

УДК 378.1

DOI 10.51955/2312-1327_2022_4_183

THE KEY ASPECTS FOR MOOC DESIGN: FOREIGN AND DOMESTIC EXPERIENCE

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Abstract. Massive open online courses have been gaining their popularity rapidly in the 21st century. Along with beneficial opportunities MOOCs have some drawbacks. The current paper focuses on the experience gained in relation to this issue and attempts to elicit the main aspects of an efficient MOOC design. In order to answer the problematic question raised in the paper there were used such methods as comparative analysis, synthesis, comparison, generalization, the study of advanced experience. Due to the chosen methods, the key aspects and steps for MOOC design were structured in a table. The researchers have described some of the challenges MOOC creators faced while launching their courses and the authors of the current work list possible solutions to the arising problems on the stage of MOOC design. The paper might interest scholars who study online courses and open education opportunities, MOOC creators as well as their providers.

Keywords: MOOC, online course, MOOC design.

КЛЮЧЕВЫЕ АСПЕКТЫ РАЗРАБОТКИ МООК: ЗАРУБЕЖНЫЙ И ОТЕЧЕСТВЕННЫЙ ОПЫТ

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Аннотация. Массовые открытые онлайн курсы на протяжении 21 века стремительно развиваются и становятся популярным средством обучения. Однако наравне с множеством достоинств MOOK обладают и рядом недостатков. Данная статья фокусируется на имеющемся опыте относительно этой проблемы и предпринимает попытку отобрать главные аспекты разработки эффективного MOOK. Для того, чтобы дать ответ на проблематичный вопрос, поднимающийся авторами статьи, использовались такие методы как сопоставительный анализ, синтез, сравнение, обобщение и изучение передового опыта. В соответствии с выбранными методами исследования в формате таблицы были структурированы ключевые аспекты и шаги разработки MOOK. Исследователи описали трудности, с которыми столкнулись зарубежные и отечественные разработчики MOOK при запуске своих курсов. Также авторы статьи предлагают ряд возможных решений для возникающих на этапе разработки онлайн курса проблем. Статья может представлять интерес для исследователей, изучающих онлайн курсы и возможности открытого образования, а также для создателей и провайдеров MOOK.

Ключевые слова: MOOK, онлайн курс, разработка MOOK.

Introduction

The massive open online course (MOOC) and open educational resources (OER) seem to draw scholars' attention to their study, design, development and evaluation. The contemporary technologies provide students with various learning opportunities implying that education might be received regardless time or location. Despite the rapid MOOC development, one should take into consideration that by origin distance learning along with earlier educational technology were background causes for MOOCs [Bonk et al., 2015]. In order to build peace, sustainable social and economic development along with intercultural dialogue the access to fine quality education should be open according to UNESCO. These opportunities might be provided by the OER means which provide large numbers of students with learning opportunities [Daradoumis et al., 2013]. It is a relevant issue due to various reasons including changes in the information society where critical thinking is of quite a high importance as well as students' skills in navigating through information flow properly [Bessarabova et al., 2018, p. 25]. Informatisation also leads to the transformation of professions, changes within the field of education, emergence of new information distribution means and digitising of human activity spheres in general [Pluzhnikova et al., 2018, p. 20]. Hence, there is a need in a sufficient response to the demands of the new digital age.

Recent achievements in the field of information and communication technologies influence teaching approaches and lead consequently to education modernisation. Massive open online courses (MOOCs) have changed the perception of traditional education showing that there might be no boundaries of time and space. Improving learning efficiency and enhancing students' engagement in MOOCs is one of the contemporary trends in e-learning [Krechetov et al., 2020]. Sebastian Thrun and Peter Norvig (Stanford University) were one of the first to offer their "Introduction to Artificial Intelligence" course for free to anyone who was interested in the topic. Hence, the number of students enrolled in the course exceeded 160,000 from many different countries. This success led to Udacity launch and later such MOOC providers as Coursera and edX appeared. At present many countries have their own MOOC providers, for instance, in Europe Future Learn is widely spread,

Miríada X is quite popular among Latin Americans, Russia's one of the most developed platforms is considered Open Education. MOOC is developed at a country level in Asia, unlike in Europe. Online courses are developed at the government level in such countries as Singapore, Thailand, Philippine and Malaysia [Lee et al., 2016, p. 4]. Although the platforms which provide with MOOCs differ, their support of global learners toward social inclusion and mutual understanding is a common feature [Conole, 2015].

