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## DIGITALIZATION OF RUSSIAN HIGHER EDUCATION: DIFFICULTIES OF THE TRANSITION PERIOD

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*Abstract:* The active process of digitalization, which accelerated in 2020 due to the COVID-19 pandemic, has created new requirements for the system of education. The relevance of this study lies in the use of data on students' academic performance and their attitude with the data of the sociological survey of teachers and students on the organization of distance learning and the difficulties that both sides used in this format. The study was conducted in 2020 and 2021. The analysis of the research data covers the following areas: organizational problems of the transition to distance learning; organizational resources used and technical capabilities for conducting classes, assessment of positive and negative aspects of distance learning; level of acquired knowledge; satisfaction with the learning process among students, as well as the issues related to the study of teachers' social well-being and the assessment of possible changes in teaching activities. As a result of the study, the authors came to the conclusion that a comparative analysis of the progress of students and the data of the survey of students and teachers allows us to draw conclusions about the low level of self-organization of students in the learning process.

*Keywords:* digital technologies, higher education, international students, academic performance, self-organization.

### Introduction

In the modern world, digitalization is becoming one of the main ways to transform the economy and the social sphere (Tarman & Kilinc, 2022; Dudukalov, Terenina, Perova, & Ushakov, 2021; Pogosyan, 2021; Öztürk, 2020). The process of digitalization, actively taking root and penetrating into all areas and levels of education, forces teachers to reconsider the established teaching

methods, mastering new ones, and integrate into a different, digital format of the education system. At the same time, the expert teaching community notes that this must be done thoughtfully without losing the established successful traditions of the national and global education system (Olawale, Mutongoza, Adu, & Omodan, 2021; Omodan & Diko, 2021; Krylova, Zhundibayeva, Kadyrov, Talaspaóeva, Fatkiyeva & Sabiyeva, 2020).

The challenges associated with the COVID-19 pandemic required a new structural analysis and sociocultural understanding, which has and will continue to have a multidimensional and systemic character (Mutongoza, Olawale, & Mzilikazi, 2021; Evans-Amalu & Claravall, 2021; Akhmetshin, Vasilev, Zekiy, & Zakieva, 2021; Martirosyan, Ilyushin, & Afanaseva, 2022).

Forced restrictions, uncertainty, as well as the absence of any ready-made scenarios for resolving the emerging crisis forced the adoption of non-standard and previously unused measures to organize training using distance learning systems built on the basis of computer learning.

Thus, educational institutions faced a number of fundamentally new problems of a functional, content and social nature.

The main task for higher education is still to maintain the quality of education, which is especially important in the competitive environment of international education.

Moreover, the number of international students has decreased significantly in recent years: "All internationalization strategies involve student mobility. Over the past 40 years, the number of international students in the world has increased from 800 000 people up to 4500000. The most intensive growth was observed at the turn of the XX-XXI centuries. In recent years, the growth rate has slowed down significantly. This is due to a number of objective reasons. Thus, traditional student exporting countries (China, Vietnam, South Korea and others) are making serious efforts to improve the quality of their own national education systems. As a result, a network of world-class national universities has emerged in these countries, which have become attractive to their own students" (Godenko, Boyko, Gadgiev, & Filimonova, 2021, p. 132). Distance learning and the pandemic have exacerbated this process: the number of students has decreased even more over the past two years, so these studies will help to give an analysis of the two years of distance learning, reveal emerging problems and outline ways to overcome them (Rodrigues, Cerdeira, Machado-Taylor, & Alves, 2021).

In light of the foregoing, the relevance of this study lies in the fact that an analysis of the academic performance of international students in the pre-pandemic and pandemic period, a com-

parison of the obtained results will help to identify the effectiveness/ineffectiveness of university education achieved with digital technologies in the pandemic period of time. Accordingly, there is a need to understand such a phenomenon as earning a college degree in a remote format in present conditions (pandemic, widespread digitalization of education).

*The purpose of the article* is to analyze the effectiveness of teaching international students pursuing a bachelor's degree in the conditions of e-learning (EL) using distance learning technologies (DLT).

To achieve this goal, a number of objectives need to be solved.

The main objectives of this study are:

- The observation of the opinions of students and teachers of Russian universities in terms of the problems and difficulties in learning and in organizing the learning process using e-learning (EL) and distance learning technologies (DLT). This will allow, in its turn, to identify of "weak points" and requests from the teaching and student community in order to determine (develop) an effective strategy for the development of digital higher education;
- the analysis of objective academic performance data based on the results of the following academic years: 2018/2019, 2019/2020, and 2020/2021 (performance analytics: scores, the number of students who successfully passed their exams and the number of those who failed). The choice of these academic periods will allow us to analyze in the most objective way the outcomes and to compare the effectiveness of teaching in traditional and distance formats.

The study was conducted using theoretical methods of scientific knowledge, as well as a number of empirical methods for collecting and processing data. A questionnaire survey was chosen as the main empirical method. Quantitative data processing was carried out by standard mathematical methods of data analysis.

### *The Hypothesis*

The hypothesis of the study was the assumption that full-time and distance learning has a number of significant differences, as a result of which a

sharp, unprepared transition to a distance electronic learning format entails the following problems:

- a low level of self-organizing for the most part of students (up to 60 %) the weak level of self-organization of students and the lack of direct contact with a teacher have a negative effect on the efficiency of teaching and students' progress;
- teachers and students experience certain social difficulties in communicating with each other because Russian education, to a greater extent, involves direct personal interaction between the teacher and the student;
- the transition to a distance learning format requires a revision of teaching methodology, as well as test system updating and criteria for evaluating the knowledge gained in a distance format;
- the organization of the educational process in a distance format should take into account a significant increase in the workload and the number of working hours of a teacher.

### *Research Questions*

The main objective of this study was to consider the opinions of Russian and international students of Russian universities on the problems and difficulties they encountered, namely:

- Has students' performance changed during the pandemic season compared to before the pandemic period?
- How did distance learning affect the level of educational efficiency?
- How important is the interaction between a teacher and a student in the process of distance learning, and how does this affect the quality of education?

Besides, the opinions of teachers of Russian universities about working remotely during the period of forced restrictions have been observed.

### *Literature Review*

Many studies exploring the role of a teacher and his or her interaction with students in the field of digital technologies have appeared (Shmalko & Rudakova, 2021; Otts et al., 2021; Balganova,

2021; Kalimullina, Tarman & Stepanova, 2021; Strugar, 2022). Korotaeva, I.E., reflects on the role of interactive education conducted by means of digital technologies when teaching Russian as a foreign language. The author has performed a study to assess the impact of computer training on the quality of language acquisition among students of engineering programs at the Moscow Aviation Institute, trying to determine the most promising technologies for use in the classroom (Korotaeva, 2020).

The observations of J. G. Semikina and, D. V. Semikin, E. P. Panova in the field of project activities are interesting (Semikina & Semikin, 2019; Panova, Tjumentseva, Koroleva, Ibragimova, & Samusenkov, 2021).

