in the subgroups of students and teachers (Mann-Whitney U-test) and between students and teachers using different time samples (Wilcoxon test), factor analysis.

200 teachers and 200 students from various fields of study (technical sciences, humanities and social sciences, natural sciences) took part in the survey. The totals ample size was 400 people. The study took place in 2 stages: in September 2017 and in February 2018. The factors motivating teachers to apply online courses were also investigated. As a tool for measuring the motivation of teachers to use MOOCs, questionnaires were used, with the key blocks clarifying the attitude of respondents to different models of MOOCs application.

To identify the main characteristics of MOOCs from the point of view of students and teachers, as well as to identify major problems in the development of MOOCs and motivating factors for the introduction of MOOCs by the teachers, the method of focus groupswas used. This method implied group discussions of the issues mentioned above under the supervision of a moderator.

The choice of this method of collecting information was based on the fact that the methods of in-depth group interviews allow researchers to extract hidden information from respondents. In a group discussion, respondents are involved in communication with people of the same type. Therefore, psychological barriers that arise between the interviewer and the interviewee are removed much more efficiently, and emotional reactions are sharper.

As part of the study the following discussions were conducted:

1) focus groups of students: 4 focus groups with the participation of students (each focus group consisted of 8 people, 32 people in total, 14 boys and 18 girls, aged from 17 to 18, from 18 to 19, from 19 up to 20 years, from 20 to 21 years); The focus group included representatives of various areas of training (psychologists, journalists, mathematicians, economists).

2) focus groups of teachers: 4 focus groups of 8 people, 10 men, 22 women, from 25 to 36 years old, from 37 to 47 years old, from 48 to 50 years old, from 51 to 67 years old).

3.2 Outcomes

The development and implementation of MOOCs in the educational process of an university is a complex and multi-stage process and requires a high-quality study of the content and architecture of the course, which should meet the training objectives. Furthermore, a certain design algorithm should be followed, which requires a

significant personal contribution on the part of the teacher, a high level of information and media literacy, and knowledge of innovative educational technologies.

3.3 Teachers And Students' Awareness Of MOOCs And The Efficiency Of Online Learning

According to a survey, conducted in September 2017, university professors of the Republic of Crimea and the city of Sevastopol are better informed about MOOCs and online platforms. Most of the interviewed teachers had heard about online courses, only 2 people (1%) did not hear about online courses.

60% of the surveyed students of the universities of the Republic of Crimea andthe city of Sevastopol are familiar with the concept of MOOC and with the leading online platforms. Some respondents do not name any platforms and associate lessons on YouTube and on the social network VKontakte with MOOCs.

The majority of respondents-teachers (67%) rate online education as effective, 6% of surveyed pointed out ineffectiveness of the online format, 26% of respondents found it difficult to answer the question about the effectiveness of online courses. In general, respondents consider online education effective. Almost half of the surveyed students believe that online learning is effective. The surveyed students believe that online courses are necessary and useful for education, have a positive effect on the learning process, are interesting and meaningful.

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3.4 Attitudes Of Teachers And Students To The Introduction Of MOOCs In Curriculum

Students and teachers have different attitudes to the implementation of MOOC sin the educational process. Teachers are less inclined to replace the traditional full-time format. Only a third of the group of teachers believes that MOOCs should be introduced into the educational process, while 39-67% of students think so(depending on the field of study). The result we have obtained is predictable and correlates with other studies [Rud18].

In this case, teachers experience personal subjective fears: teachers are concerned that online training will result in staff reduction; the development of electronic educational resources implies a substantial time input; lack of knowledge of information technology; the need to change the trajectory of presenting educational material; activation of personal creative potential and the acquisition of new knowledge and competencies.

However, another result seems interesting: about 60% of the surveyed teachers express interest and desire to participate in the development of an online course and believe that online courses have a positive effect on the level of students. Most respondents are convinced that MOOCs are an integral part of modern education (more than 70%).

The respondents indicated that MOOCs promote professional development, provide an opportunity to choose courses, broaden the horizons of the listeners, develop personality. But at the same time, according to the interviewed teachers, online training cannot replace live communication with students.

