

Life Quality and Distance Learning During the COVID-19 Pandemic from the Perspective of University Students: A Case of the Republic of Croatia

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ABSTRACT

Modern technologies and digital media have a special influence in the field of education, enabling institutions, teachers and students plethora of virtual opportunities for continuous communication, access to teaching materials and facilitation of understanding and fulfilling of teaching process and educational outcomes. After the coronavirus outbreak technology found its way to suppress many obstacles students and professors were challenged with by implementing a total distance education strategy. Nevertheless, students' life quality and the effectuation of distance learning is rather questionable. The main research interest focuses on higher education distance learning implementation and status of studies as well as satisfaction level of student population considering distance learning and the perception quality of their living conditions at the time of the coronavirus pandemic. In the sample, which included student population of all years and study programs among universities in the Republic of Croatia (N=583), the data was collected by means of a questionnaire designed by researchers of this paper and parts of standardized research questionnaire by Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985) which was divided into two parts; the level of implementation on distance learning strategies, and satisfactory levels of students' quality of living conditions. The results showed that the current level of distance learning implementation is not at a satisfactory level at the national stratum. Yet, many of participants point out distance education was not a common resource known and used by students prior to coronavirus outbreak. Moreover, a nonparametric one-sample Wilcoxon Signed rank test data analysis accepted the H_0 confirming that satisfactory volume of the quality of living conditions during the coronavirus pandemic is not at the gratifying level according to evaluation of student population. It can also be noted that there is a positive correlation between distance learning and students' satisfactory level of life quality in the time of coronavirus pandemic. As a result of these findings, it can be recommended that although alternatives for continuous higher education in the Republic of Croatia were implemented in time, there should be put a special attention on its quality and students' satisfaction levels as well as the overall impact on their life quality. There are numerous regulations and recommendations, rules and protocols, all emerging due to coronavirus outbreak, but its effects on higher education sector are yet to be investigated.

Keywords: Education, Life quality, distance education, coronavirus pandemic, student population, Republic of Croatia

Introduction

The world we live in is characterized by constant development and introduction of new technologies into all parts of human life. Whereas, there is a special influence in the field of education. After the introduction of a variety of digital media in the teaching process for the last decade, institutions, teachers, learners and students are under constant influence of virtual opportunities that enable continuous communication, access to teaching materials and facilitate understanding and fulfilling of the teaching process and educational outcomes.

One of the most developed terms within the area of education and online sources nowadays, is distance education. According to Simonson, M. Zvacek, and Smaldino (2019), distance education has become a major topic in education. The concept of distance education is exciting, and recent hardware and software innovations are making telecommunications distance education systems more available, easier to use, and less costly. The area of higher education gathers more and more interest into concepts of LMS (Learning Management System) platforms for performing distance education and points it out to be the most efficient way for transferring information and study outcomes to student population. The use of LMS platforms in distance education exploded

after the outbreak of coronavirus pandemic especially, since there was a little time to enable professors and students to adequately prepare for that fast change and the teaching process had to be continued.

For every individual, social, economic, mental and physical health are vital elements of their overall life quality. As reported by WHO (2001), one in every four individuals will suffer from a mental health problem at some point in their lives and that 450 million people worldwide have a mental health problem. A special attention may be brought up to student population in consideration to current isolation and coronavirus pandemic challenges. Students spend most of their time in faculties and frequently interact with colleagues, friends and professors. That “contact teaching” practice was replaced with virtual teaching strategies directly influencing their ability to socially integrate with the entities in the academic surrounding and influencing the state and the quality of their life. Moreover, there are numerous questions which arouse after deliberation such as: How did that isolation affected student life quality? How will these changes impact student health and life quality in the future? Are the processes of distance education sufficient enough to provide quality higher education? What are satisfaction levels among student population for using online platforms? And many other. For that reason, this study focuses on discovering factors and the quality of distance education processes and its effects on the life quality and satisfaction levels among student population.