The role of distance learning in the humanities is described in the investigation carried out by Kivi et al. (2021) and others (Shurygin, Saenko, Zekiy, Klochko, & Kulapov, 2021; Demichev, 2021).

Abramova and Korotaeva reflect on how the participation of students in a scientific conference affects the level of efficiency in mastering Russian as a foreign language and how digitalization affects the research activities of students. The article describes the results of the study of the experience of organizing student conferences by departments of the Institute of Foreign Languages of the Moscow Aviation Institute (Abramova & Korotaeva, 2019).

Some research in this area has already been conducted among international students at the Preparatory Faculty of Russian as a Foreign Language (pre-university stage of study) at Volgograd State Technical University (Tyumentseva, Kharlamova, & Godenko, 2021). The statistics have led the researchers to the following conclusion: "A few consequences (according to the results of performance analytics) ought to be noted: firstly, there is a decrease in progress of students when toughed with DLT and EL tools, due to the low level of self-organization of students and the unpreparedness of educational material for presentation in a digital format; secondly, a decline in the quality of teaching, which demonstrates the unpreparedness of teachers to use the facilities of this form of education is undeniable; and, thirdly, a statement concerning the impossibility of a complete transfer of teaching at the university to the digital environment is obvious. In addition, the authors describe the prob-

lems that regional universities face during the process of digitalization of education and the implementation of the Russian education export program” (Tyumentseva & Kharlamova, 2021, p. 149). This article presents data from the research that has been conducted for the first time among undergraduates pursuing bachelor’s degrees.

## Methods

An online survey of Russian and international students from three Russian universities was chosen as the main empirical method. These universities are Moscow Polytechnic University, M. V. Lomonosov Moscow State University, and Volgograd State Technical University. The respondents were offered questions with an option of choosing an answer (multiple or limited). A number of questions had an open form and assumed an original answer with its subsequent coding. In addition to the online survey of students, indirect semi-structured interviews with professors from these universities were conducted. All teachers who agreed to take part in the survey were interviewed via online video conferencing.

For the comparative analysis of academic achievements, a content analysis of various analytics, including students’ academic reports provided by universities, was applied.

The analyzed periods of the study were chosen not by chance:

2018/2019 was a “pre-pandemic” academic year, during which the educational process was organized in the traditional full-time form;

2019/2020 was an academic year marked by the introduction of project-based methods in the conditions of EL and DLT;

in 2020-2021 the educational process was organized in a mixed format.

We assume that a comparative analysis of learning outcomes will clearly demonstrate the

readiness (preparedness) of both universities and students for the proposed learning formats, and it will also allow us to draw a conclusion about the effectiveness of the learning formats and methods used.

For the analysis, we used the following data:

- the number of students who achieved successful results during the examination period and the number of those who failed their exams;
- the effectiveness of training – the ratio (in %) of students who received “excellent”, “good”, and “satisfying” marks.

## Participants

In the survey, 700 people, including professors and international and Russian undergraduates educating at Russian universities, took part. The inquiry encompassed 500 respondents from Moscow Polytechnic University, 70 international students from M. V. Lomonosov Moscow State University, 100 international students from Volgograd State Technical University, and 30 representatives of these universities’ teaching staff. The students are the representatives of both far abroad countries: Tanzania, Afghanistan, Vietnam, China, Iraq, Iran, Algeria, Palestine, Bangladesh, Syria, Pakistan, Egypt, etc., and near abroad countries: Belarus, Tajikistan, Uzbekistan, Kazakhstan, etc.

The students were divided into some groups according to the following criteria:

- full-time / extra-mural learning,
- employed / unemployed,
- students of Humanities, Arts, and Social Science courses/students taking mathematics and engineering courses.

The teachers who took part in the study represented various enlarged areas of training implemented in higher education in Russia. In regard to the courses taught, the teachers represented the humanitarian area, technical and natural sciences (mathematical) (table 1).

Table 1.

## Participants of the Study.

Respondents	Number of respondents	Percentage ratio (%)
Students	670	100%
Moscow Polytechnic University	500	74,6%
Academic groups:		
Course 1	175	26,1%
Course 2	145	21,6 %
Course 3	100	14,9%
Course 4	80	10,4%
Lomonosov Moscow State University	70	10,4 %
Academic groups:		
Course 1	30	4,5%
Course 2	20	2,5%
Course 3	10	1,5%
Course 4	10	1,5%
Volgograd State Technical University	100	15 %
Academic groups:		
Course 1	47	7%
Course 2	33	5%
Course 3	12	1,8%
Course 4	8	1,2%
Professor-teaching staff. (Russian as foreign)	30	100%
Moscow Polytechnic University, Professor-teaching staff. (Russian as foreign)	6	20 %
Lomonosov Moscow State University, Professor-teaching staff. (Russian as foreign)	9	30%
Volgograd State Technical University, Professor-teaching staff. (Russian as foreign).	15	50%

*Data Collection Tools*

Data collection was carried out according to the designed questionnaire consisting of 20 questions.

When compiling questions, the authors determined the following parameters (criteria) of analysis: the way of organizing classes, the methods used by a teacher, the technical means and software used in classes, the subjective attitude of the respondent to the organization of the lesson, expectations from the classes, the convenience of time of the lesson, the value of the lesson (practical and theoretical), the data of performance analytics (according to the results of the academic period: number of students who passed exams/ number of students who failed exams; absolute progress). These criteria, according to the authors, are the main variables necessary for the study undertaken.

When applying the analysis of analytics, in-

cluding the student's academic reports provided by universities, the following criteria were used:

- the number of students who successfully passed their exams / the number of students who failed their exams by the end of the exam period;
- the effectiveness of education - the ratio (in %) of students who received first-class, second class and third-class honours.

Organizing semi-structured interviews with university teachers, the authors of the study considered it important to find out the attitude of teachers to the distance learning format, the degree of preparedness and technical equipment of both universities, and the technical capabilities of the teachers themselves.

The interview also focused on how teachers assess their state of health in connection with the transition to a distance learning format and what positive aspects of distance learning, especially using project-based methods, they could point

out what practices should be applied in further teaching activity.

### *Data Collection*

The article was prepared based on the materials from two stages of a sociological study, before the introduction of distance learning (the academic year 2018/2019, before the pandemic) without using distance techniques and a year after the introduction of distance learning (the academic year 2020/2021 during the pandemic).

The tools of the first stage of the study were retained as the basis for the second stage and supplemented with a number of questions that made it possible to concretize the experience of the forced transition of universities to distance learning and evaluate its implementation during a more prepared transition in the academic year 2020/2021.

Data collection was carried out in the variant of the correspondence Internet survey by means of the Google forms platform using a standardized questionnaire form. The respondents were mainly offered questions with the option of choosing an answer (multiple or limited); a number of questions had an open form and assumed an original answer with subsequent coding. The questionnaire was anonymous, and the personal data of the respondents were not recorded anywhere.