In general, the majority of respondents have a positive attitude towards online courses, a relatively large proportion of respondents are cautious and neutral to online courses.

More than half (53%) of the surveyed students believe that online education should be included in vocational education at the universities of Sevastopol and Crimea, 30% believe that it is not necessary to include online courses in the education process. More than half of respondents believe (52%) that they would choose a MOOC as an elective course. The surveyed students believe that online courses are necessary and useful for education, have a positive effect on the learning process, and are interesting and meaningful. The majority of respondents (61%) believe, that online courses are essential in modern education. It should be noted that in general,56% of respondents have neutral attitude to online courses, 35% – positive, in 9% – negative.

3.5 Advantages And Disadvantages Of MOOC

Assessing the advantages and disadvantages of MOOCs, teachers and students agreed that MOOCs are modern, open, easily accessible, mobile and convenient.

Students also pointed out the following: an opportunity to listen to professionals, expanding horizons, self-development, additional choice, an individual approach, self-study, the opportunity to get education for working students.

The main disadvantages of the MOOC, according to the teachers, are:

– technical problems;
– the complexity of developing them;
– problems regarding discipline and motivation of students taking online courses;
– lack of personal contacts and live communication (this problem was noted by 70% of respondents);
– lack of control in the performance of tasks (this answer is quite common among teachers).

Students have pointed out the following disadvantages:
– technical failures and problems of the Internet;
– lack of traditional communication with the teacher;
– lack of control;
– difficulties related to motivation and personal qualities (laziness, lack of concentration);
– long hours of working with mobile devices and computers is bad for health;
– lack of feedback;
– poor memorization without direct communication and difficulties in perception.

3.6 Dynamics Of Students And Teachers' Attitudes To MOOC

Assessing In February 2018, we surveyed teachers and students who completed the course on MOOCs in education. The results of the study reflected the dynamics of changes in attitudes to MOOCs of both teachers and students. Thus, the percentage of teachers who have a positive attitude towards the MOOC has increased and the number of respondents who found it difficult to answer questions about attitudes towards MOOCs, the impact of the MOOC on the learning process, and the need for MOOCs in modern education has decreased.

To analyze the statistical significance of differences between the indicators forevaluating MOOCs efficiency among teachers and students at two stages, subgroupsof teachers and students who took the course (30 students, 30 teachers) were selected.

Statistically significant differences in evaluating the effectiveness of MOOCs between teachers and students were identified in September2017 before the start of the course, for example, the assessment of the MOOCs' efficiency is higher among students than teachers ($U = 45$, with $p = 0.001$), after completing the courses and familiarization with MOOCs in February 2018, there were no statistically significant differences between MOOCs efficiency indicators suggested by teachers and students.

The analysis of the statistical significance of the differences between the MOOC performance evaluations provided by teachers in September 2017 and February 2018 revealed statistically significant differences, as teachers in February 2018, the MOOC performance evaluation indicators are higher($Z = -4.2$, $p = 0.000$). The students gave higher marks for the effectiveness of the MOOC, after becoming acquainted with the online courses ($Z = -3.6$, $p = 0.000$).

In order to identify correlates of teachers and students' attitudes to MOOCs, an analysis of correlations was performed using the Pearson correlation coefficient. The analysis of the correlation links between the respondents' attitudes to MOOCsshowed positive correlations of opinion regarding the necessity and effectiveness of online courses.

Attitudes to MOOCs positively correlate with the evaluation of the effectiveness of MOOCs, awareness of MOOCs pertinence is associated with the evaluation of the effectiveness, the evaluation of the positive impact of online courses on the learning process ($r = 0.5$, $p < 0.01$), the attitude to online courses correlates with the effectivesness , usefulness and positive influence of MOOCs on the education process ($r = 0.6$, $p < 0.01$).

Thewillingness of the teaching staff to develop an online course is positively associated with the awareness of the perinence ofonline-courses in modern education, with awareness of the positive impact of online courses on the education process, with an attitude to online courses ($r = 0.5$, $p < 0.01$). As a result, it was concluded that positive attitude to MOOCs significantly positively correlates with awareness of perinence of the course, of its effectiveness. Willingness to develop a MOOC and implement it in teaching activities is associated with the idea of the positive impact of the MOOC on theprocess of education.

