

Analyses of Students' Grades Before, During and After Covid-19 Pandemic

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Abstract

The article aims to present one aspect of the impact of the imposition of pandemic restrictions on the quality of education. The results of the evaluation of students at the New Bulgarian University (NBU), Bulgaria, Department of Informatics before, during and after the pandemic were analyzed. All students are in the upper year of their studies in bachelor program. Assessment results in 3 courses are presented: „Computer periphery” (5th semester), “Digital video formats” (7th semester), “Fundamentals of multimedia presentation” (6th semester).

1. Introduction

The article aims to present one aspect of the impact of the imposition of pandemic restrictions on the quality of education. The results of the evaluation of students at the New Bulgarian University (NBU), Bulgaria, Department of Informatics before, during and after the pandemic were analyzed. All students are in the upper year of their studies in bachelor program. Assessment results in 3 courses are presented: „Computer periphery” (5th semester), “Digital video formats” (7th semester), “Fundamentals of multimedia presentation” (6th semester). The pandemic of COVID-19 has had a huge impact on the education of people of all ages. There are many articles that describe the impact of the pandemic on children, teenagers, students, there are many aspects that can be explored and analyzed.

The cumulative impact of the COVID-19 pandemic on students' academic achievement has been large, but underexplored. [1] During lockdowns, remote learning is probably the only way to tackle the disruption in classroom education. [2] From March 2020 through the 2020–21 school year, the COVID-19 pandemic introduced a unique set of challenges for schools, teachers, and students. For more than a year, students attended school through a mixture of remote, hybrid, and inperson options that varied

across the state. In addition, students and teachers faced the stress created by the public health risks of the pandemic, a national recession. Although standardized test scores are one useful measure, there is much more to learn about the impacts of the pandemic on learning and engagement. [3]

2. Challenges for Students and Professors

The impact of the pandemic is on the mentality, learning habits, the use of electronic devices and systems for learning and testing acquired knowledge. The pandemic was a challenge not only for the trainees, but also for the trainers.

The teachers were put in a situation:

- not only to prepare electronic training materials, but also to prepare adequate tests (for self-testing and for final evaluation),
- to set tasks for self-preparation,
- to provide links to useful sites with additional information on the specific topic, not only textual, but also audio-visual and multimedia.
- to devote much more time not only to preparing their lectures, but also to checking homework and tests.

- to be online almost 24/7 so that they can answer questions and problems that arise for students when learning the material or developing the assigned projects.
- when checking the tests, the teachers must decide whether to recognize the given answer as correct or not because of the use of artificial intelligence. Apparently, the answer given by the student essentially contains correct information, but it is not presented in the teacher's lecture in this way. How to objectively assess the student?

On the other hand, the students have to overcome several challenges:

- To learn the provided materials by themselves. Of course, professors are willing to respond, but not every individual feels comfortable "bothering" with questions.
- Teachers, in their efforts to give more of themselves, sometimes overdo it with the provided electronic materials and students cannot cope with reviewing, assimilating and teaching them
- Students are young people for whom the free time obtained from lectures and exercises at the university they assume that they can use for entertainment, which leads to the neglect of education.
- The introduction of artificial intelligence is a temptation that students easily succumb to. When they take a test from home, armed with several mobile devices, they ask the AI a question and provide it as the answer to the test.

3. Analysis of Students 'results

In general, e-learning has been a standard at NBU for years, and most courses were ready for distance learning, with uploaded materials in Moodle.

In NBU, there is a requirement to have at least two tests during the semester, based on which a current assessment can be formed, if the students have also fulfilled additional requirements announced in advance by the teacher (assessments of homework, attendance, projects, group works,

etc.). In case the student is not satisfied with the current grade or did not receive one, he/she takes the final exam.

It is for this reason that several types of grades are analyzed in the article: namely test 1, test 2 and final exam.

