THE USE OF SYNCHRONOUS AND ASYNCHRONOUS STUDY MODES UNDER IMPLEMENTATION OF DISTANCE TECHNOLOGIES

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Abstract: The relevance of the research topic is associated with immediate conditions of the new coronavirus infection proliferation and its consequences, which has resulted in searching for ways of distance communication performed in synchronous and asynchronous formats which would be optimal for all participants of the educational interaction. The objective of the paper presented consists in studying the practice of using synchronous and asynchronous forms of learning in conditions of implementation of distance technologies. The materials discussed in the paper can be of use in the practice of holding theoretical and practical classes both within distance learning and organization of students' independent work when transition to the mixed or completely intramural format is made.

Keywords: distance learning, synchronous learning, asynchronous learning, digital information, educational environment, higher educational institutions, information and communication technologies, efficient educational communication

1 Introduction

Recent developments associated with having to conduct classes in the partially remote format bring about the necessity of implementing some innovation methods into the process of learning. This requires well-coordinated efforts from all participants of the process and, in case the implementation succeeds, will ensure competitiveness of the higher educational institution concerned. So, according to I. F. Filchenkova (2019), "for achieving the efficiency of innovation processes, a new approach to ensuring teachers' participation in the innovation activity is necessary – one that is aimed at effectiveness and manageability of these processes" (p. 4).

With regard to this, it is organization of not only lecture and practical classes but also of students' and course participants' independent learning that deserves special attention. The prerequisite for this was the forced transition to self-isolation and a quite natural range of difficulties in carrying out the educational process and maintaining it at the previously set quality level.

As of today, many educational institutions have got an experience of implementing distance learning in the digital information educational environment of the higher educational institutions. Relying on studies of the latest two years concerning implementation of the distance learning format into teaching various economic subjects in the contemporary conditions of the COVID-19 pandemic, the authors have found that modern teaching methods (Zhulkova et al., 2019; Zhulkova et al., 2020; Sineva et al., 2020; Chelnokova et al., 2021) show themselves best in the case of face-to-face teaching. However, given the situation of the Coronavirus pandemic and its consequences having been around since 2020, the use of some of them has become either challenging or limited.

So, under restrictive measures introduced for citizens to prevent spread of the new Coronavirus infection, relevance and necessity of using new approaches both to presenting course materials (in the Moodle distance learning system included) and to compiling comments to the lecture part of the course and its practice-oriented classes has become apparent. To obtain essential advantages of the educational process within online learning, it is the use of synchronous and asynchronous modes of learning that is the most sought-after.

2 Literature Review

According to the data of the digital scientific library eLIBRARY.RU (2021), from 2019 and through the current point of time, the platform has hosted over 35 thousand works discussing the distance format of learning. The works presented cover various aspects of the said topic, including: questions of legal regulation (Nuzhnov, 2021), analysis of the experience of carrying out this format both in Russian (Medvedeva et al., 2021) and in foreign higher educational institutions (Belyaeva et al., 2020), the use of information communication technologies (Chelnokova, 2019), disadvantages of distance learning (Polskaya & Polskoy, 2021), and its development prospects (Zemlyanukhina & Zemlyanukhina, 2020; Rogozin, 2021).

Within discussing distance learning, an important place belongs to questions of organizing pedagogical activity within the synchronous and asynchronous formats. So, the authors consider it essential to note works of N. V. Garashkina and A. A. Druzhinina (2020): they view not only the relationship of the asynchronous format of learning and students' individual learning paths but also potentials of integrating the synchronous and asynchronous formats. Some other works to be noted are that of E. A. Loghinova (2020) who pays attention to aspects of organizing synchronous and asynchronous communication; N. V. Tretyakova (2020) who pointed out the importance of looking for didactic models meeting the demands of the modern educational environments; and F. O. Kasparinsky (2019) offering the technique for rational organization of the information space of synchronous distance high-touch classes in mini-groups.

Alongside this, although there are numerous works considering this topic at various angles, it is important to note that "at present, students look forward to social interaction in the classical learning format less. For them, it can be easier to write than to recite in words, and to read or listen to a recording, watch a video than to attend a lecture" (Gherasimova, 2021, p. 28). Moreover, both at the beginning of the pandemic and at present, certain difficulties pose a serious challenge for teachers in some respects. This is associated with the lack of physical possibility to bring all digital courses in all subjects at once into a format which is perfect for the remote work. With regard to this, the authors share the opinion of O. A. Polyakova and E. V. Fedorovich (2020) who pointed out the fact that previously published works rely "on the experience of specialists who used technologies of distance learning consciously, who were technically, methodologically, and psychologically prepared for that" (p. 87); however, the contemporary conditions require extensive implementation of new approaches to teaching and finding ways for optimal pedagogical interaction.

3 Research Methodological Framework

The objective of this paper consists in describing the practice of using synchronous and asynchronous forms of learning in conditions of implementation of distance technologies.