Thus, raising awareness of MOOCs potential can act as a significant source of motivation for both educators and students. This is due to the fact that a teacher, who recievedadequate methodical training for the development of online courses is more likely to see the importance and relevance ofMOOCs in modern education and will have a greater psychological readiness to develop, implement and maintainMOOCs.Figure 1 shows the correlation ofMOOC effectiveness indicators shown by students.

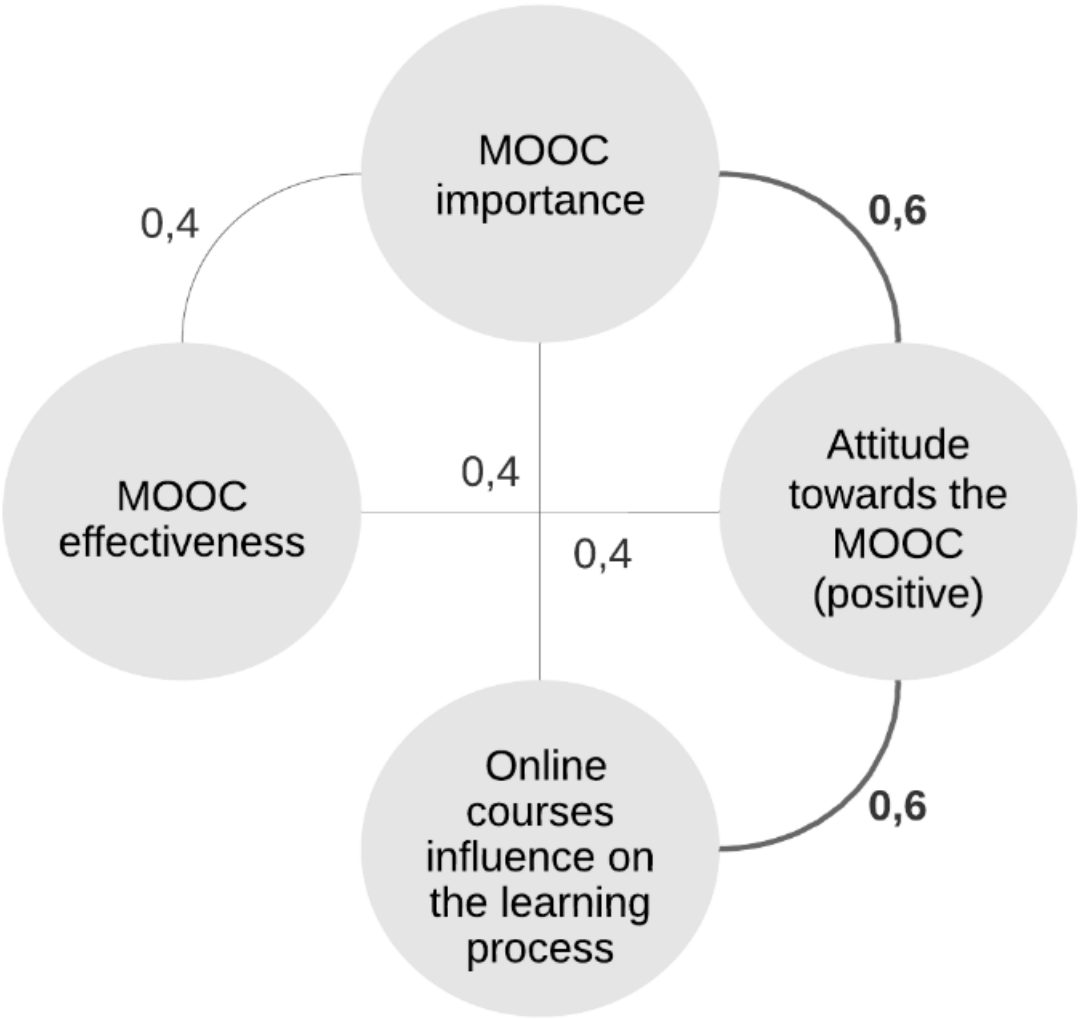

Figure 1: Correlation of the components of the students' attitude to MOOCs

The students revealed positive correlations of opinion regarding the pertinence and effectiveness of online courses ($r = 0.4$, $p < 0.01$). The attitude to online courses positively correlates with the evaluation of the effectiveness of online courses ($r = 0.4$, $p < 0.01$), the awareness of the pertinence of online courses is associated with the evaluation of effectiveness ($r = 0.6$, $p < 0.01$) , the evaluation of the positive influence of online courses on the learning process correlates with attitudes to online courses ($r = 0.4$, $p < 0.01$), the attitude to online courses correlates with the evaluation of effectiveness ($r = 0.4$, $p < 0$, 01), pertinence (necessity) ($r = 0.6$, $p < 0.01$), and the positive impact of online courses on the learning process ($r = 0.6$, $p < 0.01$).

