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An empirical investigation of pandemic impact on IT students' educational schedule

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Abstract. The novel coronavirus disease (COVID-19) forced the Ukrainian government to introduce lockdown on March 12, 2020. In addition, the transition to distance learning in schools and universities has posed new challenges to the entire education system and young people. In this study, a survey of IT students was conducted using Google forms. The questions in the questionnaire were aimed at studying the impact of online learning on the distribution of the students' day and the impact of the pandemic on the emotional state of a young person. The survey results showed significant changes in the daily schedule of students caused by the pandemic crisis. Thus, a remarkable increase in computer time can be a negative factor in influencing the health and emotional state of the younger generation.

Keywords: COVID-19 · University students · online learning · home education · pandemics.

1 Introduction

In 2020, humanity has entered a crisis period caused by a new user pandemic, called COVID-19. The study of the impact of pandemics on various areas of human life is just beginning. But it is safe to say that such a phenomenon in various areas of human activity will be long-term. In many cases, this effect is complicated to predict because of many factors that have never been encountered before. The main feature of the current situation is that there is an Internet network that can be used via the Internet – services. One of the services most affected by the pandemic is education. According to the UNESCO monitoring, more than 100 countries have requested strict quarantine restrictions, which have affected more than half of students worldwide [1].

This work is devoted to an empirical study of the impact of the pandemic on students' daily life. The study was conducted during the graduation of students studying at the Faculty of Computer Science and Information Technology of Lviv Polytechnic National University for the specialty 122 “Computer Science”, using Google Forms in 2021. The survey contained 10 questions on the impact of pandemic constraints on student learning. 159 respondents took part in the

survey. These are students of the first, the second and the fourth years of study, including 93 first-year students. Most of them are young people aged 17 – 21. The ratio of girls to boys from 2 to 1. It should also be noted that the students of the faculty, in terms of selection of applicants, are the best graduates, the average entrance score for enrollment above 185 out of 200. Lviv Polytechnic National University started online learning on March 12, 2020. From that date, the Government of Ukraine [2] in response to the spread of infectious disease called for strict quarantine restrictions by preventing the spread of disease. The return to audit training took place only in a few weeks in September 2021. The purpose of this work is to draw attention to the significant transformation of the time spent on the computer of students during online learning, in relation to the sanitary norms established by the legislation of Ukraine [3].

2 Brief publication analysis

Despite the relatively short duration of the pandemic, there are enough publications to study the various effects of this complex phenomenon. Let us take a brief look at the ones we think are directly related to this study. In [4], using telephone interviews, a study of the impact of lockdown on the professional careers of university students in Bangladesh was conducted. Researchers noted a significant negative impact of pandemic restrictions on both the professional growth of students and the general morale. In [5], a survey of 59 respondents from Qassim University QU-KSA examined the relationship between student learning strategies and factors such as class schedule, access to classes, level of engagement in online learning. The study aims to find positive factors for the opportunity to offer better learning opportunities to students both during the Corona and in the post-Corona periods. In [6], the classification of the effects of various factors on the course of the pandemic. In [7, 8], a survey of students assessed the perception of Polish students of the transfer to distance learning. The authors note the negative impact of the pandemic on the learning process and the well-being of students, especially freshmen. Paper [9] examines the impact of the pandemic on various spheres of life in 11 countries: United Kingdom, Belgium, Netherlands, Bulgaria, Czech Republic, Finland, India, Latvia, Poland, Romania, and Sweden. An interesting study of the perception of the pandemic by Polish society in 2020 based on the analysis of the content of posts on social networks is presented in [10]. The use of neural networks to predict the nature of the pandemic is presented in [11]. The [12] shows that the COVID-19 pandemic, and social stratification is growing: the poor are getting poorer and the rich are getting richer. In work [13], in order to improve the sustainable education basis on distance learning, a survey was conducted among both students and teachers. Paper [14] analyzes the advantages and disadvantages of online teaching, the level of satisfaction and acceptance based on a survey of high school lecturers. It has been shown that the pandemic has a significant impact on the digitalization of education. Paper [15] shows that the educational system in Ukraine is changing significantly due to the impact of the pandemic. The authors noted

that along with the negative effect, a large proportion of changes are positive. Thus, it can be concluded that the scientific community of the world is actively engaged in studying the new phenomenon of the COVID-19 pandemic, which caused the crisis on the planet, and its effects on various parts of human life.

3 Student survey results

The questions for the survey were inspired by the fact that the authors, as high school teachers, felt a significant increase in the daily workload caused by the pandemic and the transition to an online form of teaching material. This has also led to a significant increase in the time spent working with the computer. This time significantly exceeded the norms established by law (max. 8 hours a day [2] with a break of at least 10 minutes every hour). It was clear that the increase in workload for students is not less, but perhaps more. We would like to emphasize that the conducted research cannot be considered universal, ie one that reflects the situation in Ukraine in general, given that

- (i) the number of respondents is insignificant (159 respondents in total);
- (ii) students are a specific contingent in terms of age and preferences;
- (iii) questions for the survey were formed by non-professional sociologists;
- (iv) only 10 questions were asked. Nevertheless, we believe that the results objectively indicate the problem of the inability to control compliance with sanitary norms of computer time during distance learning.

Consider the answers to the question: “How much has the pandemic increased the number of hours spent at the computer per day?” and “How many hours per day has your time for self-study or study material increased?” The proposed answer options are a number from 1 to 10. The results are presented in Fig. 1, Fig. 2, respectively. We see (see Fig. 1) that 110 (69.1%) respondents believe that working hours have increased by 5 hours or more. Moreover, 25 (15.7%) answered that this time increased by 10 hours. Fig. 2 also shows that if these hours are associated with learning, conciseness 88 (55.3%) respondents say that the time spent at the computer has increased by 5 or more hours.