Xing (2018) assumes that student performance and student retention are long-standing challenges for online courses. While MOOCs support students internationally and provide with various opportunities, there are challenges which online course creators identify. High dropout rates are one of the most common problems since MOOCs are available for wide ranges of people regardless their education and location. The reasons vary, however, some common issues emerge and among them are no actual intention to finish the course, lack of time and support, insufficient digital skills, negative experience, etc. [Onah et al., 2014]. One of the possible ways to increase retention rates and to create an efficient MOOC is to follow the outlined objectives closely related to the target audience [Sorokina et al., 2020]. The other challenges are connected with the massiveness and low teaching involvement during delivery stages of the course and limited testing options because assessments have to be conducted using automated tools [Daradoumis et al., 2013]. Jaggars and Xu (2016) identified four relevant elements effecting students' performance: 1) organisation and presentation implying clear structure of the course; 2) learning objectives and assessments meaning they should be closely interconnected; 3) interpersonal interaction assuming the importance of collaborative work between students; 4) technology regarding a variety of tools and the ease of their use to work with the course content [Jaggars et al., 2016]. Some researchers [Базанова и др., 2017] found by the means of the questionnaire that the following factors might increase students' motivation to finish an online course: ability to interact with other participants of the online course (81%), interest towards the topic of the course (78%), an opportunity to work at their own pace (75%), practical benefit from taking a MOOC (65%), English as a working language of a course (59%), peculiar design (45%).

In the field of MOOC design researchers also dedicate their works to some key principles which serve as a foundation for online course creation. John R. Drake and Elaine D Seeman elicit 5 principles for MOOC design. Firstly, it is crucial to build a course with meaningful content avoiding insufficient examples, confusing layout of the content, insufficient material and links. Therefore, it might be useful to focus on a specific topic, provide students with clear study guide and self-assessment quizzes. Secondly, an online course should be engaging which implies short lecture videos, exclusion of colloquial speech and jokes not understandable in a wide range of cultures and immediate feedback by the means of automated grading. Thirdly, students need to be aware of their progress and, therefore, online course should be measurable to reflect learners' achievements. Fourthly, MOOC's accessibility suggests its openness to people with different levels of education and experience as well as various reasons to take a course ranging from personal interest in the topic to

professional development. Lastly, the authors suggest online course's scalability as a principle to ensure a possibility for MOOC to grow with minimal adjustments [Drake et al., 2015].

Even though the topic of MOOC design is quite popular and many researchers publish their works in attempt to improve online courses production sharing their experience and providing with contemporary results, the key aspects of a successful MOOC design seem to be not outlined explicitly. Therefore, the current paper attempted to answer the following question: What are the crucial aspects for MOOC design to make an online course efficient and ensure high levels of students' engagement?

The paper consists of several sections. In methods relevant ways of coping with the main problem of the paper are listed along with the reasons to use them. The results section provides the reader with the system of MOOC design. Discussion suggests generalisation of the researchers' experience connected with the issue raised in the paper. Conclusion focuses on the essential outcomes of the paper as well as implications of the gathered results and future perspectives of developing the issue.

Methods

In the current study the authors use the comparative analysis of the foreign and domestic MOOC design experiences in order to elicit and juxtapose the key aspects in the researchers' works. This allows to design an efficient online course with high levels of students' engagement. The synthesis is closely connected with the analysis and enables to connect the key aspects for MOOC design into a system of interrelated elements. The system will show the connections between various elements of MOOC design which should be taken into consideration while creating an online course and before implementing it into an educational process. The comparison is aimed at focusing on the domestic and foreign perspective on the MOOC design problem and what has been discussed already in the scholarly papers in different countries. Due to the generalization, it will be possible to elicit some common issues in the field of massive open online course design which different researchers draw attention to in their works. The study of advanced experience in MOOC design seems to be a relevant method within contemporary studies on the open education opportunities and online courses' creation since some significant experience is gained in the field and might be applied in order to design an efficient MOOC with low rates of dropout students.