Thus, the attitude of students to online courses is related to the evaluation (assessment) of the effectiveness of online courses, with awareness of the neccessity of online courses in modern education, about the impact on the educational process.

As a result of the interviews and focus groups discussions, teachers and students identified the main characteristics of MOOCs: openness, dynamism, mobility of learning content delivery, systematic, multidimensionality, ability to manage interpersonal contacts, monitoring of current educational trajectories of students, pedagogical interaction, learning optimization, variation of forms, reliability, information content, up-to-dateness, accessibility, creative approach, structuredness, methodical sophistication. Figure 2 presents the characteristics of MOOCs suggested by teachers.

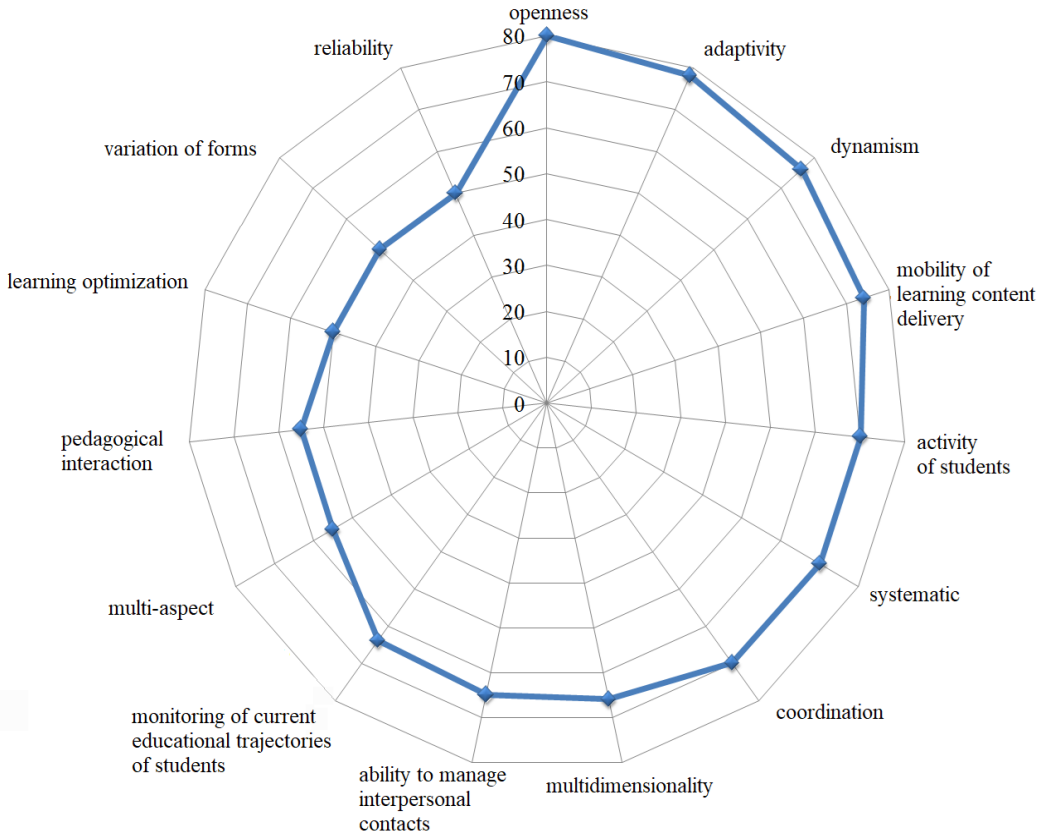

Figure 2: Specific features of attitude to MOOCs (teachers)

As a result of the factor analysis of MOOC characteristics suggested by teachers, a factor space of four factors (82% dispersion) was obtained.