Life Quality

The interpretation of quality of life within this paper is somewhat different from the one perceived by mass media and most public

Distance Education Strategies

Distance education is a relatively young area of recent studies in the scientific fields as a result of introduction of online teaching and learning environments in the last decade and ongoing innovations within higher education systems. Distance education may be separated into multiple strategies which include:

officials. The usual meaning is connected to the environment and the external circumstances of an individual as well as internal state and mental wellbeing. Since, it is generally accepted that the notion of quality of life implements important subjective and perceptual elements, there is a need for indicators that reflect those elements. The idea of measuring the quality of life could include practically anything interesting to anybody. For that reason, the main point of interest for the measurement of life quality within this paper includes measurements of individual wellbeing due to the lockdown and the coronavirus outbreaks. This includes family and friends support and connections, mental health and overall satisfaction with the current life conditions. In a study by Zhang and Feei Ma (2020) that measured life quality by assessing categories mentioned above in the area of Liaoning Province, mainland China, it was shown that the majority of participants received increased support from friends (64.6%) and increased support from family members (63.9%). Also, the majority also experienced and increased shared feelings with family members (57.8%), increased shared feelings with others when feeling blue (62.4%), and increased caring for family members' feelings (77.9%). Moreover, quality of life may add some intrinsic values found to be associated with academic outcomes as well. There is many research evidence confirming positive connotations between quality of life and academic achievement of students. In a study by Ainley (1991), it was suggested that students' quality of life is directly related to their academic achievement. As it may be seen, life quality evaluation rather depends on the subjective perception of every single individual and though has a huge impact on other areas of human life and life satisfaction.

- distance teaching (Pre-prepared study materials presented by professors in a digital form that do two-way interaction between professor and student),
- distance learning (Acquisition of given or/and presented materials in a one-way or group interaction),
- online courses (Fully prepared study materials available to students at all times with the

possibility of two-way interaction between professor and student),

- online resources (mandatory and supplementary materials that are to enable students and professors acquisition and understanding of a given study material).

Combining all categories and strategies of distance education, it may be defined as a form of modern interactive education area in which the main elements include physical distance of students and professors during instruction with the use of various forms of technologies in order to facilitate communication and fulfilment of study outcomes. Holmberg (2005) defines distance education as covering various forms of study at all levels which are not under continuous, immediate supervision of tutors present with their students in lecture rooms. Regardless any of the definitions, distance education is a matter of present time, not the future.

Many researchers provide findings that support the idea of growth in the use of digital media and distance education strategies. Growing by Degrees (Allen & Seaman, 2005) reports that, in 2013, approximately 70% of institutions indicated that online instruction was critical to their long-term strategies. Mayer (2005) indicates the development of computer-based multimedia, online learning environments could support students engaging with richer interactions and having better learning experience. Media presence, online accessibility, virtual reality only shows endless boundaries of how technologically developed we have become. It is obvious that there is a little or no higher education system that still did not incorporate a certain percentage of distance education strategies into their curricula and student activities.

Changes in the Teaching Process Due to the Outbreak of the Coronavirus Pandemic

According to UNESCO's reports, more than 160 countries implemented nationwide closures, which had an impact on over 70% of the world's student population (UNESCO, 2020). Furthermore, universities in the Republic of Croatia came to unanimous decision to transfer from "contact to contact" education practice into distance learning environment. The change was rapid, due to the

uncertainty about how long the coronavirus crisis will last and how it might affect students, their studies and life quality. Distance education is now a new routine for a great number of students as well as professors, but at the same time it presents substantial challenges. Not all students have access to this kind of education considering social and demographic inequality. Not all professors are ready to perform in that environment regarding study outcomes and activities of specific courses. Universities are being forced to summon preventive measures to keep students and professors healthy and to create plans in case infection may emerge. Higher education institutions (HEIs) have also been dealing with the impact on exchange programs and foreign students.

