State final certification using distant learning technologies

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Abstract. This publication analyzes and summarizes the experience of conducting the state final certification of students using distant learning technologies on the example of the Institute of Land Management, Cadastres and Environmental Engineering of Krasnoyarsk State Agrarian University. The analysis was carried out taking into account the opinions of all participants of the state final certification process, namely: representatives of employers and teaching staff, supervisors of graduate qualification works, secretaries and graduates. As a result of summarizing interviews and questionnaires of participants, conclusions are drawn that determine the strengths and weaknesses of organizing and conducting the defense of graduate qualification works using distant learning technologies, which allow us to formulate suggestions for optimizing the process of defense and amending the existing Regulations of conducting the state final certification.

1. Introduction
A special role in the educational process for higher education programs is played by the state final certification (SFC), which can be conducted in the form of a state exam and/or defense of the graduate qualification work (GQW). The Institute of Land Management, Cadastres and Environmental Engineering has adopted the second form of certification. SFC is important both for the University, since it is a final stage of evaluating the learning outcomes, and for the students, since writing a graduate work is the most difficult and significant stage of training.

The purpose of this publication is to summarize the experience of conducting GQW defenses in the field of land management and cadastres at Krasnoyarsk State Agrarian University using distant learning technologies (DLT).

The tasks are:

- to analyze the Regulations for conducting GQW defenses using DLT;
- to consider the capabilities of the Moodle and Zoom platforms for preparing and defending GQW;
- to analyze the use of distant learning technologies of the state final certification on the example of the Institute of Land Management, Cadastres and Environmental Engineering;
- to identify the positive and negative aspects that arise when organizing and conducting GQW defenses using DLT;
2. Results and discussion

Writing the article, we analyzed some publications on the organization of the educational process in the conditions of the pandemic in Russia and other countries [1, 2, 3, 4, 5]. The publications show the pros and cons of distant learning. The main disadvantage of using distant learning technologies is the problems of cheating prevention.

In addition, we analyzed the articles that study the process of supervising graduate qualification works at different levels of education in different countries [6, 7, 8]. The articles emphasize the special role of a supervisor in writing graduate works, as well as the importance of organizing effective interaction between the supervisor and the student.

Some publications are devoted to the organization of graduate works defense, including using the Moodle platform [9] and the Zoom program [10, 11, 12]. The articles present the experience of organizing SFC in distant form at different universities of the Russian Federation, the organizational aspects, consultations, and identification of students. However, there is no analysis of the results of the final examination in the studied publications.

Conducting the state final certification using distant learning technologies is allowed in exceptional cases if there are reasons preventing the students from personally attending the educational organization. The basis is a personal statement of a student with the reasons and supporting documents. In the 2019-2020 academic year, this reason was self-isolation connected with the coronavirus pandemic.

In accordance with Federal Law No. 273 of 29.12.2012 - FL "On education in Russian Federation", with the order of the Russian Ministry of Education and Science of 23.08.2017 No. 816 "The order of application with organizations engaged in educational activities, e-learning, distant learning technologies in implementation of educational programs", with the order of the Russian Ministry of Education and Science of 14.03.2020 No. 397 "On the organization of educational activities of institutions implementing educational programs of higher education and appropriate additional professional programs, in order to prevent spreading of a new coronavirus infection on the territory of the Russian Federation", Krasnoyarsk State Agrarian University has developed Regulations for conducting the state final certification using DLT, which describe in detail the algorithm for implementing the state final certification.

In accordance with these Regulations, the rector issued an order on admission to state final certification using DLT, which was brought to the students’ attention by the Directorate of the Institute placing the information on the official website of the University, as well as in the e-learning information environment.

30 calendar days before starting SFC, the Directorate drew up and sent to the Training Department a schedule for having SFC with the use of DLT. In addition, a schedule of consultations and pre-defenses conducted using videoconferencing was formed and approved. In the e-learning information environment, the SFC e-courses contain instructions on the procedure for conducting the state final certification with the use of distant learning technologies, which students were required to study.

As noted above, the state final certification using DLT at the Institute of Land Management, Cadastres and Environmental Engineering was carried out in the form of the graduate qualification work.

