

# INTED **2021**

15th International  
Technology, Education and  
Development Conference

8-9 March, 2021

## CONFERENCE PROCEEDINGS



*Sharing the Passion for Learning*

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**Published by**  
IATED Academy  
iated.org

**INTED2021 Proceedings**  
15th International Technology, Education and Development Conference  
March 8th-9th, 2021

**Edited by**  
L. Gómez Chova, A. López Martínez, I. Candel Torres  
IATED Academy

ISBN: 978-84-09-27666-0  
ISSN: 2340-1079  
DL: V-370-2021

Book cover designed by  
J.L. Bernat

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# THE IMPACT OF THE PANDEMIC SITUATION ON THE EUROPEAN HIGHER EDUCATION: SURVEY RESULTS OF ULSIT

**Tereza Trencheva, Stoyan Denchev, Evelina Zdravkova**

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## Abstract

**Introduction:** Covid-19 affected higher educational institutions not just in Wuhan, China where the virus originated but all other higher educational institutions in 188 countries as of April 06, 2020. Educational countermeasures are taken to continue educating the students despite the COVID-19 predicaments. More than 300 million students worldwide are having their education disrupted by the spread of Coronavirus. Universities haven't faced this level of disruption in generations, but unlike any time in the past, we have the ability to continue education even when universities close. Life has taken a new direction, raising new questions about how distance learning can be delivered; how it can be improved; what is its impact in educational and psychological aspect. One of the urgent questions is the quality of the educational process in isolation and how to preserve the basic teaching principle in pursuit of the strategic goals of higher education.

**Presentation:** The essence of this approach was not clear in terms of parameters, but it was known that it would be the result of the construction of a new social phenomenon - education in isolation during a pandemic. Real-time information sharing and cultural communication is already a fact. The challenge facing the higher education system is to improve the organization of the learning process and to integrate traditional bases into new platforms. The aim of the paper is to present main findings from the empirical study "Life with COVID-19 and something else: educational and psychological aspect", dedicated to the impact of the pandemic situation on the educational process at the University of Library Studies and Information Technologies (ULSIT), Bulgaria.

**Methodology:** Therefore, this study employed an online survey to investigate the level of satisfaction of online learning at ULSIT and COVID's psychological impact on the students at the university. The data were analyzed through quantitative and qualitative methods.

**Results:** The study was met with interest by students in total 120 invitations sent to respondents received 92 fully completed responses. Respondents consider as an advantages of online learning that they have more time for their own self-improvement, share that the new teaching methods in the university environment motivate them; no time is lost to move, everyone has the freedom to plan their day alone, and that the home environment predisposes to more in-depth work. Disadvantages include the reduction of the effectiveness of training due to technical problems, the increased time spent in front of the computer, the lack of live contact with colleagues.

**Conclusion:** The findings from this study will be of much benefit to university administrators and management in taking future emergency decisions concerning the implementation of online learning programs for students at the university.

**Keywords:** Covid-19, higher education, online training, distance learning, social isolation.

## 1 INTRODUCTION

At the beginning of 2020, the fear-ridden world was forced to face a new crisis – the coronavirus pandemic – and Europe was defined as epicenter of this pandemic by the World Health Organization, despite the fact that the crisis emerged in China. An unknown disease, announced as Covid-19, presented us with a new challenge. In a few days we adjusted - from live communication to remote, and continued our daily work, but from a distance. Covid-19 affected higher educational institutions not just in Wuhan, China where the virus originated but all other higher educational institutions in 188 countries as of April 06, 2020.

We witnessed how quickly and adequately a large number of EU Member States exercised their constitutional law and introduced a state of emergency throughout their territory. Borders, shopping centers, cultural centers, kindergartens, schools and universities were closed and a ban on holding mass events of all kinds was introduced. All these actions have raised many questions, including : will



the world be able to cope with this crisis, protect people's values and interests; will it be able to protect and guarantee the irrevocable human right to education and access to vocational and continuing training; how and under what conditions all this could happen [1].

In pursuit of two main goals – two main goals – to preserve the health of students, teachers, university students, lecturers, researchers and innovators and to keep the educational and scientific process going, European Union countries have undertaken different actions. In order to overcome the effects of the spread of the disease caused by the COVID-19 virus, various restrictive measures have been introduced in the academic systems, with almost all countries suspending work and physically closing their educational and scientific institutions.

Educational countermeasures are taken to continue educating the students despite the COVID-19 predicaments. More than 300 million students worldwide are having their education disrupted by the spread of Coronavirus.