Results

MOOC design is a complex issue, and therefore, firstly, it is essential to decide who is the target audience of the course. Even though online courses imply a wide accessibility, the instructor's mission also lies in providing potential students of an online course with relevant information, specifically the necessary skills to complete the course successfully, the main objectives clearly outlined within the chosen topic and the required level of English or any other working language of the online course. Among existing types of online courses an instructor-paced xMOOC seems suitable for a well-organized course since it gives an opportunity to the instructor for building

a useful structured MOOC which includes strict deadlines along with notifications on the key dates of the course.

Table 1. The key aspects for MOOC design

MOOC design						
target audience		title	objectives	home page	interface design	
advertisement + motivation						
Type						
xMOOC		cMOOC	Quasi-MOOC	Self-paced	Instructor-paced (deadlines)	
Principles						
Meaningful content		Engaging	Measurable progress		Accessibility	Scalability
Lectures	Supplementary materials	Collaborative interaction	Assessment + progress scheme			
Videos	Links / files	Forums	E-assessment	Peer assessment		
		Supplementary tools	Test / quiz	Essay		

Although clear structure, a peculiar and not trivial topic of the course as well as regular assessments might help a student to stay motivated, there are some challenges resulting from MOOC's nature.

Table 2. Ways to cope with challenges within MOOC design

Challenges	What helps to overcome it in the design process	Details
High dropout rate	Objectives	Closely to follow the main objectives of the course
Culture	Content	Omitting jokes and examples which are too specific for one culture, not to exclude representatives of various nations from the topic if possible
Individualization	Collaborative interaction	Finding proper tasks and formats to organize students' communication, discussion of the key aspects within MOOC
Self-directed learning	Content	An optional lecture for students who take their first

		MOOC on how to study efficiently
Low teaching involvement	Feedback	Asking students about their impression of the course on social networks
	Assessment	Providing students with various types of tasks giving the suggested answer key even for the questions which require an open question / full answer

Discussion

In general, the model for designing a MOOC can be described within ADDIE (Analyse, Design, Development, Implementation, Evaluation) activities [Lee et al., 2016; Shukor et al., 2019]. In the current paper the focus is on the experiences of online course creation related mainly to the analysis and design steps. Within analysis the online course creator is required to observe the types of MOOCs (x-MOOC, c-MOOC, quasi-MOOC) [Daradoumis et al., 2013; Bonk et al., 2018] and platforms where MOOC might be launched so that to match it with the potential audience and objectives of the course. In case an online course creator decides to launch a self-paced MOOC, it might be useful to take into consideration the most suitable completion dates for the learners. The scholars' research [Sorokina et al., 2020] has shown that people more often tend to finish an online course in March (53.13%) and April (25.00%).

Although taking a learner's point of view is challenging, MOOC instructors already tried some practises to make their online courses more personalised. For example, the course "Designing a New Learning Environment" creators facilitated MOOC learners to support each other by the means of social networks [Kim et al., 2015]. In the meantime, Severance tried to design "Office Hours" to discuss his courses and get international feedback for improving his educational products as well as leading a YouTube channel dedicated to his MOOCs [Severance, 2015].

The design stage of MOOC includes the following elements: 1) objective setting, 2) course scope and type, 3) content reflected in lectures and supplementary materials, 4) teaching-learning strategy construction, 5) learning activity design, 6) assessment strategy formation, 7) course name selection, 8) PR strategy construction, 9) interface design; 10) motivation [Рогожина, 2021, с. 91; Lee et al., 2016, p. 15]. Furthermore, the first home page of the course is of significant importance [Shukor et al., 2019] since it is aimed at promotion of MOOC, students' motivation as well as giving key skills necessary for the online course completion and outlining the main objectives.