Preparation of graduate qualification works (GQW) in 2020 took place both in the traditional and distant format. The tasks of their supervisors were:

- formulation of the topic, based on the materials collected by the students in practice;
- assistance in writing the plan, checking the sections of GQW;
- checking the format of the final version of GQW, as well as planning and mapping material and applications;
- assistance in preparing the report and presentation for the defense;
- writing the supervisor's review of the student's work.
The first stage was carried out in the usual traditional format, including the conversation with a student, identifying his interests and promising areas for graduate research, and formulating the topic of GQW.

Subsequent stages of the work were carried out in a distant format by e-mail correspondence. The disadvantages of this format include:

- time spent on writing comments that had to be explained in writing several times, which delayed the process of preparing the work;
- material costs for telephone communication, if you had to consult by phone;
- saving several electronic versions of GQW sent by the student to see if the comments were eliminated;
- the electronic format of the document is worse perceived than the printed one, so you have to re-read it several times in order not to miss important things;
- constant reading from the screen impairs vision and generally negatively affects the health.

It is difficult to organize in conditions of self-isolation the approval of the graduate qualification work with consultants, reviewers, the process of receiving a review from the supervisor of GQW and signing by the head of the graduating Department, but new tasks open up new modern solutions. To simplify interaction with all SFC participants in the e-learning information environment, the appropriate course for land management and cadastres was developed on the Moodle platform, which contains the following components:

- Introduction to the SFC procedure: Regulations for conducting SFC with the use of DLT; instructions for students; technical readiness for SFC; technical equipment for participating in SFC with DLT.
- Preparation for the state final examination: consultations on the sections "Environmental Protection", "Economics", "Life Safety"; consultation and review of the supervisor; standard control; checking for "anti-plagiarism"; review; familiarization of the student with the review; admission to the defense; checking the technical readiness for SFC.
- State certification examination: defense of the graduate qualification work; final grade.
- Obtaining the document of education and qualification.

Each student had to pass all these stages distantly, which greatly simplified the work of graduates, because there was no need to come to each of the consultants, reviewer, supervisor, and just place the appropriate section in the e-learning information environment in Moodle. The implementation of the sections was evaluated making it possible to go to the next stage of SFC. A little difficulty was performing the standard control connected with the lack of opportunity for the examiner to evaluate the final version of GQW in printed form.

Coordination of the student's work on passing all stages of SFC in a distant format on the Moodle platform was a part of the supervisor’s tasks. Among the positive aspects of this form of SFC organization, we can see the possibility to control the student passing all the stages of SFC, namely, receiving the reviews from consultants on the required sections on Economics, Environmental Protection and Life Safety, receiving a review of the GQW, uploading the student's planning and mapping material and the final version of the GQW, checking for "anti-plagiarism".

Before the defense, a preliminary defense of GQW was organized on the Zoom platform, where the supervisor had the opportunity to communicate with the student on-line and report to the SFC secretary about the student's readiness for the defense procedure.

Technological support for conducting SFC with DLT at the University was carried out using the ELIE (e-learning information environment) portal. Interaction between participants of the educational process (members of SEC, teaching and support staff and students) was performed in the video conferencing mode on the Zoom platform.
During SFC, all participants were located distantly from each other, and the members and the secretary of SEC had technical means and software equipment that ensured the integrity of the SFC procedure. In addition, the students, the members of SEC and the secretary were subject to the requirements of the identification procedure.

Identification was carried out in two ways. The first one – before starting the GQW defense, the secretary and the members of SFC were identified, then each student separately before the defense of the bachelor's work. During the defense process, we realized that it was inconvenient. Since the defense process was stopped during the students’ identification and the members of the Commission simply lost the time, so it was decided to carry out identification according to the second way, namely, immediately before the defense, to identify all students simultaneously separating them into session halls and maintaining the confidentiality of personal data. Then the secretary and members of SFC were identified.

There were some incidents during the identification, for example, some students could not immediately understand how to leave the session hall, they had to be explained in detail how to do it. Sometimes they had to leave the Zoom platform and connect again, and it took time.

In addition to technical support of the video conference, the secretary had to keep the GQW defense protocols, which caused some tension, since it was necessary to understand and fix the wording of the Commission member's question, since at any time there could be a technical failure or the Internet could "crash", and this happened repeatedly. Since the University had defenses at several institutes on the same day, the load on the network was quite high. We had to use the personal tablet of the video conference co-organizer with an Internet connection. In addition, the technical support engineer had to check whether the defense was being recorded on the University server, and this was not without a failure.