In the first and second stages, all teachers who agreed to participate were interviewed. The semi-structured interviews were conducted via an online video link. The respondents were informed in advance about the objectives of this study and some pre-planned questions. During the conversation, the participants of the online interview were asked to express their personal opinion on how exactly the educational process is changing during the period of the transition to distance learning.

The academic performance analytics was provided by the universities that participated in this study. Moscow Polytechnic University, Volgograd State Technical University and M.V. Lomonosov Moscow State University provided information on the student's progress in the academic years 2017/2018, 2018/2019 and 2019/2020. The analysis of the reports made it

possible to track the average students' performance rating in dynamics.

### *Data Analysis*

The analysis of the results of the study was carried out in the context of the bibliographic base and thematic blocks, compiled to solve the tasks of the study and aimed at realizing the main goal of the project. For the analysis, standard general scientific methods were used in order to obtain a qualitative assessment of the effectiveness and ineffectiveness, prospects and limitations of the available empirical data, and methods of collecting and processing them.

Quantitative data processing was carried out by standard mathematical and statistical methods of analysis. Primary information was processed using Microsoft Excel.

The statistical significance of the experimental data was verified using the Wilcoxon T-test<sup>1</sup>, which is used to compare indicators measured under two different conditions but using the same respondents.

To assess the effectiveness of teaching and level of academic performance, a description of the correlations between the following criteria was made:

- The general level of student's motivation to study
- Satisfaction with the learning process
- Attendance of various types of classes.

The article reveals the problems of modern higher education in light of today's current situation under the circumstances of transferring the education system to the distance format. In this article, by comparing the data of exam periods in different academic years, a number of statistical regularities have been identified: an increase in students' performance in 2021 compared to 2018/2019, while deterioration of health, a drop in motivation, a change in mood for the worse (depression, despondency, disappointment in education), a drop in the quality of education. The authors of this article make an attempt to identify the reasons for the increase in academic performance, which occurs against the backdrop of a growing.

<sup>1</sup> <https://math.semestr.ru/group/wilcoxon.php>.

## Results

We noted above that the methods of project activity were used by teachers in their work not only with foreign students but also with Russian students following the national curriculum of higher education. The effectiveness of the use of these methods, in our opinion, is confirmed by the analytical data.

The analyzed periods of the study were chosen not by chance:

- 2018/2019 was a “pre-pandemic” academic year, during which the educational process was organized in the traditional full-time form;
- 2019/2020 was an academic year marked by the introduction of project-based methods in

the conditions of EL and DLT;

- in 2020-2021 the educational process was organized in a mixed format.

We assume that a comparative analysis of learning outcomes will clearly demonstrate the readiness (preparedness) of both universities and students for the proposed learning formats and will also allow us to draw a conclusion about the effectiveness of the learning formats and methods used.

For the analysis, we used the following data:

- the number of students who achieved successful results during the examination period and the number of those who failed their exams;
- the effectiveness of training – the ratio (in %) of students who received “excellent”, “good”, and “satisfying” marks (Fig.1).

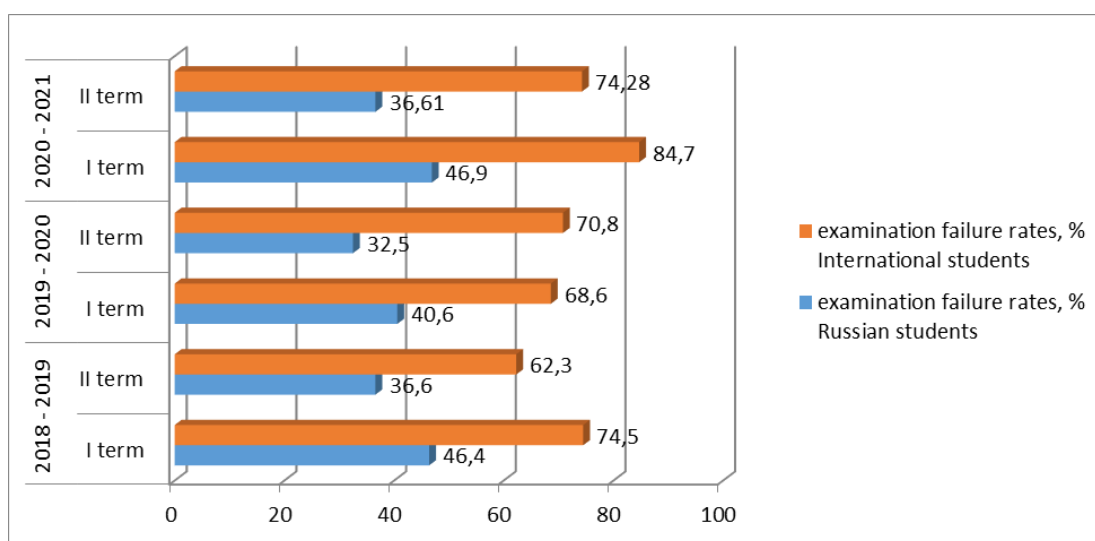


Figure 1. Dynamics of Change in the Number of International and Russian Students of VolgSTU Studying Full-Time Who Passed and Failed Their Exams During the Examination Period.

The histogram presented in Fig. 1 illustrates the dynamics of changes in the number of International and Russian students who passed and failed their exams in the pre-pandemic period (the academic year 2018/2019) and in the academic years 2019/2020 and 2020/2021.

The results of the II term of the academic year 2019/2020 (the first period of the introduction of distance learning) show an increase in the number of students, who did not achieve satisfying grades in both groups compared to the results of the first term of the academic year 2019/2020, but at the same time, they correlate with the results of the second term of the academic year

2018/2019 with the only difference that a significantly smaller number of international students had summer test and examinations in the summer of 2020.

The next histogram (Fig. 2) demonstrates the quality of mastering the educational material by foreign students – absolute academic performance data. The presented educational analytics data illustrate a 2% decrease in absolute academic performance in the group of international students in the 2<sup>nd</sup> term of the academic year 2019/2020 compared with the indicators of the first term of the same academic year, while Russian students showed an increase of 8.1%.