Moreover, it is relevant to highlight some of the pedagogical and technical criteria researchers suggest [Yousef et al., 2014]. The former criteria imply instructional design (lecture organisation, culture) and assessment (e-assessment, peer-assessment) while the latter criteria centre on such issues as user interface, video content, learning and social tools, learning analytics. Yousef et al. (2014) carried out research to identify the criteria of the vital importance to consumers and providers of

MOOC. The results show that in relation to the lecture organisation the research participants give priority to clear objectives of lectures being mentioned at the beginning along with request for supporting the collaborative learning among students and for providing coaching. Also, course objectives, time schedule and opportunities for improving students' self-organised work gained high ratings in the survey. Less attention was paid by the respondents to the course progress time line and the lectures' keywords.

With regard to culture criteria, which is quite relevant for online courses' massive enrolment nature, interviewees found the presence of examples in the content of MOOC important which are comprehensible to all the participants of the course regardless their cultural background. At the same time respondents' answers make an opportunity to take part in the video-conference discussions (if such are a part of MOOC) at two or more different times due to various time zones one of the most popular criteria.

In addition to the culture question in MOOCs Head (2015) shares the experience of an online course design. The main problem according to the author seems to be connected with the diversity of students who enrol in the MOOC. Taking into consideration the possible variety of cultures presented by the enrolment statistics of the other online-courses Karen and her team were attempting to make sure that there are hardly any parts of the course which are not inclusive enough. To ensure students' awareness if the course suits them, the advertising video stated that a native fluency in English is rather relevant for success within this MOOC since, unfortunately, the MOOC creators did not have a group of qualified people to translate the materials and lectures to support non-English speakers. Considering the visual aids, the team was trying not to include any offensive symbols, the audio materials were revised in terms of accents and dialects in order to make the listening comprehension less difficult and consequently excluded such recordings. A very precise discussion included the clothing choice of the material presenters who were filmed for the MOOC. Another issue was connected with the students' perception of the course and instructors imposing particular cultural perspectives. The conclusion that the author draws from her experience of designing MOOC and being its presenter is concentrated on the necessity to be quite vigilant if working with such a wide range of cultures which are represented by students who enrol in MOOC [Head, 2015].

In terms of the assessment category, which assures the quality of the learning outcomes, the statistical results show that MOOC students expect autonomous quizzes with an opportunity to see correct answers after taking a quiz as well as a variety of assessment tasks including short answers, essays, matching, multiple choice activities and true/false questions. As for the peer assessment, it is relevant to provide students with clear instructions and defined deadlines [Yousef et al., 2014]. In order to avoid grading without actual reading of students' works, explicit comments on the completed task should be an essential element of peer assessment. Also, a limited access to the results of the assessment for those students who do not complete it might help to ensure efficient and fair peer assessment. Open Education (Russian MOOC provider), for instance, has this function. In an effort to make

assessments manageable for students, it might be efficient to place them in the order where simpler tasks are suggested before the difficult ones [Shukor et al., 2019]. At the same time, it is relevant to highlight that assessment results do not always serve as an indicator of MOOC efficiency due to the fact that some students enrol in the course for the knowledge rather than achieving high performance [Jung et al., 2018, p. 24]. While considering various tools for assessment which is usually associated with "a combination of actions and operations aimed at comparison of an object with a standard" the MOOC creators should take into account that "a modern set of goals are interpreted nowadays in terms of competence parameters" [Tareva et al., 2018, p. 758].

In the technological criteria dimension, there are several components which are aimed at students' overall satisfaction and learning activities support. The most important interface features are related to videos since they are the core of MOOC. Therefore, recommendations for effective video content imply good audio/video quality, a summary and a transcript of the video lecture, and breaking videos into smaller pieces which do not exceed 20 minutes [Yousef et al., 2014].

For achieving collaboration in MOOCs, discussion and video-conferencing were identified as the means to satisfy this request [Yousef et al., 2014]. Discussion forums used for dialogue in each module within MOOC provide learners with an opportunity to be involved in collective learning and regular interaction. "The feeling of social presence enables students from different countries to communicate equally online and freely exchange ideas among themselves and with the teachers. An asynchronous university e-learning course focusing on the regular participation of students in discussion forums can be a useful model for online collaboration. Our practice confirmed that asynchronous technology is more appropriate for an international distance course as it makes it more flexible for students to work online" [Titarenko et al., 2021]. Rogozhina (2021) suggests using messengers for MOOC students' communication and interaction along with such tools as Miro, Trello, Google.

