

Peculiarities of Training Future Teachers in Conditions of Restrictive Measures

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ABSTRACT

The article describes training future teachers under restrictive measures in the Novokuznetsk Branch of the Kemerovo State University.

The main task at this stage of training was the vocational training of future teachers in the conditions of exclusively distance learning. Unsupervised activities and organization of teaching practice were carried out in small groups.

The following tasks were set:

- 1) To prove that using online information technologies in distance learning in small groups increases the effectiveness of teaching practice in schools under restrictive measures;
- 2) To find ICT tools that will allow in the best way possible to prepare and implement the necessary activities that are part of the teaching practice in schools in a distance learning format.

The authors developed a model of future teachers vocational training based on project activities and the use of information and communication technologies when implementing the educational program. Training students and organizing the teaching practice in the conditions of restrictive measures made it possible to evaluate the results of quasi-professional activities of future teachers based on the use of distance learning tools and technologies.

The developed model was implemented, which made it possible to solve the tasks set, prepare students for teaching in schools in conditions of restrictive measures using modern information and communication technologies.

The materials obtained as a result of developing and implementing the model will be of interest to heads of educational institutions and teachers involved in the problems of training teachers to use modern information and communication tools and technologies in the teaching process.

Keywords: *distance learning, small group teaching, e-learning, information technologies, teacher training, quasi-professional activity*

1. INTRODUCTION

While organizing the educational process for undergraduates (Teacher Education and Professional Teaching) in the Novokuznetsk Branch of the Kemerovo State University during the new coronavirus infection spread, a transition to distance learning was made, as a result of which:

- 1) information and communication technologies were used to organize lectures, seminars and lab practicals, as well as qualification activity (defence of term papers, tests and exams; defence of graduation thesis) ;
- 2) training, performance (teaching) and pre-graduate practices were carried out in small groups using project activities;
- 3) future teachers have gained experience in quasi-professional activities during practical training and organization of teaching in conditions of contactless

communication in schools and organizations of secondary vocational education.

The coronavirus infection spread around the world has made serious adjustments to the working hours of educational institutions [1], including Russian schools and universities.

During the coronavirus spread on the territory of the Russian Federation, the Russian Ministry of Education recommended implementing educational programs of primary, secondary and high school, programs of secondary vocational education and additional educational programs using e-learning and distance educational technologies [2].

We analyzed the problems of training students that arose in the educational process organized in the conditions of restrictive measures:

1. The level of computer literacy among university teachers is significantly higher than that of school teachers. However, it turned out that higher education is not ready to organize the educational process in the conditions of

restrictive measures, primarily due to the lack of online learning models and insufficient number of sites capable of withstanding the overall transition to distance learning [3].

2. Free services that have proved to be the most popular in the organization of educational work in conditions of restrictive measures do not meet the requirements of large scale and security and do not provide special services necessary in the educational process. If fee-based services used, then lectures and seminars require funds and mechanisms for arranged payment from these services by an educational institution [4].

3. Lab or any other practicals conducted online deprives them of their main purpose that is teaching skills with equipment and students' collaboration with their mates. This problem was especially acute when preparing and conducting undergraduate training in schools [5].

4. The transition to distance learning has significantly increased the workload for self-study, online lectures: it does not allow explaining the most difficult points. Students have to find answers to difficult questions on their own if they do not have access to the necessary literature. Peculiarities of subscribing to university e-library materials are that they are only accessed from IP addresses belonging to the educational institution [6].

These problems are all the more relevant in schools that have been forced to switch to remote work. As a part of the educational process organization under quarantine, there was the need to develop an online model for training future teachers.

2. MATERIALS AND METHODS

To build a model based on information and communication technologies in distance learning, the following approaches were used:

- use of various information technology options,
- small group training,
- project method;
- quasi-professional activities in organizing undergraduate training in schools.

Our Institute has experience in organizing e-learning [7]. We use LMS Moodle as the basic technology.

There being e-learning in conditions of restrictive measures since March 2020, it became necessary to apply a wider range of information and communication technologies to organize the educational process. Thus, platforms for organizing audio and video conferences, voice messengers and text chats for communicating on the Internet, open software for conducting web conferences, as well as software that provides text, voice and video communication were used.

The use of such a wide range of information services and technologies has significantly reduced the impact of the shortcomings of some services on the organization of the educational process.