Universities haven't faced this level of disruption in generations, but unlike any time in the past, we have the ability to continue education even when universities close. Life has taken a new direction, raising new questions about how distance learning can be delivered; how it can be improved; what is its impact in educational and psychological aspect. One of the urgent questions is the quality of the educational process in isolation and how to preserve the basic teaching principle in pursuit of the strategic goals of higher education.

## **2 THE AIM, BACKGROUND AND METHODOLOGY OF THE SURVEY**

### **2.1 The Aim**

The main aim of the empirical survey “**Life with COVID-19 and something else: educational and psychological aspect**” is to investigate the impact of the pandemic situation on the educational process at the University of Library Studies and Information Technologies (ULSIT), Bulgaria. Therefore, this study employed an online survey. The data were analyzed through quantitative and qualitative methods. In this paper, following research questions are explored:

- what is the impact of COVID-19 and the level of satisfaction of online learning at ULSIT;
- what is COVID's psychological impact on the students at the university.

### **2.2 Background**

The isolation we experienced, especially in the first months, was one of the biggest challenges for everyone in the recent decades. During trials, things crystallize - the hidden becomes clear, the obvious is illuminated even better - both good and bad. The essence of this approach was not clear in terms of parameters, but it was known that it would be the result of the construction of a new social phenomenon - education in isolation during a pandemic. Real-time information sharing and cultural communication is already a fact. The challenge facing the higher education system is to improve the organization of the learning process and to integrate traditional bases into new platforms.

At the end of the first lock down after the first wave of the pandemic, we conducted a survey because we needed the frank opinion of students about what was happening so that together we could continue, improve and develop online learning at ULSIT. The survey examines the general condition of students in isolation and online learning. There are questions to which more than one answer can be given, as well as to freely express a suggestion or opinion. The survey is anonymous because it is believed that the answers are frank, critical and sincere.

The digital world is a new culture of teaching, and young people become accustomed to a new culture of learning and communication. Covid - the situation, social isolation is far from ideal, but it is an opportunity to change, to develop capabilities in the field of technology. Technology has the potential to optimize the learning process and improve it, although in the beginning the forms of distance learning were not countless possible platforms or opportunities.

### **2.3 Methodology**

A survey instrument was developed by the authors in order to collect data from students who study in professional field “Public Communications and Information Science”, regarding their level of satisfaction of online learning at ULSIT and the COVID's psychological impact on the students at the university. The

questionnaire consists of two main panels and 21 main questions divided in them. It includes mainly closed and few open questions.

As mentioned earlier, survey was conducted at 10 specialties at ULSIT, university accredited to carry out training in the professional field "Public Communications and Information Science". To achieve maximum accuracy in the study of general aggregate, with a view of specificity obtained from the survey data, there is a limit, which relates only to students in degree "Bachelor". The study was done on the principle of systematic random selection with stratification to 10% of the students in the professional field "Public communication and information sciences". Data collection was carried out by online survey. Survey data is processed by the statistical package SPSS (Statistical Package for the Social Sciences) for Windows 21.0.

### 3 FINDINGS OF THE SURVEY

The study was met with interest by students in total 120 invitations sent to the respondents and received 92 fully completed responses. Respondents consider as an advantages of online learning that they have more time for their own self-improvement, share that the new teaching methods in the university environment motivate them; no time is lost to move, everyone has the freedom to plan their day alone, and that the home environment predisposes to more in-depth work.

#### 3.1 COVID-19 in University Environment

Interesting are the answers to the questions "Which form for distance learning did you use?" and "Which canal for learning in electronic environment do you like best?".