In Bulgaria, the grades are in the range:

- 6 - Excellent
- 5 - Very good
- 4 - Good
- 3 - Sufficient
- 2 – Weak / Failed

There are variants in grades, multiplied by 0.50 (ex. 3.5; 4.5; 5.5)

Let's see the results in the Computer Periphery course: the grades of two tests during the semester and those of a final exam. The chart (Fig. 1) presents the percentage ratio per semester before, during, and after the pandemic. In the first and last case, the tests are conducted at the university under the supervision of the teacher. During the pandemic, students are remote and the teacher, apart from being in the virtual classroom for support, has no monitoring of the conditions in which the student answers the questions. For the first test, it is striking that before and during the pandemic the results are almost comparable. However, there are no excellent grades during the pandemic. Note that the test is early in the announcement of online learning and students still have their study habits. Of serious concern is the fact that, after returning to a university environment, poor results are too high a percentage. Students are weaned from taking written tests without relying on the help of electronic devices.

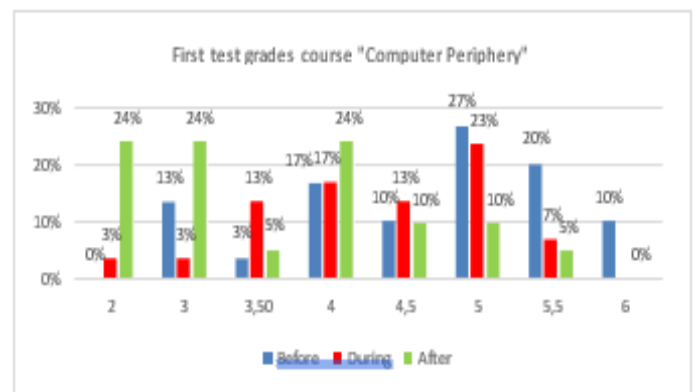


Fig. 1 “Computer periphery” first test grades

Regarding the second test (Fig. 2), the students, already adapted to the new conditions, being at the university and being tested in the presence of a teacher, are doing better after the pandemic. It has excellent grades - 5%.

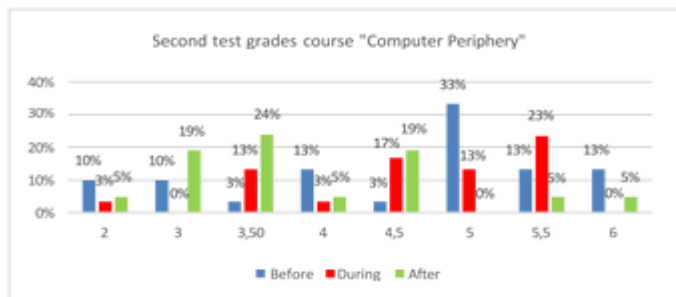


Fig. 2 “Computer periphery” second test grades

The graph for the final exam (Fig. 3) shows only a strong deviation in low grades - as much as 13%, compared to 3% for the first and second tests. The explanation is that these are assessments of students who did not appear for the first and second tests, did not participate in the learning process. But in all three graphs it is noticeable that the pre-pandemic estimates have an almost identical distribution.

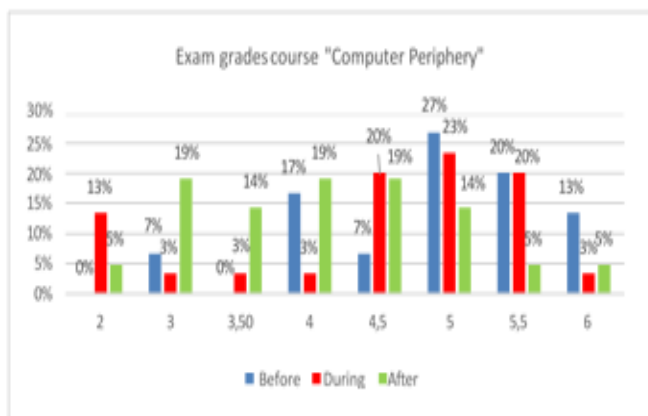


Fig. 3 “Computer periphery” final exam grades

Let's also see the grades in the second course "Digital video formats". On the first test before the pandemic (Fig. 4), the absence of poor grades and a high percentage of excellent grades are noticeable. Students attend, ask questions, do exercises. After the pandemic, the number of excellent grades dropped sharply at the expense of poor and average grades.