Researchers note that working in small groups encourages students to be active in acquiring new knowledge

themselves, to transfer the educational process from "teaching" to learning and mastering knowledge [8].

In addition, working in small groups develops the ability to explain and pass on knowledge to other members of the group who need it. This activates quasi-professional activity as a necessary factor in training future teachers.

Applying the basics of project activity in online training allows solving the problems of studying complex theoretical material by oneself. [9] The research skills acquired by students in working on projects allow them to use the resources of the global network to find answers to complex questions when studying new material, something that used to be usually discussed in details with teachers at lectures.

All of the above allowed us to develop a model of online training of students in Teacher Education and Professional Teaching in conditions of restrictive measures.

The model reflects the methods of training and consists of the following interrelated components:

1. Target component, which reflects the goal (mastering new forms of work in conditions of restrictive measures) and the expected results of training (mastering teacher competencies in using information and communication technologies in professional activities, reducing the time for organizing the educational process online).
2. Content component: determining forms of organization of the educational process that will be in demand in future professional activities: includes giving classes (lessons in Computer science, Mathematics, Physics, Economics and Technology), as well as conducting the necessary extracurricular activities.
3. Technological component, which includes the teacher's activities in online distance learning and students' activities, their unsupervised work in learning and undergraduate training;
4. Diagnostic component containing testing the effectiveness of the model built.

3. ORGANIZATION OF EXPERIMENTAL TRAINING

Training and preparing students for teaching in conditions of restrictive measures, there was an idea to organize students' work with online services in such a way that it would allow them to apply their skills at school when performing tasks on teaching practice. Such training has shown high efficiency, but we have not received statistical evidence proving it, because there was only one academic semester at disposal for the opportunity to organize and conduct practices at school. Nevertheless, when arranging training in conditions of restrictive measures there have been organizational issues and a list of online services worked out, they are successfully used not only at universities but also at schools.

During the quarantine period, we planned an experiment that allows assessing more accurately the applicability of the developed online learning model and proving its effectiveness. To do this, we needed to define:

- the list of educational programs of training teachers for the experiment,
- the list of tasks of teaching and performance practices for their online implementation in schools,
- the list of online services for organizing the educational process at school.

The use of online services in the educational process has activated some components of future teachers' IT adaptation to information and communication educational tools. Without prior training, students were forced to master online services when learning, which allowed them to apply their skills in quasi-professional interactive activities.

As noted by the researchers, students' quasi-professional activity allows implementing elements of future professional activity when learning. [10]

The experimental training lasted four months, it was attended by more than 300 students studying in 44.03.01 Teacher Education, 44.03.05 Teacher Education with Two Specialities, the focus of training - Mathematics and Computer Science, Computer Science and Physics, Mathematics and Physics, Technology and Computer Science, as well as 44.03.04 Professional Teaching, the focus of training - Economics and Management.

At the beginning of distance learning in conditions of the restrictive measures, the experiment was conducted to prove the effectiveness of various online services in preparing students for teaching in schools and institutions of secondary vocational education. The secondary goal was to use the ICT capacity to avoid the negative impact of quarantine on preparing students for work in school in conditions of restrictive measures.

In the future, students' readiness for teaching practice in schools, colleges and technical secondary schools operating in the remote format was evaluated using the results of quasi-professional activities. According to the diagnostic component of the online learning model developed by us, each student could get in one of three categories: satisfactory, successful, and very successful based on the results of undergraduate practice at a school, college, or technical secondary school.

Organization of the undergraduate practice was carried out in small groups. Taking into account the specifics of working with online services, the following small groups were made: 3, 4 or 5 people in each.

Teachers used online services that are successfully integrated into LMS Moodle. This is a platform for organizing Zoom audio and video conferences; Discord voice messenger and text chat for communicating on the Internet; BigBlueButton open-source software for holding a web conference; free Skype software that provides text, voice and video communication.

4th-year-students received tasks for conducting lessons and extracurricular activities in grades 7-9 of secondary schools, or in the 1st-2nd year of colleges and technical secondary schools. In order to get prepared for practice, they drew up task sheets of lessons and scenarios of extracurricular activities and made an approximate plan of a lesson with the use of appropriate online services based

on them. Drawing up a lesson plan meant making a list and sequence of online services used that correspond to the lesson goals.

The effectiveness of using online services during a lesson or extracurricular activity was assessed by the number of students participating in them and the duration.