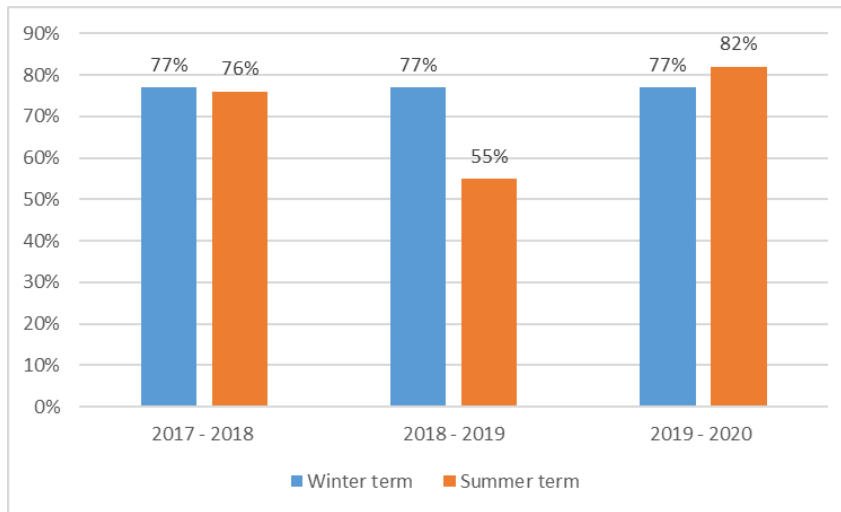


Figure 2. Progress of the Average Rating Score Among the International Students at the Preparatory Faculty of VolgSTU

In the first term of 2020/2021, the absolute academic performance of international students is sharply reduced to 15.3% (by 13.9% compared to the first term of the academic year 2019/2020), and in the group of Russian students – to 53.1% (by 14.4% compared to with the 1st term of the academic year 2019/2020), which is due to the lack of adaptation of first-year Russian students, and poor technical conditions (lack of a stable Internet connection, time difference) for teaching international first-year students. A significant part of international students (up to 75%) began

the academic year outside the Russian Federation.

Educational analytics of the preparatory faculty for international students (Fig. 3) for 2017/2018, 2018/2019 and 2019/2020 also demonstrate that the average student performance rating in the pandemic academic year 2019/2020 did not decrease and varies within limits: 77% and 76% (I and II terms of the academic year 2017/2018), 77% and 55% (I and II terms of the academic year 2018/2019) and 77% and 82 % (I and II terms of the academic year 2019/2020).

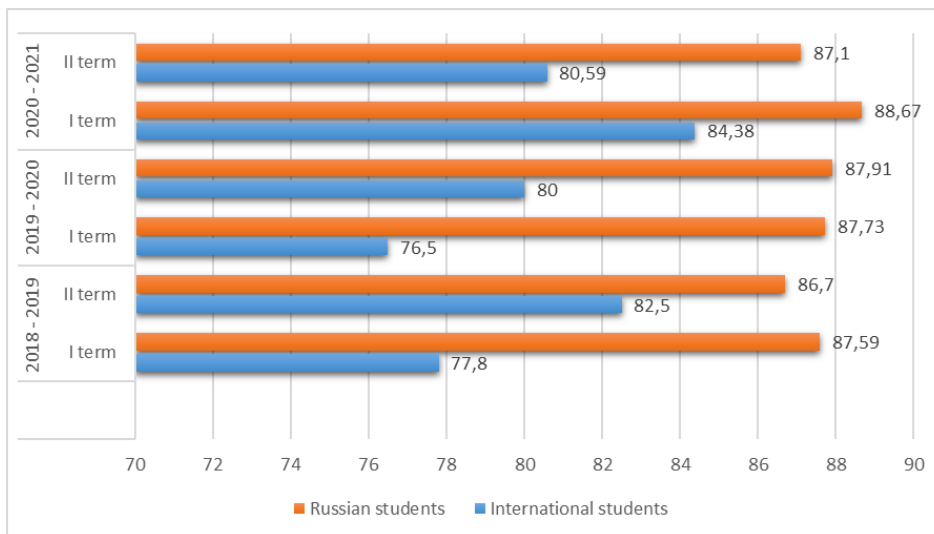


Figure 3. Indicators of the Average Rating Score Among Russian and International Students of VolgSTU.

A comparative analysis of the indicators of the average score the rating of Russian and inter-

national students shows a gradual increase in both groups under consideration (Fig. 4).

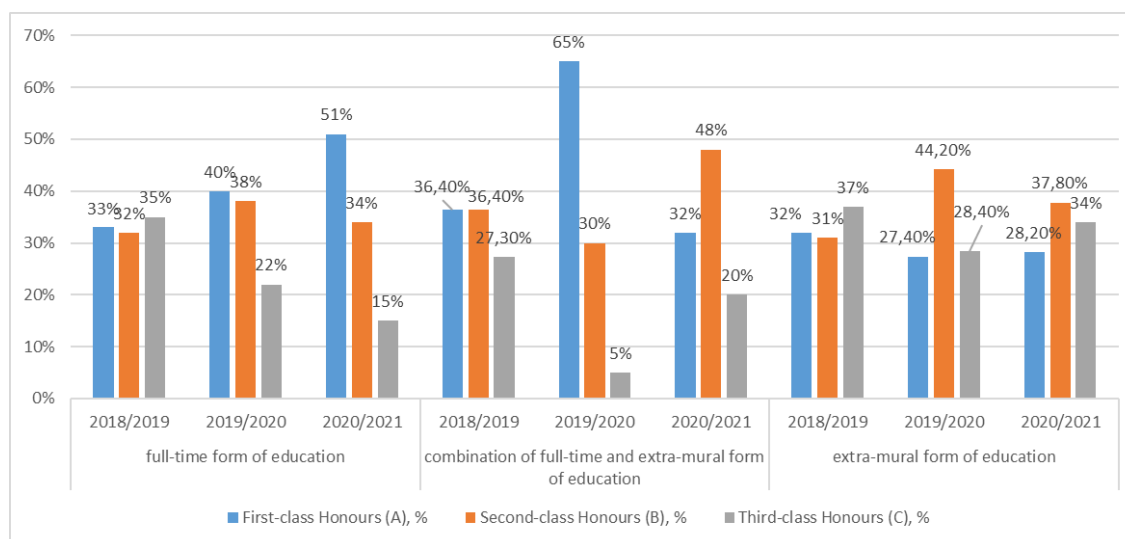


Figure 4. Academic Performance of International Students (Different Forms of Study) of Moscow Polytechnic University.

The presented data allow us to conclude that the academic performance of Russian and international students during the period of distance and combined formats of education using the methods of project activity demonstrates stability.

For greater objectivity, we compared the academic performance of Russian and international students enrolled in higher education programs following the national curriculum.

Histograms allow visualizing the qualitative performance indicators of Russian and international students.

In particular, the percentage of foreign students who achieve 90–100 scores (according to the results of the 1st and 2nd terms) is traditionally lower (compared to Russian students): 32.1% and 23.5% in the academic year 2018/2019; 17.9% and 23.7% in 2019/2020; 29.6% and 18.82% in 2020/2021.

The percentage of students who achieve 76–89 scores in both groups is quite consistent: 50.4% / 48.6% and 50.02% / 41.2% in the academic year 2018/2019; 51.5% / 48.9% and 48.4% / 38.5% in 2019/2020; 51.3% / 51.02% and 48.77% / 51.76% in 2020/2021 and, accordingly, the number of international students who achieve 61–75 points is more than Russian students in this category.

Let us turn to the analysis of the work of the teaching staff and to the comparative data of the education analytics of the Moscow Polytechnic University (MPU) during the organization of teaching students using distance learning technologies (DLT) and e-learning (EL). The teaching staff of the university revised the training courses in a short time and adapted them for being used in the distance learning format.