Republic of Croatia

In the online survey carried out by Croatian Ministry of Science and Education (2020) which included 106 HEIs, the results showed that most of professors and students (80%) are educated to use online resources and distance education platforms, or that everyone has the opportunity to teach this form of teaching. Secondly, in addition to the national distance education platform named "Merlin" or their local LMS platform, HEIs do support the use of available distance education platforms free of charge (Microsoft Teams, Zoom, Webex, Big Blue Button, Jitsi Meet, Skype, YouTube, OBS, Google Classroom and others). Also, data showed that distance learning is available to both, undergraduate and graduate level, full-time and part-time students. Moreover, the problems occur regarding the established systems of monitoring and evaluation at the level of the institution, where 30% of HEIs still have not established a system of monitoring and evaluation or are in the process of establishing one. Taking the time and conditions of coronavirus pandemic in consideration, we can say distance learning environment in the Republic of Croatia is rather well organized and was present in a certain amount before the global pandemic exploded, yet its quality and students' satisfaction levels were not implied and are in the central interest of this research paper.

EU and Surrounding Countries

Coronavirus pandemic resulted in a global change of educational practices, affecting every single part and level of education nationwide. Neighboring regions surrounding Republic of Croatia (Slovenia, Bosnia and Herzegovina, Serbia, Montenegro, Hungary, Italy and others) have made similar plans and either transferred to distance education platforms or stopped the entire higher education completely by prolonging their timetables and the ending of the academic year. Many HEIs started numerous funding, web platforms and brochures in order to provide fast and adequate support to students, administrative and teaching staff affected by coronavirus. European Association for International Education (EAIE, 2020) published a report 'Coping with COVID-19: International higher education in Europe', that offers some preliminary perspectives on the impact of the coronavirus on international education bringing the results from the more than 800 survey responses from 38 different countries across the European Higher Education Area. According to the report, the spread of countries reporting response plan implementation is quite wide, 31 countries (60% of respondents). Moreover, student representatives and bodies are doing their best to provide help and strengthen consciousness of governmental bodies. The European Students' Union (ESU) is collecting data on the impact of COVID-19 on student life in cooperation with the Institute for the Development of Education (Zagreb, Croatia) and an interdisciplinary team of researchers based at the University of Zadar in Croatia. There are numerous regulations and recommendations, rules and protocols, all emerging due to coronavirus outbreak, but its effects on higher education sector are yet to be investigated.

Methods

Research questionnaire was set using Likert type scale with the maximum value of 5. Also, 3 open type qualitative questions were asked. Quantitative data was examined and analyzed using program SPSS Statistics 26. For all quantitative variables descriptive parameters were calculated. On behalf of normality of distribution, a nonparametric one-sample Wilcoxon Signed rank test data analysis was calculated. Also, a

nonparametric measure of rank correlation was analyzed by implementing Spearman's rank correlation coefficient. The problematic topics that are concentrated around the subject are explained with numerical and indicative values as well. Comparison and analysis approaches were used and combined with qualitative data examination.

Aim and Research problem

The aim of the research is to get an insight into the higher education distance learning implementation and status of studies as well as satisfaction level of student population considering distance learning and the perception of quality of their living conditions at the time of the coronavirus pandemic in the Republic of Croatia.

Relating the research aim, the following problems and hypotheses have been identified:

P1: What is the current level of distance learning implementation?

P2: Is distance education a common resource known to and accepted by student population?

H1: The level of distance learning implementation is not at the satisfactory level according to student population.

H2: Satisfactory volume of the quality of living conditions during the coronavirus pandemic is not at the gratifying level according to evaluation of student population.

H3: There is a positive correlation between the life quality during the coronavirus pandemic outbreak according to the year of study.

Sample and research instrument

The sample of this study included student population of all years and study programs among Universities in the Republic of Croatia. That summed a total of 583 participants who filled the questionnaire correctly.

The data for this study was collected by means of "The Study of life quality and distance learning during the COVID19 pandemic from the perspective of University students" questionnaire which was designed by researchers of this paper and parts of standardized research questionnaire

by Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985), divided into two parts; the level of implementation on distance learning strategies, and satisfactory levels of students' quality of living conditions. The questionnaire was constructed by using data and available reports of the current research topics on the numerous effects of coronavirus pandemic and the research questions developed by the researcher.