Conclusion

Massive open online courses became an efficient tool for supporting life-long learners with the high-quality resources and various opportunities for expanding their knowledge and improving their skills. While designing a MOOC, creators should follow different criteria: pedagogical (lecture organization, assessment), technical (user interface, video content, learning and social tools, learning analytics) and cultural (account of cultural diversity within enrolled students; lectures' content accessible for understanding of people from different countries).

In general, there are several main stages of MOOC design which include analysis, design, development, implementation and evaluation. The current paper focuses on the first two stages within which there is a number of challenges that online course creators highlight and the paper suggests and structures possible solutions to the problems.

High dropout rates might be prevented in case our target audience is clearly defined and the outlined objectives of the course are followed by the creators

throughout the course. In terms of students' cultural differences that cause misunderstanding or dissatisfaction with an online course, MOOC's massive nature should be taken into account and if jokes or examples specific to a culture are used, they need to be explained. There should be no dialects (unless they are the focus of the course) in the video lectures since they are one of the main components of a MOOC providing students with knowledge.

Also, due to the number of people who enroll into a course, individualization becomes a challenge and creators need to prepare various ways of interaction and communication for students. Forums in the course are one of the most common tools for this purpose, however, they are usually used to solve technical issues students have with a MOOC and therefore it might be reasonable to give specific tasks for discussions. Although primary part of the MOOC content is related to a chosen topic, a lecture on self-studies should be helpful for those who take an online course for the first time. Some scholars consider low educators' involvement in the running course and not sufficient feedback to be the factors that lower the number of students who finish the MOOC. But a possible solution to this question lies in MOOC creator's desire and ability to use social networks and online "office hours" for collecting relevant feedback on the course for its further improvement.

The gained experience in the field of open education capacity allows researchers to study positive and negative outcomes of MOOC design in different countries. Hence, analysing advanced practices makes it possible to overcome existing problems and find solutions before launching a MOOC. The current paper outlined the key aspects for an efficient MOOC design which can be used by the researchers and educators planning to launch an online course.

Acknowledgements

The authors have no funding to report.

Библиографический список

- Базанова Е.М.* MOOC По академическому письму: управление мотивацией обучения студентов / Е.М. Базанова, Е.Е. Соколова // Высшее образование в России. 2017. № 2. С. 99-109.
- Рогожина Т.С.* Методология создания образовательного онлайн-курса: от идеи до воплощения // Мир науки, культуры, образования. 2021. № 2. С. 90-93.
- Bessarabova I.S.* Goals and objectives of civic education in Russia and in the USA: The comparative analysis / I.S. Bessarabova, T.N. Bokova, L.A. Rychenkova // Espacios. 2018. № 39(38). P. 21-30.
- Bonk C.J.* MOOCs and open education around the world. / C.J. Bonk, M.M. Lee, T.C. Reeves, T.H. Reynolds. New York and London: Routledge, 2015. 358 p.
- Bonk C.* Pushing toward a more personalized MOOC: exploring instructor selected activities, resources, and technologies for MOOC design and implementation / C. Bonk, M. Zhu, M. Kim, S. Xu, N. Sabir, A. Sari // International Review of Research in Open and Distributed Learning. 2018. № 19(4). P. 91-115.
- Conole G.* Designing effective MOOCs // Educational Media International. 2015. № 52(4). P. 239-252.
- Daradoumis T.* A review on massive e-learning (MOOC) Design, Delivery and Assessment / T. Daradoumis, R. Bassi, F. Xhafa, S. Caballé // Eighth International Conference on P2P, Parallel,

Grid, Cloud and Internet Computing. 2013. P. 208-213.

Drake J.R. Five principles for MOOC design: with a case study / J.R. Drake, M.O'Hara, E. Seeman // *Journal of Information Technology Education: Innovations in Practice*. 2015. № 14. P. 125-143.

Head K. The single canon: MOOCs and academic colonization. In C.J. Bonk, M.M. Lee, T.C. Reeves, & T.H. Reynolds (Eds.). *MOOCs and open education around the world*. New York and London: Routledge, 2015. P. 12-20.