An analysis of the academic performance of international students of Moscow Polytechnic University over the past three academic years (2018/2019, 2019/2020 and 2020/2021) allows us to note the following: an increase in the number of international students (of all forms of education) who achieved “excellent” and “good” grades and, accordingly, a decrease in the number of students who achieved “satisfying” grades (see Fig. 4).

According to the results of the exam period, 33% of international students in the academic year 2018/2019, 40% in the academic year 2019/2020 and 51% in 2020/2021 had “A” marks.

As for the grade “B”, 32% got it in the academic year 2018/2019, 38% in the academic year 2019/2020 and 34% in the academic year 2020/2021.

There is a steady decrease in the number of

full-time international students whose knowledge and skills are evaluated with a “C” grade: from 35% in 2018/2019 to 22% in 2019/2020 and up to 15% in 2020/2021.

There is no mistaking a sharp increase in the number of international students of a combined form of education (full-time and extra-mural form) and of an extra-mural form of education who had excellent and good results in the 2019/2020 academic year.

There have been the following changes in the performance of international students following a combined form of education (full-time and extra-mural form):

in the academic year 2018/2019, 36.4% of students received “excellent” and “good” grades;

in the academic year 2019/2020, 65% of students got “excellent”, 30% of students took a mark “good”;

in the 2020/2021 academic year, 32% of students got “excellent”, and 48% of students had a “good” mark.

There is a change in the number of students whose achievements were graded as “satisfy-

ing”: 27.3% – in 2018/2019, 5% – in 2019/2020 and 20% – in 2020/2021.

Let us consider the change in the progress of international students following an extra-mural form of education:

The number of those who achieved “excellent” in 2018/2019 is 32%, 27.4% – in 2019/2020 and 28.2% – in 2020/2021;

the number of those who performed with “good” grades is 31% in the academic year 2018/2019, 44.2% in 2019/2020, 37.8% in 2020/2021;

the number of third-class degree students or students with “satisfying” results was 37% in the academic year 2018/2019, 28.4% in 2019/2020 and 34% in 2020/2021.

For the representativeness of the data of our study, we carried out a comparative analysis of the absolute academic performance of international students of two universities – Moscow Polytechnic University (MPU) and Volgograd State Technical University (VolgSTU), which is summarized and presented in the histogram in Fig. 5.

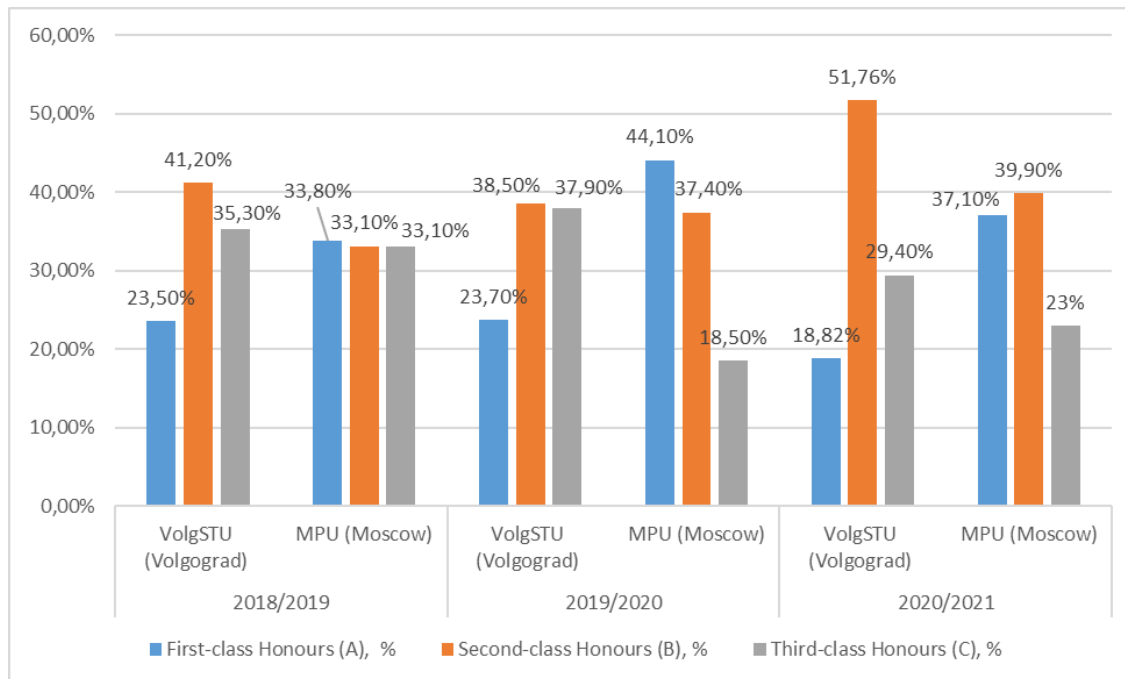


Figure 5. Absolute Performance of International Students at the End of the Academic Year (All Forms of Education) MPU and VolgSTU (Academic Years 2018/2019, 2019/2020, 2020/2021).

Thus, the presented data of educational analytics allow us to draw the following conclusion: despite the shocking state of the educational sys-

tem caused by a sharp transition to a distance format, the learning process in most educational organizations was organized and carried out at an

adequate level. The level of mastering the educational material practically did not suffer. At the same time, a comparative analysis of data on the level of academic performance of students (both Russian and international) of two universities (MPU and VolgGTU) and the number of students who passed and failed their exams in the “pre-pandemic” year and in the first period of the introduction of the distance format education (2019/2020) characterizes, in our opinion, to a greater extent the level of self-organization of students in the learning process: students with a low level of self-organization either missed the exam period or failed.

But, at the same time, the transfer of the learning process to a distance format did not take into account the technical readiness of international students for such an organization of learning: up to 30% of international students did not have the technical ability to actively participate in the learning process (problems with a stable Internet connection not only abroad, but and in Russia). However, considering the fact that there was less live communication between students and teachers, or it was often completely excluded, the following question arises: did this affect the way the students perceived the educational material?

The respondents, in the absolute majority, pointed to the following problems that became apparent in the process of distance learning: a drop in the level of motivation due to the lack of communication with the teacher and, as a result, the difficulty of mastering the material, a decrease in class attendance, and a decrease in teacher control.

So, the attitude of students towards distance learning in 2020 (the answers of the respondents were divided: 53% expressed a negative disposition, whereas 52% expressed a positive attitude towards the distance learning format). In addition, 70% of students answered that it was impossible to learn Russian remotely; however, 30% answered this question positively.

It is necessary to clarify that up to 90% of those who gave a positive answer to this question were students from Near-Abroad countries who studied Russian in schools in their homeland. The students' answers to the question, “Is it difficult to study remotely?” It was divided as follows: 43% answered that it was not difficult, and 57% noted difficulties.