The first factor (41%) is a cognitive unit in evaluating the effectiveness of MOOCs, which includes: openness, adaptability, dynamism, efficiency of delivery of educational information, consistency, flexibility, integrity, multidimensionality, reliability, information content, accessibility, structure. This unit performs the functions of improving the learning of the material, the development of student's cognitive processes (attention, memory), knowledge acquisition, the development of adaptability, self-development.

The second factor (19%) is the communicative block, which includes the active position of the participants, coordination, the ability to manage interpersonal contacts, and pedagogical interaction. This unit performs the following psychological functions: maintaining optimal communication between participants, psychological support for participants and their emotional exchange.

The third factor (16%) is motivational (diversity and multidimensionality, monitoring of learning trajectories and students' achievements). This unit performs the following functions: maintaining the motivation and creative activity of MOOC students, maintaining their interest and the process of self-realization of the teacher and students, increasing competence over time (ability to plan time).

The fourth factor (6%) is the innovation block (optimization of training, variability of forms, complexity, up-to-datedness, information relevance, creative approach, methodological sophistication).

Attention to these characteristics in the course of a MOOC development, according to teachers, can reduce psychological barriers for both teachers, who create courses and students, who take MOOCs. So, for example, due to underperformance regarding the MOOC communicative block characteristics, the teacher and the students' teaching/learning motivation and interest may decrease, causingboredom and monotony. On the other hand, excessiveactivity and control in the communicative sphere of the MOOC characteristics, can cause thefeeling of loss of freedom, anxiety, internal conflict (the discrepancy between the expected and the real), information overload and stress.

In this regard, when developing and implementingMOOCs, the teacher should maintain a sufficient level of communication, its optimum, reducing manifestations of uncertainty and overload.

Underperformance regarding characteristics of the cognitive component, can result in the decrease in the

percentage of the learned material, the unsystematic character, fragmentation and the "erosion" of knowledge. The optimum motivation of students and the teacher is an important psychological component of the MOOC effectiveness.

Low motivation causes loss of interest, monotony, boredom; extremely high motivation may lead to an internal conflict,frustration and stress. In this regard, it is important in the course of MOOC development, to take into account psychological characteristics of teachers and students' attitudes to MOOK in terms of education quality improvement, maintaining professional communication, personal and professional development.

On the basis of interviews and focus group discussions, the teachers pointed out the following problems in developing MOOCs: lack of knowledge in the field of MOOCs and competence in MOOCS development, fear, a huge workload for the course maintenance, new communication format and feedback, etc. Many of the indicated problems are solved in the process of instruction and psychological training.

3.7 Teachers' Motivation And The Rationale For The MOOC Application Model In Curriculum

Expectedly, the question arises what objectives the university is establishing, integrating online courses into the educational process. You can specify the following main reasons [Bel18, Kle16]:

1. Setting correspondence between the requirements of federal educational standards, curricula and content of online courses. A large variety of online courses allows universities to create very flexible and adaptive programs that meet the needs of different standards and groups of students.

2. Lack of a teacher (lecturer) of a discipline with necessary qualifications, or significant costs for employing him/her.

3. The need for adaptation disciplines (for foreign students or students, enrolled in a master's course from other universities), without increasing the costs of forming in efficient small groups.

4. The need to develop students' meta-competencies: project work, activities in heterogeneous groups, immersion in an alien environment, development of self-organization and self-control.

5. Improving university competitiveness and enhancing the program attractiveness through the use of leading and more prestigious Russian universities' brands.

6. Transformation of faculty roles. The formation of new educational "hybrid" models implies a change in the professional roles of university teachers: the release of time for scientific work; modification of the educational and methodological role of the teacher (analysis of online courses for inclusion in the curriculum; adaptation and identification of topics and issues of the discipline not covered by online courses; support, counseling, control of students' knowledge during the online courses); actualization of new pedagogical roles (tutor, moderator, facilitator).