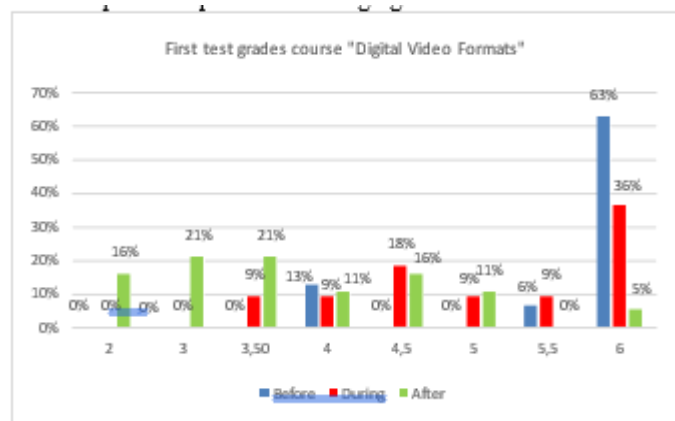


Fig. 4 “Digital video formats” first test grades

In the second test (Fig. 5), it is noticed that again the percentage of excellent grades before the pandemic is high, and after it the percentage of poor grades decreases. The results achieved during the pandemic are mostly in the upper range. But in all three variants there are no weak grades.

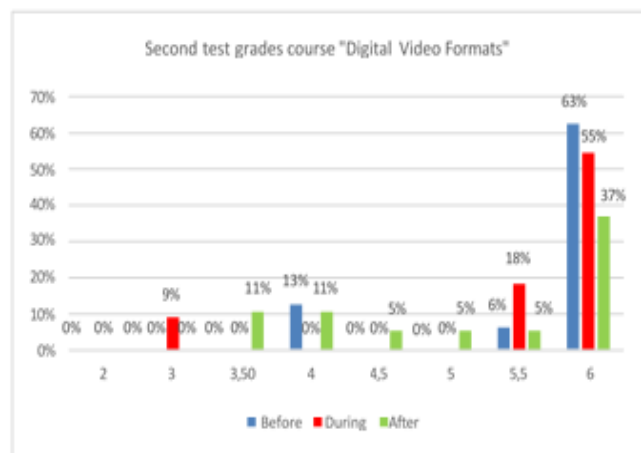


Fig. 5 “Digital video formats” second test grades

In terms of the final exam, there was a steady predominance of very good and excellent grades before COVID-19, and a significant drop in performance after. (Fig. 6)

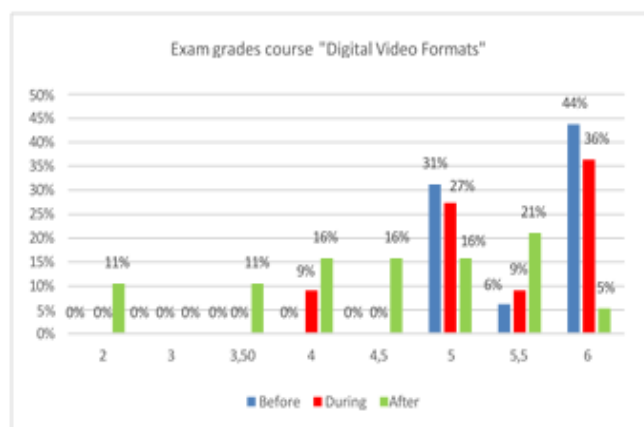


Fig. 6 “Digital video formats” final exam grades

And finally, let's look at the analogous data for the "Fundamentals of multimedia presentation" course, which traditionally has a very large number of students and for 5 years the students have been divided into 2 groups - face-to-face and remote. But most students prefer to join the virtual classroom instead of attending the university (that's their right). It is also understandable the consequence that the majority prefer to take the tests online outside the lecture hall. Let's see the results comparison!

In the first test (Fig. 7), scores are heavily concentrated in the upper range. A small number of poor, average, and even good grades in all three periods under consideration.