Questionnaire was spread among student population within universities in the Republic of Croatia in an online version using google forms platform. The questionnaire consisted of two parts. In the first part, students were asked to evaluate the level of implementation and provide opinions on distance learning strategies, and in the second part they were asked to assess satisfactory levels of the quality of their living conditions. The questionnaire was prepared both, in Croatian and English language by authors of this study. In the introduction, a precise explanation of the research aim was presented in order to assure the validity of the answers. The data was collected during April and May in 2019/2020 academic year.

Findings

In attendance to investigate the first research problem, the relationship between distance learning and its level of implementation, qualitative data was provided and the following results were collected. The obtained outcomes were analyzed by ranking the most prominent answers provided by participants. After being

asked how would they comment distance learning implementation at the level of their faculty and/or university, around 85% of them claimed they have fully transferred from contact to contact to distance learning environment, but that its implementation is rather poor or not at a sufficient level.

As the main reasons for the poor implementation of distance learning they point out:

The complexity of working conditions- rapid change of schooling environment, use of multiple different LMS platforms, reliability and internet connectivity, online presence at a certain time schedule.

Higher level of engagement- greater load of tasks and assignments, fewer submission time periods, level of complexity due to technical implications.

Greater amount of workload- homework assignments, course outcomes do not comply with the expected ECTS grading system, individual course assignments at a higher rate.

Poor communication at the level professor-student- real time communication almost non-existing, online lectures pre-filmed and recorded, uneven information flow.

Unclear and unreal expectations- the amount of workload will produce the counter-effect diminishing the core elements of a specific course.

On the other hand, a smaller number of respondents did suggest that distance learning implementation is at a satisfactory level, around 12%, while the rest did not know how to evaluate

Table 1. Descriptive values H1

	N	Minimum	Maximum	Mean	Std.		Skewness	Kurtosis			
					Deviation	Variance		Std. Error	Statistic		
6.3	583	1	5	3,13	,050	1,200	1,439	-,193	,101	-,855	,202
6.6	583	1	5	3,13	,048	1,165	1,357	-,010	,101	-,654	,202
6.9	583	1	5	3,63	,053	1,280	1,639	-,597	,101	-,742	,202
Valid N (listwise)	583										

Table 2. One-Sample Test (bootstrap model) dana (H1)

Var.	Test Value = 4				Bootstrap					
	t	df	Sig. (2-tailed)	Mean Difference	Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval		
								Lower	Upper	
6.3	-17,435	582	,000	-,866	,002	,049	,001	-,957	-,767	
6.6	-18,131	582	,000	-,875	,000	,048	,001	-,967	-,780	
6.9	-6,956	582	,000	-,369	-,001	,051	,001	-,468	-,266	

it (3%).

Secondly, when investigating the use of LMS platforms before and during the coronavirus outbreak, a large number of respondents did point out distance education was not a common resource known and used by students nor professors prior to coronavirus outbreak (89%) affirming the second research problem.

In order to discuss the first hypotheses (H1), a parametric descriptive value of the dependent variables was calculated and showed in Table 1. Variable 6.3 tested ease of access and the fulfilment of study obligations, 6.6 the level of organization and the implementation of the distance learning, and 6.9 the prevalence of the distance learning, learning to contact to contact

education due to the coronavirus outbreak.

Considering the research questionnaire, the test value of the distance learning level implementation was set at 4, taking the values “(4) I agree” and “(5) I completely agree” as the ones relevant to the positive satisfaction levels. In order to test the H1 hypotheses One-Sample t Test was used (bootstrap model). The results are showed in Table 2.

According to the results of the One-Sample t Test H1 is accepted confirming the level of distance learning implementation is not at the satisfactory level according to student population since there is a significant statistical difference between the test value of 4 and the sample value of mean within