Jaggars S.S. How do online course design features influence student performance? / S.S. Jaggars, D. Xu // *Computers & Education*. 2016. № 95. P. 270-284.

Jung E. The influence of instructional design on learner control, sense of achievement, and perceived effectiveness in a supersize MOOC course / E. Jung, D. Kim, M. Yoon, S.H. Park, B. Oakley // *Computers & Education*. 2018. № 128. P. 377-388.

Lee G. A study on the development of a MOOC design model / G. Lee, S. Keum, M. Kim, Y. Choi, I. Rha // *Educational Technology International*. 2016. № 17(1). P. 1-37.

Kim P. Creating a temporary spontaneous mini-ecosystem through a MOOC / P. Kim, C. Chung // In C.J. Bonk, M.M. Lee, T.C. Reeves, & T.H. Reynolds (Eds.). *MOOCs and open education around the world*. New York and London: Routledge, 2015. P. 157-168.

Krechetov I. Implementing the adaptive learning techniques / I. Krechetov, V. Romanenko // *Educational Studies*. 2020. № 2. P. 252-277.

Onah D.F. Dropout rates of massive open online courses: behavioural patterns / D.F. Onah, J. Sinclair, R. Boyatt // In *Proceedings of the 6th International Conference on Education and New Learning Technologies (EDULEARN14)*. 2014. P. 5825-5834.

Pluzhnikova N.N. Intelligence and technology: The problem of interaction / N. N. Pluzhnikova, E. V. Korableva, T. N. Bokova // *Espacios*. 2018. № 39(38). P. 20-28.

Severance C. Learning about MOOCs by talking to students. In C.J. Bonk, M.M. Lee, T.C. Reeves, & T.H. Reynolds (Eds.). *MOOCs and open education around the world*. New York and London: Routledge, 2015. P. 169-179.

Shukor N.A. Using learning analytics to improve MOOC instructional design / N. A. Shukor, Z. Abdullah // *iJET*. 2019. № 14(24). P. 6-17.

Sorokina E. Factors affecting MOOC retention rates / E. Sorokina, Y. Gambeeva, A. Glotova, L. Litvak // *Izvestia: Herzen University Journal of Humanities & Sciences*. 2020. № 196. P. 194-202.

Tareva E.G. The assessment of students' professional communicative competence: New challenges and possible solutions / E.G. Tareva, B.V. Tarev // *XLinguae*. 2018. № 11(2). P. 758-783.

Titarenko L. An asynchronous university distance course as a possible model for international online collaboration / L. Titarenko, C.B. Little // *Universe of Russia*. 2021. № 1. P. 134-150.

Xing W. Exploring the influences of MOOC design features on student performance and persistence // *Distance Education*. 2018. № 40(1). P. 98-113.

Yousef A.M.F. What drives a successful MOOC? An empirical examination of criteria to assure design quality of MOOCs / A.M.F. Yousef, M.A. Chatti, M. Wosnitza // *IEEE 14th International Conference on Advanced Learning Technologies*. 2014. P. 44-48.

References

Bazanov, E.M., Sokolova, E.E. (2017). Massive open online course on academic writing: management of students' motivation to study. *Vysshee obrazovanie v Rossii*. 2(209): 99-109. [in Russian]

Bessarabova, I.S., Bokova, T.N., Rychenkova, L.A. (2018). Goals and objectives of civic education in Russia and in the USA: The comparative analysis. *Espacios*. 39(38): 21-30.

Bonk, C.J., Lee, M.M., Reeves, T.C., Reynolds, T.H. (2015). *MOOCs and open education around the world*. New York and London, Routledge. 358 p.

Bonk, C., Zhu, M., Kim, M., Xu, S., Sabir, N. & Sari, A. (2018). Pushing toward a more personalized MOOC: exploring instructor selected activities, resources, and technologies for MOOC design and implementation. *International Review of Research in Open and Distributed Learning*. 19(4): 91-

115. DOI: 10.19173/irrodl.v19i4.3439

Conole, G. (2015). Designing effective MOOCs. *Educational Media International*. 52(4): 239-252. DOI: 10.1080/09523987.2015.1125989

Daradoumis, T., Bassi, R., Xhafa, F., Caballé, S. (2013). A review on massive e-learning (MOOC) Design, Delivery and Assessment. *Eighth International Conference on P2P, Parallel, Grid, Cloud and Internet Computing*: 208-213. DOI: 10.1109/3PGCIC.2013.37

Drake, J.R., O'Hara, M., Seeman, E. (2015). Five principles for MOOC design: with a case study. *Journal of Information Technology Education: Innovations in Practice*. 14: 125-143.