Students' responses to the question “Was it

interesting for you to study distantly?” were included in the survey in 2021. In 2021, students' assessments of distance learning and attitudes towards this form of organization of learning are less harsh and categorical: 45.8% answered positively (“Yes”), 21.7% - “rather YES than NO”, 23.3% of respondents answered that it was “partially” interesting, 5.8% - “Rather NO than YES” and only 3.4 % of respondents answered negatively (“No”).

For a more detailed understanding of the difficulty of distance learning for students, we included several questions in the 2020 questionnaire, for example: “Preferred conditions for a good understanding of educational material”. Here, the vast majority of students (83%) noted that in the classroom, when communicating with a teacher in person, the understanding of the material is faster and better, and only 17% preferred the distance format. A more detailed analysis of students' answers allows us to conclude that up to 100% of those who prefer the distance format are senior students who speak the language at a sufficient level and already have a high level of academic and sociocultural adaptation.

The distribution of students' answers, in what way, in their opinion, the distance learning format affects the understanding of the educational material. Almost half of the students (49%) did not note a “strong” influence of e-learning (EL) on their understanding of the required material, 34% did not note changes in the understanding and assimilation of the material under study when it was performed using EL and distance learning technologies (DLT); 6% even characterize the improvement of knowledge in the subject, i.e. noted a positive impact, and 11% noted a negative impact of EL and DLT on the understanding of the educational material.

The answers presented, in our opinion, cannot serve as objective data since they do not take into account many factors that can have a strong influence; in particular, not every academic discipline or course can be mastered in a distance format (it concerns, for example, laboratory / practical classes in chemistry or physics).

The student's answers to a similar question: “How did studying disciplines in the distance LMS format affect your education?”, included in the questionnaire in 2021, were distributed as follows: 30.8% of respondents noted the same level (“did not influence, the same level”), 30%

described the level as “fairly good influence, learned new things” and 15.8% mentioned a positive impact (“positively influenced, the level increased noticeably”); 17.5% of the students surveyed noted a rather negative impact (“I will have to catch up”), and 5.9% emphasized a negative impact (“failure in learning”). Thus, by 2021 (compared to the survey data of 2020), the number of students who negatively assessed their education in the distance learning format had increased from 11% to 23.4% (5.9% + 17.5%).

The technical capabilities of international students in the period March – June 2020: 28% used a phone when studying in a distance format, 26% used a laptop, 24% used a computer, and 22% used a smartphone. Such a rather shocking transition of the Russian education system to a distance learning format in March 2020 caused a sharp “collapse” of Internet connections – the quality of the Internet connection dropped sharply; information resources turned out to be unprepared for such a sharply increased load.

In 2020, when studying using distance learning technologies, students and teachers used the

following software and instant messengers or services: WhatsApp – 34%, Skype – 31%, Zoom – 26%, and Viber – 9%.

Each university has developed its own distance learning organization system, or LMS – Learning Management System. LMS is a kind of database of electronic resources and educational materials. VolgSTU has an electronic information learning environment (EILE), and Moscow State University, named after M.V. Lomonosov, has a Center for Distance Education (CDE). How well is this system organized? Is it in students’ demand, and is it convenient to use? What improvements are required, and why is special attention from the university administration needed?

To find out the opinion of students about the level of organization of specific types of training sessions in the distance learning system, the 2021 questionnaire included the following questions: “What types of distance learning did you like the most?” (see Fig. 7) and “For what reason did you use this or that element (resource) of the LMS? (Multiple answers possible)” (Fig. 6).

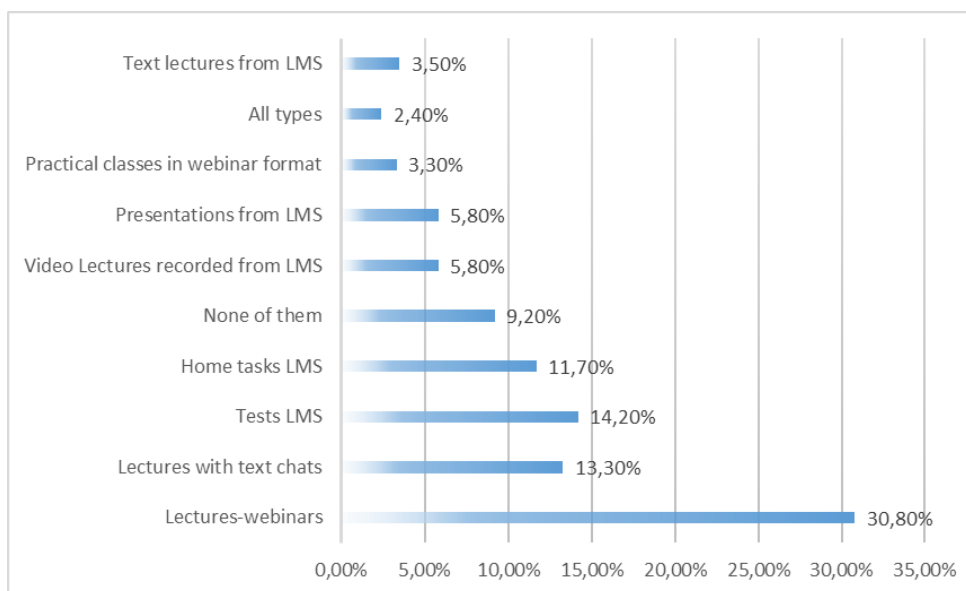


Figure 6. The Most Preferred by Students Having Distance Learning Format Types of Classes, 2021.

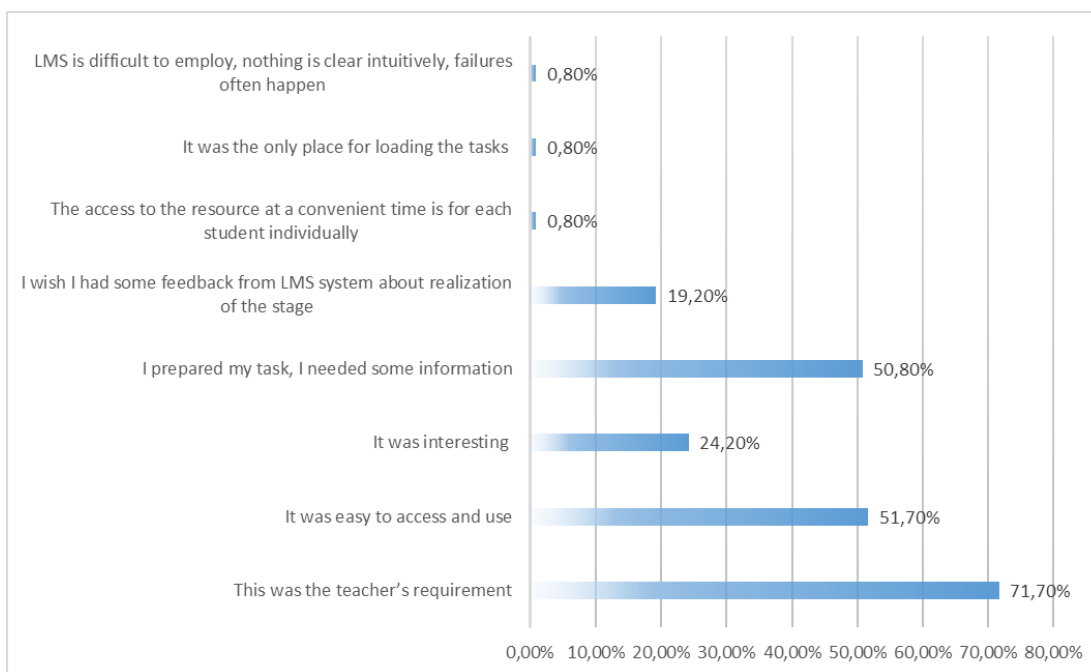


Figure 7. Reasons for Students to Use LMS Elements (Resources) in Distance Learning Format, 2021.