During the undergraduate practice, teachers monitored the structure and content of lessons given using online learning tools, they developed recommendations for teachers who carried out external management of the undergraduate practice, prepared evaluation tools for students, which were used to hold the final conference on the results of the practice.

4. FINDINGS

During the training under restrictive measures, students' readiness for teaching practice was evaluated and as well as the practice itself in schools operating in the conditions of distance learning

We considered control groups to be groups of the same areas as the ones trained in the traditional format without any restrictions a year earlier. The experimental groups were groups of students who learned and carried out unsupervised work on the developed online learning model, they were preparing for undergraduate practice in small groups in the conditions of distance learning and performed it.

Table 1 First assessment of the level of students' readiness for teaching practice under restrictive measures

	Satisfactory (pers.)	Successful (pers.)	Very successful (pers.)
Experimental group (55 people picked)	13	28	14
Control group (56 people picked)	22	24	10

The analysis allows us to draw the following conclusions: the first cross-sectional analysis of experimental and control groups showed an approximately equal probability of determining levels of students' readiness for teaching practice using online services.

The results of the second assessment in experimental and control groups of the level of students' readiness for teaching practice using ICT in conditions of restrictive measures, after training using online tools, are shown in Table 2.

Table 2 Second assessment of the level of students' readiness for teaching practice in conditions of restrictive measures

	Satisfactory (pers.)	Successful (pers.)	Very successful (pers.)
Experimental group (50 people picked)	10	26	14
Control group (50 people picked)	25	20	5

To determine the effectiveness level of the online learning model developed in training future teachers of schools and secondary vocational schools, we analyzed the results of a twice-done assessment of the level of readiness of the same 50 randomly selected students from the experimental group for teaching practice using online services (before and after training under restrictive measures).

As a result of comparing the distribution of students, we can conclude that the distribution in the experimental group differs from the distribution in the control group for two steps of the experiment. Thus, the results of the second cross-sectional analysis showed that online training of students has a significant impact on students' undergraduate practice in quarantine.

During the experiment, to clarify the properties and qualities of online services in the organization of the educational process at school, the online learning model was applied not only for students. A similar experiment was conducted, which involved two groups of teachers taking distance training courses on using online services, the groups numbered 17 and 19 people. 17 teachers of schools and institutions of vocational secondary education used only video conferencing platforms in online training (control group), 19 teachers of schools and institutions of vocational secondary education used video conferencing platforms, voice messengers and text chats. 15 people were picked in each group.

Based on the analysis of the findings obtained, it can be concluded that the quality of lessons conducted by teachers themselves using all means of online communication in the experimental group is stochastically higher than the one in the control group.

Thus, we concluded that the developed online learning model, based on projects and online learning tools, together with the organization of quasi-professional activities, prepares students well enough for teaching practice in schools and institutions of vocational secondary education.

One of the tasks of implementing the developed model was to find out the optimal composition of groups in the context of unsupervised work on solving complex problems. We assumed a connection between the content of e-lectures in specific disciplines and the optimal composition of small groups, as well as the number and

level of complex questions that students have after taking online classes. Experimental training confirmed our assumption. It turned out that project work on tasks was effective when students used online messengers and chats. The overall effectiveness of project work in small groups was confirmed.

The results of analysing the time students spent on unsupervised work using online services for discussing problematic issues were important. In traditional training, teachers often noted the lack of self-dependence and activity of students, as well as a low level of their readiness to discuss complex issues, perform complex tasks, and so on. Discussing complex issues in messengers and chats allowed students to reduce the time of unsupervised work and increase the overall effectiveness of preparing for classes, as well as for conducting lessons and extracurricular activities during teaching practice.

4. CONCLUSION

Training under restrictive measures has shown that using developed online learning model based on the use of modern information technologies has made it possible to solve the problem of preparing for work in schools through organizing quasi-professional activities with information technologies.

We have identified the platforms and environments that most accurately meet the requirements for the organization of the educational process in schools and universities. We have shown positive dynamics in the effectiveness of extracurricular activities in secondary schools and in vocational secondary education institutions.

Conclusion

Thus, the tasks were solved: it was proved that the developed model of online learning in small groups in conditions of restrictive measures using online information technologies increases the effectiveness of teaching practice in schools. It also identifies ICT tools that allow the most optimal preparation and implementation of necessary activities that are part of teaching practice in schools operating in a distance learning format.

The developed learning model and the findings obtained can be used when preparing teachers for professional activities in conditions of restrictive measures in other educational institutions.

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