Question “Has your budget spending changed due to the pandemic?” received the answer that the costs have not changed – 74 (46.5%); increased – 80 (53.3%); decreased – 6 (3.8%). Question “Did the pandemic affect your visits to streaming pages?” has answers that visits have not changed – 87 (54.7%); increased – 70 (44%); decreased – 2 (1.8%). 55 (34.6%) have feelings of insecurity in the future due to the pandemic. 135 (84.9%) consider themselves sufficiently informed about the methods of preventing the spread of coronavirus. The question “Has anyone in your family lost their job due to a pandemic” was answered “no” 122 times (76.7%), the answer “yes” 9 times (5.7%), partially 28 times (17.6%). Interestingly, the total number of unemployed (fully and partially) of 23.3% correlates well with the value of unemployment due to the pandemic of 22%, which was calculated by UNICEF experts in Ukraine. Among all 159 respondents, 73

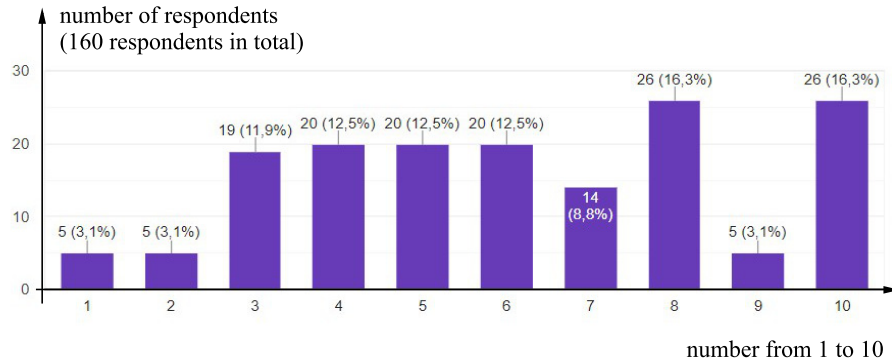


Fig. 1. Answers to the survey question: “How much has the pandemic increased the number of hours spent at the computer per day?” (160 respondents).

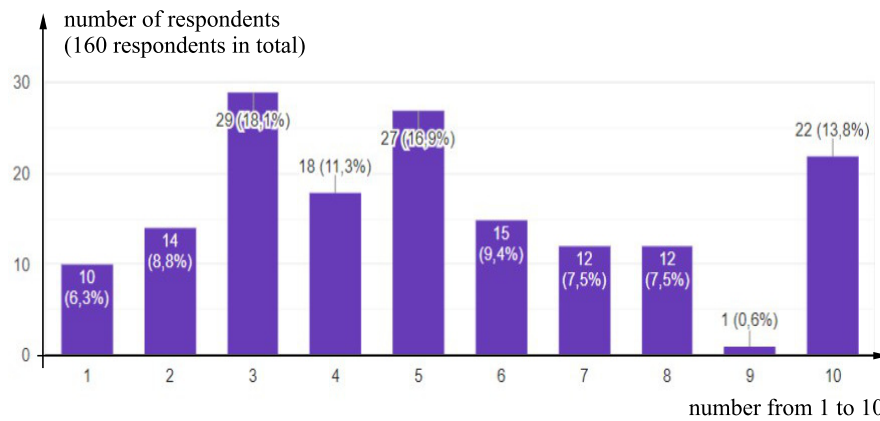


Fig. 2. Answers to the survey question: “How many hours per day has your time for self-study or study material increased?” (160 respondents)

(45.9%) believe that the number of online purchases has not changed, 80 (50.3%) has increased, and 6 (3.8%) have decreased.

The question “Which area of your life has been most affected by the pandemic?” received the following distribution of answers (presented in descending order): training – 114 (71.7%); rest – 26 (16.7%); work – 7 (4.4%); relations in the team – 3 (1.9%); for all of the above – 3 (1.9%); family relations – 2 (1.3%); the rest (relationship with the opposite sex, health) received 1 vote (0.6%).

When answering the last question: “What is most annoying about quarantine restrictions?” students had the opportunity to write their own answer. That is why we received such a list of things that cause irritation during the forced quarantine restriction of citizens' freedoms. The list is presented in descending order: lack of travel – 49 (30.8%); closed cafes, bars, restaurants – 35 (22%); wearing a mask – 29 (18.2%); closed cinemas 13 (8.2%); lack of concerts and music festivals 10 (6.3%); all listed – 9 (5.6%); indoor gyms – 4 (2.5%); closed museums – 2 (1.3%); distance learning – 2 (1.3%); destruction of sleep mode 1 (0.6%); disorganization of people 1 (0.6%); difficulty establishing a daily routine 1 (0.6%); quarantine restrictions 1 (0.6%); nothing annoying 1 (0.6%).

Thus, all 10 survey responses were analyzed and the empirical study was completed.

4 Conclusion

The study fully confirms the opinion of other researchers that the pandemic has a great impact on higher education. This effect is long-term and has not yet been studied. At present, the final consequences of the pandemic are absolutely impossible to predict. However, the study shows certain trends that show the short-term impact of quarantine restrictions, as well as the transition to distance learning. Adding to the optimism is the fact that the transition to distance learning has some positive consequences, which will probably be implemented in the educational process in the postpartum period. Among them is the constant access of students to methodical materials in the form of video lectures, presentations, or text methodical developments. Among the most negative consequences are the lack of social communication, an extremely significant increase in time spent working with a computer. An increase in the length of the working day and a change in the daily routine can be observed in both students and teachers. In the future, it would be interesting to conduct such a study in a next the 2022 year. It will be interesting to expand the list of questions in the survey, add more questions related to the professional orientation of students.

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