7. Economic expediency, which means staff reduction, without reducing the quality of educational programs.

Currently, 3 main models of MOOCs application in the educational system of Russian universities [Vol15, Mak15] have been formed.

Model 1: an online course is introduced as a required element of the educational program. The course completely replaces the discipline or module of the educational program. In this model, the learning outcomes of the online course should be fully consistent with the requirements of the educational program.

If the compliance is not full, the structure of the main educational program should be changed, the missing learning outcomes can be balanced by changing the requirements for the learning outcomes of other disciplines or modules. The university gets the opportunity to receive detailed information about the performance of its students, to provide them with methodological support and to participate in monitoring activities, performing the function of proctoring. The model is implemented by means of concluding an agreement on the network form of the OP implementation.

Within the framework of this model, the staff workload, involving contact work, is reduced and cancelled, which can be balanced by the introduction of project training and a change in the structure of the workload in other disciplines or modules. For example, if a teacher's discipline is replaced as part of a module, the released time of teachers can be used to launch an interdisciplinary project.

Model 2: The course is introduced as an alternative form of mastering the discipline or module in the main educational program. This model provides students with the opportunity to build an individual educational trajectory. This option has a number of limitations: the university should establish a procedure of online course credit transfers; the discipline should fully coincide in terms of academic workload and learning outcomes of the online course. There might also be a problem of uncertainty in the number of students who want to master

the discipline online, which affects planning the staffwork load. This problem can be solved by introducing quantitative restrictions for online course learners.

Model 3. Blended learning. Teachers use the technologies and MOOC materials in the process of teaching their academic discipline. The application procedures for this model have not been fully established yet.

The issues of using MOOCs in the educational process are at the center of international research on the topic of mass open online courses [Bad16, Bel18, Gol17, Yua14, Gae14]. However, noin-depth research studies of teachers' motivation to apply online courses has been conducted [Ape16, Tim16]. Meanwhile, the attitude of teachers to MOOCs, and online education, as shown by the results of our study, is rather ambiguous. Teachers are rather restrained and neutral about MOOs formats and are reluctant to implement them in their practice. Elimination of this kind of anti-motivation is crucial.

4 Results

An instrument for measuring the teachers' motivation to use MOOCs in the form of a questionnaire has been developed. The main task of the study is to work out the model and specify conditions, which might encourage teachers to apply open online courses, developed by other universities in the educational process of their university and their discipline from the models considered above. Therefore, the key unit of the questionnaire includes questions, that determine the attitude of respondents to the models of MOOCs application.

Below (Figure 3) the results of the questionnaire testing, which demonstrate the attitudes of respondents to the models of MOOCs application in the educational process, are presented.

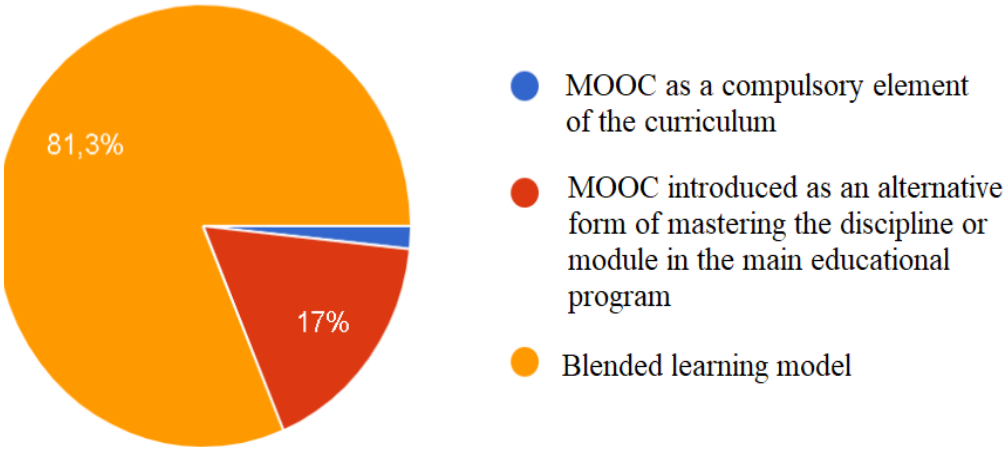

Figure 3: Results of the questionnaire on the effective model of MOOC application in curriculum

The first model of "MOOC as a compulsory element of the curriculum" causes a strongly negative attitude of teachers to the replacement of the traditional course with an online course in an educational program. Only 1.7% are positive in respect of this model. The introduction of this model requires the development of an additional system of motivation and unpopular administrative decisions.