Tasks of this paper include: studying the most characteristic features of synchronous and asynchronous modes in conditions of carrying out learning in the distance format; finding out highlights of the use of the learning modes in question in the practice of teaching activity; identifying the prospects of use of information technologies.

Methodological basis of the research consists of the methods of analysis, synthesis, observation, and modeling.

4 Results and Discussion

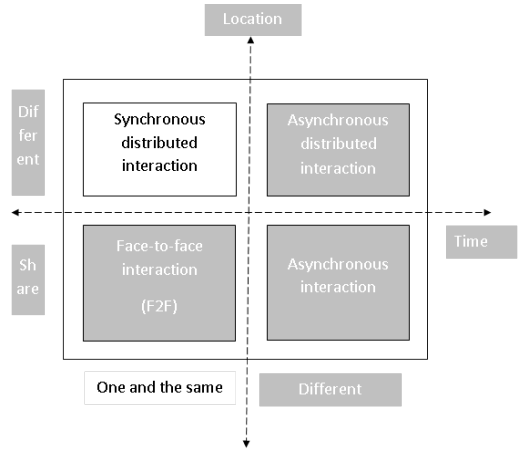
The opportunity of carrying out distance technologies of learning, i.e., organizing classes with the use of e-learning and distance educational technologies, is consolidated at the level of law. Namely, it is provided for by Article 16 of Federal law "On

education in the Russian Federation" (2012). Meanwhile, Clause 1 of the said article gives the definition for the notion of "distance educational technologies" which generally implies the use of information telecommunication networks in interaction of students and pedagogical workers at a distance. Alongside this, such opportunities reveal a number of problems associated directly with carrying out of learning.

Based on studying a number of scientific published works dealing with the said topic, the following conclusions have been made:

- Depending on location of the participants of learning and the time of holding the classes, online environments can have various organization options (Figure 1).

Figure 1 Spatial and temporal occurrences of the online learning environment



Source: Seidametova, 2020, p. 96

- Synchronous courses represent the interaction of teachers and students taking place in the "here and now" mode according to the existing schedule of classes; this corresponds to the classical style classes most of all, as feedback can be organized in the same mode with assessment of the knowledge absorbed by the attendees. With regard to this, it is important to note that it is with teachers that the responsibility rests completely when this mode of learning is used (Manokin & Shenkman, 2021).
- When learning is performed in the asynchronous mode, teachers and course participants are separated both in time and space. In this case, organization of learning may well be more complicated, with it being more labor-intensive exactly in terms of teachers' preparation (searching for and processing materials on the course topics, uploading them into the digital information educational environment of higher educational institutions, assessing students' completing the relevant assignments). One more important point is that the quality of presented materials has to be both in line with the requirements of the educational institution and up to students' idea about the quality context (it is with master degree course participants that this task is especially challenging). In case of such an approach to the course content, the complete responsibility for studying it will be placed directly with students.

Taking into account the differences of the modes discussed, some attention must be paid to their similarity, too. So, both modes of learning have to be implemented using special technical means which allow organizing interaction with students both in terms of direct learning and in providing feedback.

Proceeding from specific features of holding theoretical and practical classes both in the synchronous and asynchronous modes, the authors have attempted to implement them in practice within various subjects for which courses have been developed in the Moodle systems. The said attempt has been made for students of the intramural and extramural departments, as well as for the master degree ones.

To find out "bottlenecks" in each of the courses uploaded directly into the Moodle LMS, non-structured concealed personal observation was opted for as the principal research method; it was performed in the situation which is natural for students and course participants. As the object of analysis, the authors selected the "Organization of project activity" course which is designed for intramural students in focus area of training 44.03.05 Pedagogical Education (with two profiles of training, Physical Education and Life Safety, where the subject is studied in term 1 of year 1 (with the interim assessment form of a credit); as well as Russian Language and Literature, History and Social Studies, History and Law, Computer Science and Technology, History and Religion of Russia, Geography and Biology, Mathematics and Economy, Mathematics and Computer Science, Biology and Chemistry, Mathematics and Physics, where the subject is studied in term 2 of year 1 (the interim assessment form – exam). The principal criteria of analysis were not only the quantitative and qualitative content of the course according to the current requirements of the internal standard documents of the university (Provision on the Digital Information and Educational Environment, 2019) but also the availability of information sources that are relevant for representatives of the younger generation.