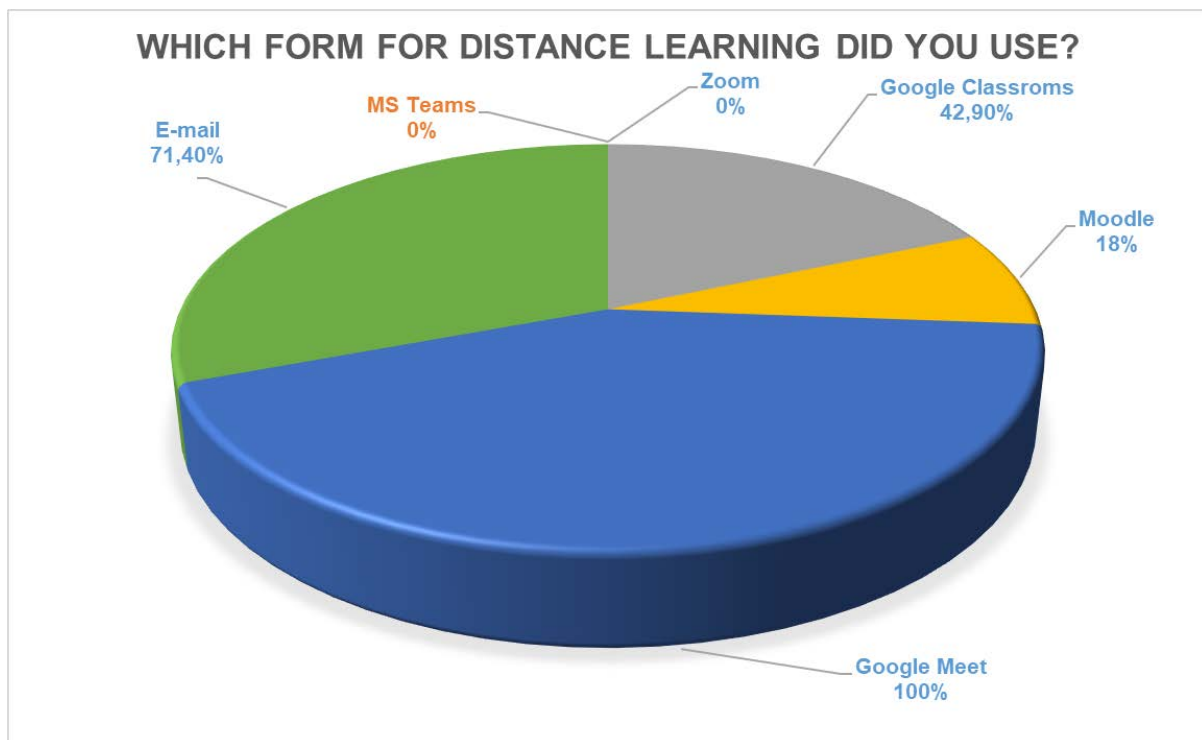


Figure 1. Percentage distribution of the forms of e-learning used by students

All respondents indicate Google Meet, followed by email - 71, 4%. Only 42.9% studied through Google Classrooms. Moodle is a learning platform for only 18%. As can be seen from fig. 1 during the pandemic the students at ULSIT use different forms of learning in an electronic environment. The most common and accessible to all in the various disciplines was Google Meet, followed by the traditional approach to communication - email.

However, it is strange that 89.3% indicate e-mail as the training channel in the e-environment that they like mostly. Followed by training and communication platforms - 53.6%. 28.6% prefer social networks and the so popular Viber, Skype, Facebook.

To the question: "Did you encounter difficulties in conducting distance learning?" half (50%) of the respondents are adamant that they have not encountered any difficulty, and the other half is divided between answers such as: I do not understand the tasks, I do not have enough time to prepare all tasks, the Internet is weak, I have problems with technology, I am not sufficiently prepared for such communication.

**Regarding the advantages** of distance learning, respondents unanimously agree that "New methods of teaching in a university environment motivate". 60.7% are of the opinion that "No time is wasted to move", 53.6% believe that: "Everyone has the freedom to plan their day on their own", and are unanimous that the use of e-learning creates new knowledge and skills to work online. 26.6% are of the opinion that: "The home environment predisposes to more in-depth work", 17.9% believe that: "There is more time for self-improvement" and "There is more time to communicate with teachers". 17.9% do not find any advantages in distance learning.

Despite the advantages of distance learning, 82% of respondents point to the lack of live contact with colleagues as a disadvantage of distance learning, 57.1% worry that the time spent in front of computers and monitors has increased. 25% believe that the effectiveness of training is reduced due to technical problems, and that more fatigue accumulates from the lack of variety in the activities that take place during the day. The workload increased daily by 14% daily and around the clock.

This is for an academic workload of 3 hours a day. Because 35.7% say that they are engaged in academic learning for three hours a day, as is the time for academic learning. 21.4% spend more than 3 hours on academicism, 25% are satisfied with one hour a day spent studying in a university environment. Two hours are enough for 14.3%.

The time that respondents spend working on academic issues is equally distributed among all: 35.7% spend more time, 36.7% have not changed the time they have spent on academicism so far, more 28.6% spend little time. Nevertheless, 53.6% manage to prepare for lectures and exercises, 46.4% prepare in part.

In terms of satisfaction with distance learning, 42.9% are rather satisfied, 25% are satisfied. The dissatisfied are as much as those who are completely satisfied.