The second model, "MOOC introduced as an alternative form of mastering the discipline or module in the main educational program", is approved by 17% of the teachers. The introduction of this model also requires additional motivation for teachers.

The blended learning model caused the least negative attitude of the teachers. 81.3% of the teachers are ready to cooperate with colleagues from other universities in the online environment.

In the course of the interviews and focus group discussions, teachers pointed out the following major motivating factors for MOOCs implementation: fear of dismissal, reduction of the workload, creative self-realization, use of their abilities, professional growth, advantages of a flexible work schedule, etc.

5 Discussion

Working out solutions for the implementation of MOOCs in the educational activities of the university, the following problems should be taken into consideration:

– inadequate information level of teachers in respect to the effectiveness of online learning and psychological reluctance of 50% of the teachers to work with online courses;

– a contradiction between the interest and psychological readiness of students and reluctance of teachers to work in the field of online technologies. The teacher's readiness to implement MOOCs models in educational activities is determined by the level of media literacy, technological skills, experience of developing and applying electronic educational resources, awareness of the specific features of a course development, maintenance and online education.

The research results indicate, that the effectiveness of the organization of the educational process through the introduction of modern pedagogical technologies is primarily determined not only by the importance of the introduction of these technologies, but by the quality of the psychological preparation of the human element.

Wide-scale implementation of MOOCs in the educational environment of the university requires stage-by-stage teacher training, which involves upgrading information and communication skills, methodical training and support of the educational process in the digital educational environment. A considerable methodological and didactic MOOCs potential can be only fulfilled, when the educational content gets a valid psychological and pedagogical substantiation.

Mastering new roles in the course of incorporating MOOCs in the educational process requires development and change of behavioral practices. We believe that this will lead to a gradual increase in the quality of education, development of professional and pedagogical competencies of teachers.

For successful modernization of the educational process and development of the best possible scenario for the introduction of MOOCs in the educational programs of universities, teachers may also sign up for online courses with their students. This practice helps to solve two major problems:

– assessment of the scope of knowledge available to students and self- assessment of his/her own level of competencies by the teacher;

– on-the-spot course support and moderation of the learning process.

Possible risks of implementing this practice:

– resistance of teachers and heads of departments, institutes, faculties;

– inadequate university infrastructure;

– resistance of administrative departments (financial and legal departments). Undoubtedly, making a choice between the models of MOOCs introduction in the educational process, the university should consider what problems, challenges (needs) it is facing, to what extent teachers and students are prepared for the changes and whether it is possible to solve these problems with the help of online courses.

6 Conclusion

The research results suggest that the process of integrating MOOCs into the basic educational programs of higher educational institutions is relevant, expedient and should be advanced further. The process of MOOCs implementation presents a variety of problems: regulatory support for MOOCs integration in the educational process, framing internal policy, overcoming psychological resistance of teachers. In this regard, a revision of the organization of the university educational system is required, taking into account changing requirements for the forms, methods and technologies of teaching, to address the needs of today students, who belong to the digital generation Z. At the same time, it is obvious that teaching can be efficient only when teachers and students are ready to applynew tools of online learning and MOOCsmodels in practice.

References

[O'Fa17] O'Farrell L. (2017) Using Learning Analytics to Support the Enhancement of Teaching and Learning in Higher Education. *Paper presented at National Forum for the Enhancement of Teaching and Learning in Higher Education.*

[End13] Enders, Brenda (2013). Gamification, Games, and Learning: What Managers and Practitioners Need to Know. *The eLearning Guild,* 2013.