Some nonresident students faced such a problem as incomplete coverage of the locality by the Internet. They had to travel hundreds of kilometers from their home. The defense took place on the Zoom platform installed on the phone, which made it impossible to demonstrate the presentation - the secretary had to do this, which led to asynchronous defense.

The secretary of SFC had to fill out an electronic work-around sheet. It was important to control whether all the GQW materials (completed graduate qualification work with sections signed by consultants, checking for borrowing, the supervisor’s review, as well as presentation materials prepared for defense) were uploaded to the SFC course in Moodle. In addition, students had to inform in advance how the paper version of the GQW was submitted to the Institute's Directorate (sent personally / sent by mail), which caused difficulties.

The process of preparing and carrying out the GQW defense has its advantages and disadvantages. Participants of this event are students who have reached the level of defense of GQW, diploma supervisors, members of the Commission, which includes the teaching staff of the Department and representatives of employers, the secretary of SFC, consultants and reviewers. Each category of participants offers their own advantages and disadvantages of SFC behavior distantly.

In the process of interviewing graduates, the following positive aspects were identified:

- distant defense is more comfortable, since the student is in his usual environment (for example, at home) and is less worried;
- there are no restrictions in the location, if you have the Internet, you can defend your GQW from anywhere in the world;
- no time is spent to go to the place of SFC;
- comfortable waiting time for defense (students do not gather near the classroom);
- planning and mapping material is given in electronic form, which saves time and money for its printing.

Of course, there are positive aspects of distant SFC in higher education institutions, but such experience also has a number of disadvantages. Because everyone who has faced the defense of a diploma project knows how important this day is for a student and how exciting it is. Distant defense
imposes a number of additional difficulties for the graduate, for example, such as technical readiness, no one excludes that at any moment, the lights may go out, or there will be the problems with the Internet. The main disadvantages according to the students are:

- no experience in public speaking;
- there is no visual contact with the Commission, it is not clear whether they are interested in the report, what exactly to focus on;
- the group is at a distance, there is no possibility to support each other. 75% of the students indicated a lack of live communication.

At the same time, a third of respondents would prefer the distant defense.

From the point of employers’ view, it is a great advantage to be able to participate in a meeting of SFC on-the-job, and such a format of defense removes territorial difficulties, i.e. a member of the Commission can be located in another city or country and this is not a restriction. In addition, a number of employers, as well as students, point to saving time on moving. Employers did not note any disadvantages in distant defense.

The GQW defense in the field of land management and cadastres has its own specifics, that is why some difficulties arose during the distant defense. When conducting SFC, it is necessary to have planning and mapping material, which is an essential part of any land management project or documentation, as well as technical and economic parameters. During the full-time defense of GQW, the planning and mapping material and technical and economic parameters of the project are necessarily posted before the Commission, and during the student's report, it is possible to study them in detail and compare with the project proposals and their justification. During the distant defense, the planning and mapping material and technical and economic parameters are also successfully performed and demonstrated in the presentation, but there is no possibility to review them in detail and compare them with the text of the report.

3. Conclusions

Summarizing the experience of having SFC in a distant format, it should be noted that it was an interesting experience for everyone, but many participants of the SFC process marked that the traditional form of defense was preferable to distant one. In our opinion, the main problem of using this method is the increase of time and moral burden on the secretaries of SEC and the supervisors of GQW.

Of course, this academic year has given us invaluable experience in using distant learning technologies, which have enabled graduates to fully complete the learning process and adequately defend their graduate qualification works, but the amount of work in terms of providing and conducting defense has increased significantly.

In conclusion, we would like to note that in our opinion the preferable form of defense of GQW should remain face-to-face defense in the traditional format, but there should be a mixed use of DLT in SFC. Particularly, the Regulations should specify the possibility of distant participation in SFC not only for students (if there is a valid reason), but also for members of SEC (representatives of the professional association, nonresident Commission chairmen, other members of SEC in case of illness or business trip).

When organizing preparation for the defense (regardless of the format of the defense), you should use the capabilities of the Moodle platform to control the main stages of preparation for the defense: receiving a review, checking the standard control and sections on Economics, Environmental Protection and Life Safety, verifying for "anti-plagiarism".

In distant defense you should determine the mechanism of its submitting and further keeping without increasing the burden on secretaries of SEC and supervisors (for example, the possibility of replacing signatures on the title page of the work printing the statements of Moodle LMS with the marks of all consultants).
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