Respondents share successful and useful teaching and communication practices between students and faculty during a state of emergency and suggest: quick response from e-mail teachers, frequent Viber conversations, pre-formulated topics in online meetings, regular connections and good communication. They also point out: Successful approach in teaching and communication, conference calls from any point.

### **3.2 COVID-19 and psychical well-being**

What's more, we rewarded the survey with a few more questions to explore how the state of emergency and the new way of communicating with ULSIT colleagues affect mental well-being and whether they can change young people's ability to make good decisions during COVID. -19 (or coronavirus), i.e. to control their own lives?

14, 3% bought additional food stocks during the lockdown, 25% believe that everyone around follows the recommendations for non-spread of the virus. 50% do their best to maintain physical distance, 75% say they do everything they can to limit the spread, 42% feel well informed about the steps I can take to help limit the spread of the coronavirus. One respondent wrote that he completely ignored the measures.

Fig. 2 presents the percentage distribution of the answers to the question "Do you miss the contact with colleagues?", In which 75% answer "Yes" and 25% of the respondents do not feel the lack of their colleagues. To the question "Do you feel nervous and anxious during the state of emergency?" - 64.5% said no, but 25% were worried and nervous. Among the respondents there are those who overcame this feeling in the first weeks.



*Figure 2. Percentage distribution of the respondents answers of the question "Do you miss the contact with your colleagues?"*

The distribution of the answers to the question "Who do you trust the most?" In terms of information about the disease and measures to overcome it is interesting. At most 85.7% trust their parents. Next is the health system in the country as an institution that respondents trust - 17.9%, followed by ULSIT and its management - 10.7%, as is the trust in state institutions in the Republic of Bulgaria. 7.1% trust the police.

Regarding the respondents' anxiety, their concerns are about: future job prospects - 50%, followed by the uncertainty of the development of the coronavirus situation - 46.4%, 42.9% are worried because of the ignorance of how long the measures will last for social distancing and closed shops, schools, restaurants. Respondents worry about older people who cannot see, many feel lonely, harass them and the inability to participate in social activities and occasions spent in close proximity to others. Many point to the inability to travel abroad as a cause for concern, as well as the inability to do their job well enough. Others cite the inability to participate in religious activities as a cause for concern. Some feel ashamed that they act differently from other people, such as at work, when shopping. A serious problem is the thought of income at the moment, as well as the ability to do your job well enough.

How to overcome the feeling of discomfort during the situation with the coronavirus - it decreases as: 64% have telephone conversations with friends from long distances, 60.7% watch TV shows and movies. 39.3% follow the information from the government and follow the advice of the government, 21.4% carry out face-to-face chat, 28.6% dedicate their time to work and friends. 14.3% play video games online with other people. 10.7% help other people as volunteers. 3.6% dedicate themselves to God and religion as much as they visit, prepare for a possible new crisis or prepare new homework assignments. 35.7% create new contacts on the Internet. 28.6% are saved by work - they state that they dedicate all their time to their work and vocation, as do the respondents who dedicate all their time to an activity or hobby.

To the question "How do you imagine yourself after we return to normal existence?" I see myself as a person who "everyone responds differently. Most - 71, 4% think they will love to communicate with friends, despite the long isolation and physical distance. 42.9% say they will be able to easily keep their cool in stressful situations. 35.7% will feel good when they are busy with something. According to 28, 6% insulation will make them kind and considerate to all. 25% will have many new ideas. 14, 3% are those who will easily forgive others, will have a developed imagination and will be able to think about things that do not yet exist. 10.7% think that they will easily get nervous and will be socially reserved. 7.1% see themselves as extroverted and sociable, as well as sometimes rude to others. 3.6% imagine themselves to be rather lazy from now on.

Respondents believe that COVID will change everyone's life. Thanks to this isolation, young people have become closer to their parents and they accept this as a very important lesson that should not be forgotten, to appreciate the little things and the moments with loved ones, which we take for granted on a weekday. It is to be better people.

## 4 CONCLUSIONS

Obviously, the coronavirus plays a huge role in changing the world. Digital education is not talked about, it is a fact. The fact is that everyone is working harder because they are not yet used to the new teaching technologies. The usual liveliness in universities is missing, the buildings are empty, the cafes are not working, but learning does not stop. It continues and we are all called to discover the benefits of the global pandemic. The university administration creates an organization and coordinates the communication and technical implementation of the learning process. During this time, teachers and students communicate with each other, consult, support each other even though they are at home or present their seminars over the phone. This is how the old models of work go down in history, and the new methods settle down permanently, even develop and go well. Perhaps the system in the world has improved and face-to-face meetings are not the only effective way to teach and teach in a university environment. Because the environment today is one - Google Meet, Skype, Viber, Moodle, etc. In other words, the possibilities are limitless - from the opportunity to become a student without an in-person exam to reduced costs and communication with quality teachers just by voice thousands of miles away - everything is changing.