Based on the results of the first period of introducing digitalization in the Russian education system (March – June 2020), the authors conducted a survey of some teachers, the purpose of which was to find out the attitude of these teachers to the distance learning format, the degree of readiness/preparedness and technical equipment of both universities and the technical capabilities of teachers. The teaching community repeatedly noted that most universities and, accordingly, the teaching staff were not ready for the distance format. Since it is impossible to create a distance learning course in any discipline by simply converting a traditional learning course into an electronic digital format, in this regard, in March-June 2020, teachers (45%) noted a significant increase in their workload when preparing for classes, 33% of the teaching staff noted a slight increase in workload, and 22% did not note an increase in workload.

The diagram illustrates the distribution of teachers' answers to the question: "How convenient is it for you to conduct classes in a remote format?" – 67% answered that it was "not con-

venient", 22% – did not note any difference, and 11% – noted the convenience of conducting classes in a remote format. The readiness of teachers and the readiness of the courses they teach for the introduction of digital technologies in the Russian education system.

The distance learning format cannot be characterized unambiguously, either only in a positive or only in a negative way. Teachers' assessment of their health status: 44% noted a deterioration in their health (visual impairment, overweight; besides, 45% of the teaching staff noted a significant increase in workload when preparing for classes in a remote format), and 56% of teachers did not notice a negative impact on their health.

In a special group of teachers, the authors included teachers of Russian as a foreign language (RFL), who were asked to evaluate the impact of distance learning on the acquisition of Russian by foreign students (regarding the types of communicative skills) in the first year of study at the preparatory faculty. These data are presented in the histogram in Fig. 8.

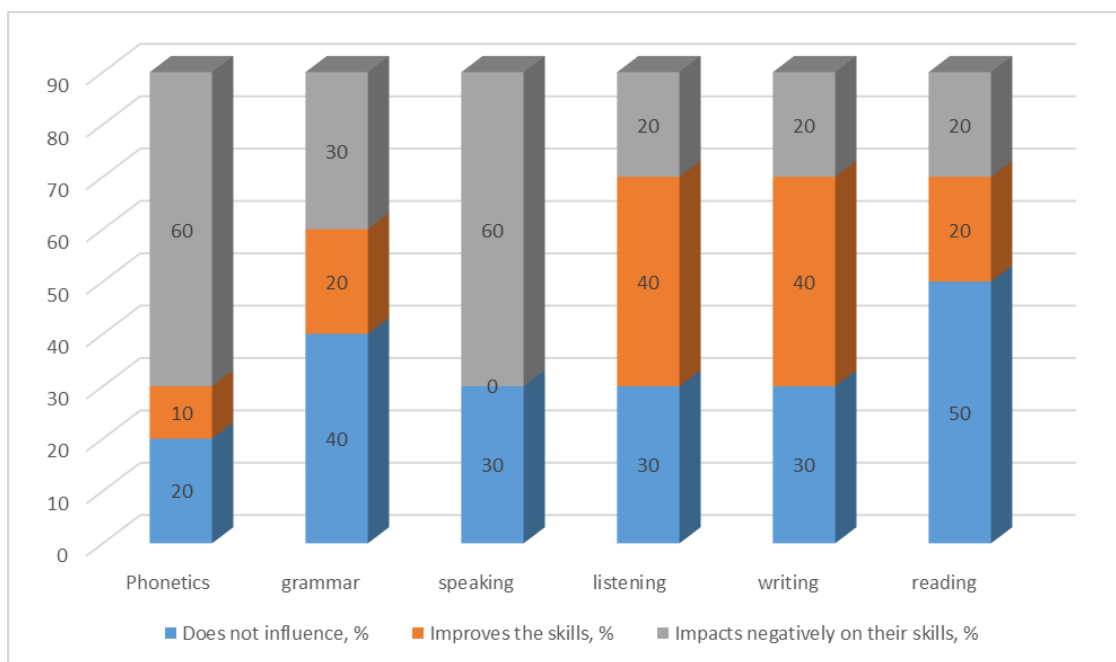


Figure 8. The Influence of Distance Learning on the Development of RFL Course Students' Skills (Considering Types of Communication), in %.

Nevertheless, teachers note some positive aspects of the conditions of distance learning, es-

pecially when using project-based methods (see Fig. 9).

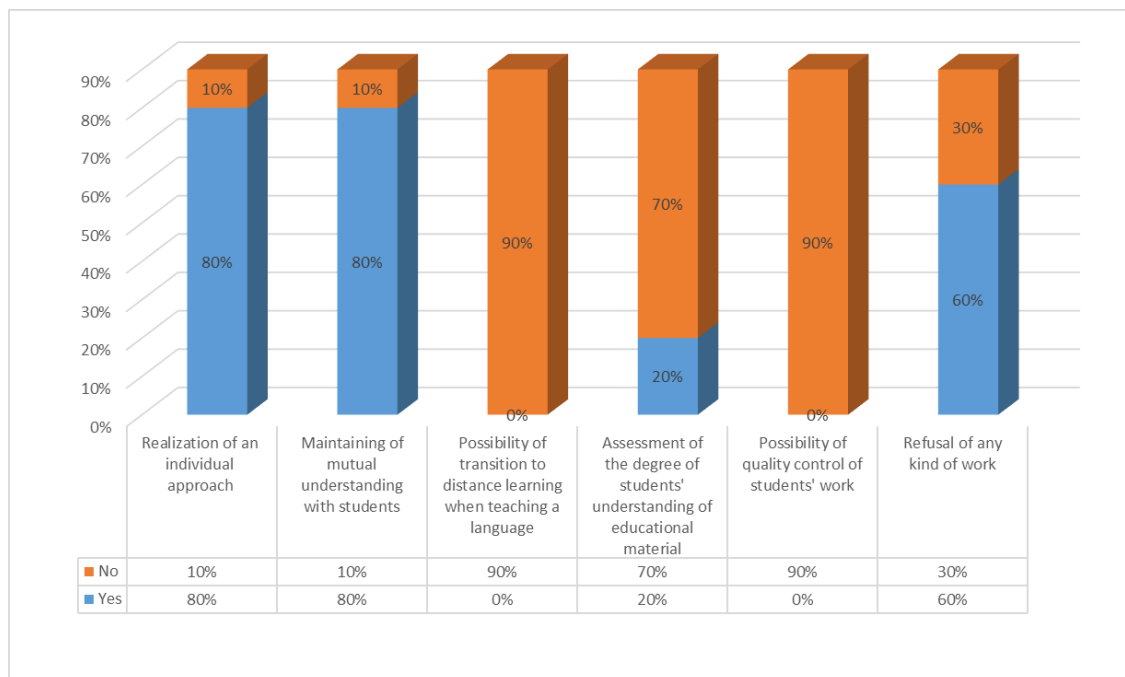


Figure 9. Teaching Staff Evaluation of the Possibilities of Online Learning and Using Distance Learning Tools When Teaching Russian as a Foreign Language at the Preparatory Faculty.