The work conducted has enabled the authors to make a number of conclusions that are of interest for colleagues, regardless of the specific circumstances of their courses and subjects taught. So, the disadvantage of not only fundamental availability but also quantity and quality of explanatory materials has been eliminated. It is worth emphasizing that video materials designed to explain the most important aspects in general or within individual course topics (both theoretical and practical in nature) have to be placed on pages of the course necessarily. Here, it is the teachers' ability to present the course material in a high-quality way that goes to the forefront: namely, to introduce cross references for students to orient in the material, to upload assignments (including ones for independent work) with as exhaustive as possible comments on them, to specify recommended literature, Internet-based sources, and so on. Another essential point is that for both first year students and master degree course participants, it is critical to get the introductory information in the subject under study. This is why, for example, the zero section of the digital training package in the Moodle virtual learning environment must contain not only text but also video-based explanations, among other things.

The considerably reduced quantity of questions in classes, the higher interest in the subject owing to the up-to-date materials uploaded, as well as the higher quantity of correctly done works can be considered as the result of the changes introduced. The obtained data have found the necessity of developing a similar model for other courses. So, modeling the courses involved first of all working with the work program of the subject, followed by providing it with the content in line with the given syllabus. Taking into account the fact that the current situation is associated with gaining knowledge with the use of information communication technologies, among other things, some corrections have been made to the courses concerning independent work. Namely, it was subdivided into two logical parts, one to be performed before the lecture class on the topic and the other one – after it.

Alongside the above, for maintaining interest, the authors included further explanatory materials of various formats into the courses, among them links to video materials hosted on the YouTube portal, papers in digital scientific libraries, non-fiction and fiction movies by Russian and foreign producers with comments as appropriate, which has confirmed its efficiency when working in the asynchronous format.

The above novelty has reputed itself exclusively in the positive light for several reasons. Among them, there are: permission to students to openly use Internet-based resources and search for information (this is relevant for assignments requiring one to

find real-life examples) and motivation for students to communicate within their groups on certain course topics in a more focused way.

Within the synchronous format of learning, theoretical and practical classes were held in the Zoom video conferencing mode on a compulsory basis. Practice has shown that its principal advantages are demonstration of presentations and short video clips, the opportunity of answering questions quickly, including those asked by students in the chat, and the opportunity for the course participants to voice their standpoint, take part in debate, and show results of their works completed in groups or individually (in the presentation form, too).

Results of assessment events held in various study groups and focus areas of training have shown the high effectiveness of using the asynchronous and synchronous methods, which is confirmed by high scores (before and after making the changes, in the study groups of equal number, the quantity of positive marks has increased from 54,5% up to 80%, respectively). The said marks included those of the final test passed in the Moodle system. One should specifically note the fact that the students who participated extensively in debate at theoretical and practical classes have shown noticeably better results as they had supplementary information (when answering certain test items, they could associate the questions with supplementary explanatory materials presented in the course).

The knowledge obtained according to the results of studying the list of digital technologies extensively used by colleagues from other higher educational institutions in teaching profile subjects were used in the authors' own work, too. So, in the nearest future, it is planned to implement some new technologies in conditions of the mixed format of learning. This will allow working on some of the suggested ones in the asynchronous mode and then gaining feedback within the intramural and extramural communication.

So, for example, within the synchronous learning format, the authors expect to apply the Live chat tool without quitting the already habitual Zoom chat. They are also going to use Telegram for communication, which will enhance the speed of answering the questions of students or course participants. The authors also consider it important to use the opportunities of the Miro interactive whiteboard and Google Doc to organize working in groups.

For carrying out the asynchronous mode, it is expected to further use e-mail with its evident advantages, the Moodle virtual learning environment which has reputed itself positively. The authors also intend to extend the list of social networks because judging by students' reviews, it is social media that are of greatest interest as a source of communication.

5 Conclusion

As a result of working on the topic in question (which is currently of paramount importance as it influences the quality of learning in a certain way), the authors have come to the conclusion that partial upgrade of the courses has demonstrated positive results and it is quite logical to consider both modes of learning as equally productive forms of obtaining and absorbing the gained knowledge. Similarly, they can be viewed as convenient platforms taking into account communication and technical particularities and possibilities of the audience within distance learning.

With regard to this, the authors believe that in the future, it is the third mode – the mixed one combining all advantages of synchronous and asynchronous learning while leveling out their demerits – that will be sought-after and the most relevant. Productivity of this form can be explained by saving time for putting principal theoretical questions across to students in talking mode. The mode can be spared directly for explaining the material, should the audience have any questions (in fact, an intramural class will be held in the "flipped classroom" format). In this case, communication is performed not only along the teacher-to-student line but also along the student-to-teacher one. This fact reveals another advantage of mixed learning: students are provided with a certain volume of independent work they must master before getting theoretical knowledge on this or that course topic. Relevance of such a scheme of learning is associated with reducing the academic hours for lecture classes and increasing the hours allotted for practical classes and independent work.

Let it be noted that within the context of streamlining organization of the educational process based on the parallel and successive use of the synchronous and asynchronous learning modes, their extensive use not only in conditions of distance learning form for students of the intramural department, but also in organizing the work at the extramural department, as well as for master degree course participants, is an indisputable advantage.

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