Head, K. (2015). The single canon. MOOCs and academic colonization. In C.J. Bonk, M.M. Lee, T.C. Reeves, & T.H. Reynolds (Eds.). *MOOCs and open education around the world*. New York and London, Routledge: 12-20.

Jaggars, S.S., Xu, D. (2016). How do online course design features influence student performance? *Computers & Education*. 95: 270–284. DOI: 10.1016/j.compedu.2016.01.014

Jung, E., Kim, D., Yoon, M., Park, S.H., Oakley, B. (2018). The influence of instructional design on learner control, sense of achievement, and perceived effectiveness in a supersize MOOC course. *Computers & Education*. 128: 377-388. DOI: 10.1016/j.compedu.2018.10.001.

Lee G., Keum, S., Kim, M., Choi, Y., Rha, I. (2016). A study on the development of a MOOC design model. *Educational Technology International*. 17(1): 1-37.

Kim, P., Chung, C. (2015). Creating a temporary spontaneous mini-ecosystem through a MOOC. In C. J. Bonk, M. M. Lee, T. C. Reeves, & T. H. Reynolds (Eds.), *MOOCs and open education around the world*. New York and London, Routledge: 157-168.

Krechetov, I., Romanenko, V. (2020). Implementing the adaptive learning techniques. *Educational Studies*. 2: 252-277. DOI: 10.17323/1814-9545-2020-2-252-277

Onah, D.F., Sinclair, J., Boyatt, R. (2014). Dropout rates of massive open online courses: behavioural patterns. In *Proceedings of the 6th International Conference on Education and New Learning Technologies (EDULEARN14)*: 5825-5834. DOI: 10.13140/RG.2.1.2402.0009

Pluzhnikova, N.N., Korableva, E.V., Bokova, T.N. (2018). Intelligence and technology: The problem of interaction. *Espacios*. 39(38): 20-28.

Rogozhina, T.S. (2021). Methodology for creating an online educational course: from idea to implementation. *Mir Nauki, Kul'tury, Obrazovaniia*. 2(87): 90-93. [in Russian]

Severance, C. (2015). Learning about MOOCs by talking to students. In C. J. Bonk, M. M. Lee, T. C. Reeves, & T. H. Reynolds, T. H. (Eds.). *MOOCs and open education around the world*. New York and London, Routledge: 169-179.

Shukor, N.A., Abdullah, Z. (2019). Using learning analytics to improve MOOC instructional design *iJET*. 14(24): 6-17. DOI: 10.3991/ijet.v14i24.12185

Sorokina, E., Gambeeva, Y., Glotova, A., Litvak, L. (2020). Factors affecting MOOC retention rates. *Izvestia: Herzen University Journal of Humanities & Sciences*. 196: 194-202. DOI: 10.33910/1992-6464-2020-196-194-202

Tareva, E.G., Tarev, B.V. (2018). The assessment of students' professional communicative competence: New challenges and possible solutions. *XLinguae*. 11(2):758-783.

Titarenko, L., Little, C.B. (2021). An asynchronous university distance course as a possible model for international online collaboration. *Universe of Russia*. 1: 134-150. DOI:10.17323/1811-038X-2021-30-1-134-150

Xing, W. (2018). Exploring the influences of MOOC design features on student performance and persistence. *Distance Education*. 40(1): 98-113. DOI: 10.1080/01587919.2018.1553560

Yousef, A.M.F., Chatti, M.A., Wosnitza, M. (2014). What drives a successful MOOC? An empirical examination of criteria to assure design quality of MOOCs. *IEEE 14th International Conference on Advanced Learning Technologies*: 44-48. DOI: 10.1109/ICALT.2014.23