## ACKNOWLEDGEMENTS

This research would not have been possible without the financial assistance of the following project: "A Conceptual Educational Model for Enhancing Information Literacy in an University Information Environment", financed by National Science Fund of the Ministry of Education and Science of the Republic of Bulgaria with Contract No KP – 06 – H35 / 10 от 18.12.2019, led by Prof. DSc Stoyan Denchev.

## REFERENCES

- [1] S. Denchev, D. Stoyanova, The Value of European University Education in the Context of COVID-19. Do Education and Science Have to Pay off the General Bill of Society?, Sofia: Za Bukvite – Oh Pismeneh, 2020
- [2] D. Stoyanova "The role of young people in the process of implementation of new knowledge in practice", *EDULEARN19 Proceedings*, pp. 9456-9459, 2019
- [3] T. Kiryakova-Dineva, M. Hadzhipetrova-Lachova, and Y. Chankova. "Intercultural Dialogue For Education In The Mediterranean Region". *EDULEARN17 Proceedings*, pp. 3920-3926, 2017
- [4] K. Rasheva-Yordanova, S. Toleva-Stoimenova, B. Nikolova, I. Kostadinova, "Informing and Digital Literacy in Conditions of Digital Divide", *ICERI17 Proceedings*, pp. 6827-6832, 2017
- [5] J. Lotman, Culture and Information. Sofia: Science and Art, 1992 [In: Bulgarian]
- [6] T. Todorova, I. Peteva, "Information Literacy Competency of LIS students in SULSIT with a Special Focus on Intellectual Property", *ECIL2013*, pp. 610 – 617, XXIV, 2013.
- [7] I. Trenchev, R. Mavrevski, M. Traykov, D. Stoykov, "Mathematical approaches for creation of complex 3D models and their application in education", *ICERI19 Proceedings*, pp 4909-4914, 2019
- [8] S. Denchev, T. Trencheva, E. Zdravkova "A conceptual educational model for enhancing information literacy in a university information environment: project framework", *EDULEARN20 Proceedings*, pp. 2272-2279, 2020
- [9] C. Geertz, *The Interpretation of Cultures*. New York, Basic Books, Inc., Publ., 1978
- [10] E. Tsvetkova, I. Pavlova, K. Aleksandrova. Universal contemporary information center – conceptual model and role in community building, *EDULEARN18 Proceedings*, pp. 3946-3953, 2018
- [11] S. Denchev, T. Trencheva, E. Zdravkova, "Intellectual property and media culture in higher education", *INTED2019 Proceedings*, pp. 5814-5819, 2019

- [12] T. Trencheva, "Information Literacy in the Framework of Higher Education: Focus on Intellectual Property Training", *INTED20 Proceedings*, pp. 6555-6561, 2020
- [13] M. Lazarova. Copyright education in screen art studies in the Digital age, *Conference Proceedings of The Future of Education 7<sup>th</sup>*, p.21 – 24, 2017
- [14] D. Stoyanova, E. Savova, I. Peteva, R. Yotova, "Academic Research Projects for Students Support and Motivation in University Information Environment", *ICERI18 Proceedings*, pp. 9706-9709, 2018
- [15] T. Trencheva, E. Zdravkova, "The Necessity of Intellectual Property Training in the Media Industry: Survey Results from Practice", *INTED20 Proceedings*, pp. 6617-6625, 2020
- [16] E. Savova, T. Varadinova, R. Yotova "Knowledge Institution: the Role of Libraries for Preservation and Socialization of Documentary Cultural Heritage", *EDULEARN18 Proceedings*, pp. 5709-5712, 2018
- [17] T. Trencheva, E. Zdravkova, "The necessity of intellectual property training in the media industry: survey results from practice", *INTED2020 Proceedings*, pp. 6617-6625, 2020
- [18] I. Peteva, S. Denchev, K. Aleksandrova, "The Role of Library Laboratory (LibLab) as an Innovative Project for Science Education in University Information Environment", *New Perspectives in Science Education Proceedings 2016*, pp. 510-515, 2016
- [19] Denchev, S. & Trencheva, T. "Intellectual Property as a Basic Part of the University's Information Literacy", *Proceedings of ICEMS 2016 Conference*, 28-29th May, DEStech Publications, Beijing/China, 2016, pp. 74-78.