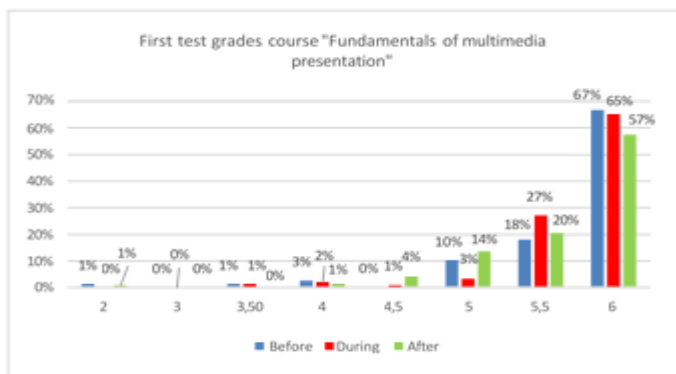


Fig. 7 “Fundamentals of multimedia presentation” first test grades

In the second test (Fig. 8), we can now see higher percentages available at the lower end of the grading scale, but again very good and excellent grades prevail. In both tests, student performance is better in the pre-pandemic period.

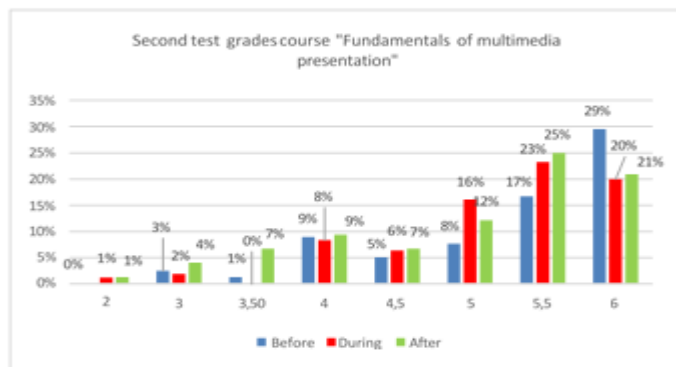


Fig. 8 “Fundamentals of multimedia presentation” second test grades

The grades from the final exam (Fig. 9) are quite similar to those from the first test - a strong shift towards the high ones.

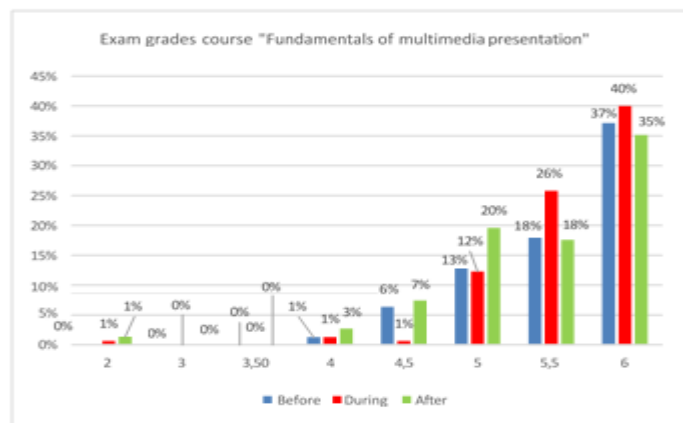


Fig. 9 “Fundamentals of multimedia presentation” final exam grades

Another interesting element is to track the achievements of students, divided by gender, in the three considered stages: before, during and after the pandemic. The following table (Tabl. 1) shows the average exam results in the three courses studied.

Table. 1 Exams grades

		Exam grades		
		Computer periphery	Fundamentals of multimedia presentation	Digital video formats
male	before	4,55	5,48	4,94
	during	4,16	5,61	5,25
	after	3,11	5,28	3,75
female	before	5,3	5,61	5,63
	during	4,82	5,62	5,67
	after	4,25	5,65	4,75

It is striking, on the one hand, that female students achieve higher results in all three periods, but also that in the period after the pandemic the results are significantly lower than before it.

4. Conclusion

In conclusion, we can say that distance learning imposed by the pandemic has greatly disrupted the discipline and study habits of students. Their return to universities seems to require time - to visit the libraries again, to maintain relations with their fellow students, to contact their professors.

References

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