[Lee11] Lee, J. J. & Hammer, J. (2011). Gamification in Education: What, How, Why Bother? *Academic Exchange Quarterly,* 15(2).

[Mul15] Mulder, F. & Jansen. D. (2015). MOOCs for Opening Up Education and the OpenupEd initiative. In: C. J. Bonk, M. M. Lee, T. C. Reeves, T. H. Reynolds (Eds.). *The MOOCs and Open Education Around the World.* New York: Routledge Tayler & Francis Group.

[Hol14] Hollands, F. & Tirthali, D. (2014). Why Do Institutions Offer MOOCs? Online Learning, 18(3).

[Tsa16] TsarevR.Yu., Tynchenko SV, Gritsenko S.N. (2016). Adaptive learning using the resources of the information and educational environment. Modern problems of science and education. 5.URL: http://science-education.ru/en/article/view?id=25227 (in Russian).

[Kal14] Kalman, Y.M (2014). A race to the bottom: MOOCs and higher education business models. *Open Learning: The Journal of Open, Distance and e-Learning.* Volume 29, Issue 1, January 2014, pages 5-14.

[Tre16] Tre'yakov, V.S., Larionova, V.A. (2016). Open Online Courses as a Tool for Modernization of Educational Processin Universities. *Vyssheeobrazovaniev Rossii* [Higher Education in Russia]. No. 7 (203), pp. 55-66. (In Russian., abstract in English).

[Law12] Lawrence S. Bacow, William G. Bowen, Kevin M. Guthrie, Kelly A. Lack, Matthew P. Long. *Barriers to Adoption of Online Learning Systems in U.S. Higher Education* // May 1, 2012 Copyright 2012 ITHAKA.

[Rud18] Rudakov, V.N. (2018) Prospects of mass open online courses in the Russian Federation: a survey of teachers and students. Monitoring the Economics of education. *Information and analytical materials on the results of sociological research.* No. 11 (77).

[Bel18] Beloglazov.., Beloglazova L.B. (2018) The use of massive open online courses as a way of improving the quality of teaching in the field of information technology. *RUDN Journal of Informatization in Education.T.* 15. No. 2. pp. 206-214. DOI 10.22363/2312-8631-2018-15-2-206-214.

[Kle16] Klemeshev, A.P., Kuksa, I.Yu. (2016). Administration of Academic Programmes as a Factor of University Modernization. *Vyssheeobrazovanie v Rossii* [Higher Education in Russia]. No. 5 (201), pp. 10-20. In Russian., abstractin English).

[Vol15] Volkov A.V. (2015) Experience in the development of network educational programs with the use of online courses. *New educational technologies at the University: proceedings of the XII international scientific and methodological conference.* Ekaterinburg: UFU. Pp. 245-250.

[Mak15] Makoveichuk, K.A. (2015) Prospects of using MOOCs in basic educational programs of higher education in Russia. *International research journal.* No. 6 (37) Part 3. Pp. 66-67.

[Bad16] Badanova, N, Firsova, S (2016) Some problems of implementing e-learning in the modern university. *Kazan pedagogical journal.* No. 4 (117).

[Gol17] Golubeva, A.N. (2017) Mass open online courses: concept, classification and application experience in higher education // *Voprosi pedagogiki* [Pedagogical issues]. 2017. No. 7. Pp. 25-29.

[Yua14] Yuan, L., Powell, S. & Olivier, B. (2014). Beyond MOOCs: Sustainable Online Learning in Institutions. CETIS, Bolton.

[Gae14] Gaebel, M., Kupriyanova, V., Morais, R. & Colucci, E. (2014). E-learning in European Higher Education Institutions: Results of a mapping survey conducted in October-December 2013.

[Ape16] Apenko, S.N., Timkin, S.L. Problems of using open online courses in the educational process of the University: teacher motivation. *Informatization of education: theory and practice: collection of international scientific materials of Conference* (Omsk, November 18-19, 2016). Pp. 54-58.

[Tim16] Timkin, S.L. (2016) Barriers and motivation for the introduction of online learning in universities in the post-MOOC era. *Report on the 13th international scientific conference "New educational technologies in higher education-2016".*