Next, we will find out whether the quality of perception of educational material by students

was affected, taking into consideration the fact that the percentage of live communication be-

tween students and teachers has become less or absent altogether.

Next, we will find out whether the quality of perception of educational material by students was affected, taking into consideration the fact that the percentage of live communication between students and teachers has become less or absent altogether (see Fig. 9).

The results of the survey showed that due to the lack of live communication with teachers, it became more difficult for students to master the material and, as a result, 69% of students had a decrease in motivation to study.

The spontaneous transition to a distance learning format also revealed that the efforts of teachers to fill educational content were not always justified. Thus, 28.6% of students admitted that they experienced difficulties in perceiving the lecture material that the teachers tried to lay out, and they were not always able to understand it on their own without a teacher's consultation.

It turned out that this situation forced students to turn to various Internet resources for a better understanding of the material; 43% of students reported this.

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For the humanities, where it is necessary to develop the skills of rhetoric and communication, the unwillingness of students to prepare for seminar discussions turned out to be alarming. While during face-to-face seminars, most students tried to answer the teacher's questions orally, sometimes using lecture notes or textbooks, on the contrary, as surveys showed, in online classes, most students read out the text found on the Internet during the seminar itself.

The number of those who spoke in their own words also decreased from 27.6% to 16.2%. It can be concluded that after the introduction of the distance learning format, students began to prepare worse for classes, and the teacher did not

always have the opportunity to control this.

If I had a chance – I cited a prepared beforehand answer. If a question is unexpected, I tried to think it over and answer it.

## Discussion

The presented data of educational analytics correlate with the teaching community's opinion about the first results of the process of digitalization of Russian higher education, which allows us to draw certain conclusions and note the reasons for the "explosive" growth in academic achievements:

- in 2019/2020, all educational materials for each course were in general and permanent access in the electronic educational environment of each university, and teachers, stayed almost constantly in contact. There was no need (and it was impossible!) for students of combined ad extra-mural forms of education to seek a personal meeting with teachers for consultations;
- the examinations of 2019/2020 were carried out remotely, using DET and EL tools; by this time, the control system had not yet been created (and tested!) Therefore, it was impossible to conduct a qualitative test of students' knowledge;
- there is a feature of the modern education system (not only Russian!): at present, the education system is dominated by a test system of controlling knowledge, which is far from perfect (in particular, students often have the effect of "recognition" of the answer; one cannot exclude the effect of "random" choice of the correct answer when doing a test);
- we consider it necessary to underline the fact that, at present, there is no knowledge test system using distance learning technologies and electronic means. Each university and each teacher decide on the issue of conducting knowledge control in a remote format independently. And for the teaching community, this methodological problem is one of the most important.

## Conclusion

The analysis of the data received during research



allows us to draw the following conclusions:

- comparison of the data on progress, and also - quantities of the students who successfully passed examinations, and those who did not pass them, with the data of interrogation of students on the organization of remote training confirms our hypothesis (= the assumption), about a low level of self-organizing of students during training and at the absence of direct contact to the teacher reduce the efficiency of the process of training and negatively influence an average level of progress;
- the comparative analysis of interrogation of teachers and students has revealed a problem of social dissatisfaction for the lack of opportunities for personal interaction in systems “the teacher - the student” and “the student - the student” that also has had a negative effect on the productivity of process of training, that also is the confirmation of second our hypothesis on social difficulties in dialogue with each other (the teacher - the teacher, the teacher - the student, the student - the student) in connection with that the Russian education in the greater degree is personally focused.
- the analysis of interrogation of teachers and students about the suggested organizational forms of educational employment and comparison of technical opportunities of universities regarding the organization of the process of training and the organization of the monitoring system of knowledge in a remote format has designated a problem of revision (or creations new) methodical forms of teaching and creation of essentially new monitoring system of knowledge of students at training in an online format. The existing monitoring system of knowledge is imperfect and difficultly applied in use for a distance format of training. The absence of opportunities for qualitative examination of students in a remote format leads to divergences in the data on the progress of students and words of students about the reduction in the quality of education and loss of motivation at remote training. It has been marked by authors in the third hypothesis.
- in connection with enough short periods of time of preparation of high schools to introduction of an online format of training and the revealed “conditional” readiness of high schools regarding educational - methodical

maintenance of the process of training in such format, authors mark (at the analysis of the data of interrogation of teachers) substantial growth of loading of teachers by preparation for each educational employment. It corresponds with the fourth hypothesis of the given research.

- The analysis of the experience of the organization of the process of training in the high schools submitted in the given research during the period from 2020 till 2021 and generalizing the data received during research allows authors to draw the following conclusions on prospects of development of an education system:
- transfer of an education system completely in a distance format is impossible without irreversible losses in the quality of training,
- the organization of training in the mixed format in view of features of separate subject matters has been approved by all respondents and has recommended itself positively.

Authors consider that process of introduction of digital technologies in the educational process will allow for increasing quality of Russian education has made it more competitive, mobile and flexible.

The analysis of the data obtained during the study allows us to draw the following conclusions:

- the transition of the university education process to a distance format has not affected students’ performance (changes in students’ performance indicators are within the statistical error);
- the comparison of academic performance data, the number of students who passed exams successfully and those who failed them and a survey of students in terms of the organization of distance learning allows us to conclude that students’ self-organization when preparing for classes is low.

At the same time, the transfer of the learning process to a distance format in a short time has affected the quality of the knowledge gained, which is confirmed by the data from a survey of students and teachers. The respondents of all groups of respondents noted a decrease in motivation and interest on the part of students.

An imperfect control system and the lack of opportunities for qualitative testing of students’ knowledge in remote mode cause discrepancies

in the data on students' performance and the students' words about the decrease in the quality of education and the loss of motivation when learning distantly.

Analyzing the experience of organizing education in the period from 2020 to 2021 and summarizing the data obtained during the study, we can conclude that:

- the transition of education completely to a distance format is impossible,
- the organization of education in a mixed format, taking into account individual academic disciplines, was approved by all respondents and has proven itself positively.

The authors believe that the process of introducing digital technologies into the educational process is going to improve the quality of Russian education, making it more competitive, mobile and flexible.

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