Table 3. Descriptive values H2

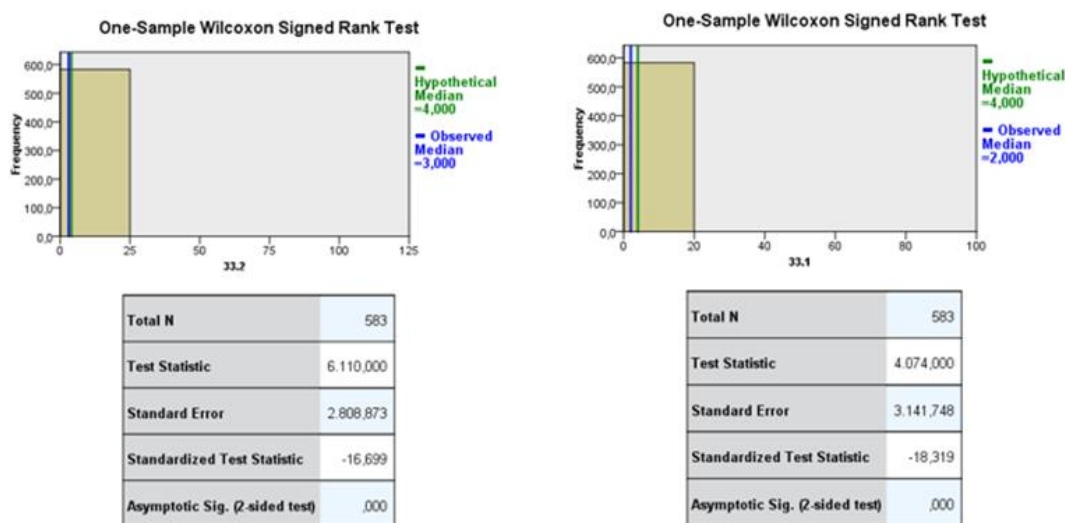
	N	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness	Kurtosis			
									Statistic	Std. Error	Statistic
33.1	583	1	5	2,59	,048	1,162	1,349	,409	,101	-,642	,202
33.2	583	1	5	2,76	,054	1,296	1,679	,195	,101	-1,102	,202
33.3	583	1	5	3,99	,037	,888	,789	-,973	,101	1,142	,202
Valid N (listwise)	583										

the tested variables (6.3, 6.6, 6.9.). From the values of the mean difference (-,369 to -,875) it can be seen that the respondents have a statistically significantly fewer arithmetic values than the criteria test value of 4.

Moreover, the second hypotheses (H2) assumes that satisfactory volume of the quality of living conditions during the coronavirus pandemic is not at the gratifying level according to evaluation of student population. Descriptive values of the dependent variables were calculated and showed in Table 3. Variable 33.1 tested living conditions during coronavirus outbreak, 33.2 levels of pressure, stress and inner turmoil due to the outcome of the current life situation, and 33.3 daily routine in the given circumstances of the coronavirus pandemic.

Lastly, the third hypotheses (H3) assumed there a positive correlation between the life quality during the coronavirus pandemic outbreak and to the year of study. The values 33.1 tested living conditions during coronavirus outbreak, 33.2 levels of pressure, stress and inner turmoil due to the outcome of the current life situation. 33.13 happiness with the living conditions during a coronavirus pandemic, and 33.14 satisfaction levels with the quality of teaching during the coronavirus pandemic. According to the analyzed data, the value distribution of the year of study is: 48% respondents of the first year of study (N1= 287), 10,9% respondents of the second year of study (N2= 64), 12,8% respondents of the third year of study (N3= 75), 23% respondents of the fourth year of study (N4= 135) and 4,6% respondents of the fifth year of study (N5=27).

Figure 1. Tested values of 33.1 and 33.2 variables (H2)



Since the precondition of normal distribution has not been met, a non-parametric one sample Wilcoxon Signed rank test data analysis was conducted. Tested values confirm statistically significant differences (median < 4) within the variable 33.1 and variable 33.2. showed in Figure 1. and reject the existence of statistically significant differences at the variable 33. The results only partially accept H2 that satisfactory volume of the quality of living conditions during the coronavirus pandemic is not at the gratifying level according to evaluation of student population.

To test the H3 hypotheses a non-parametric Spearman’s correlation coefficient was used. As it may be seen from the table 4.

Table 4. Correlation coefficient data analysis

		33.1	33.2	33.13	33.14
Spearman's rho	3. Year of study	,010	-,026	,019	-,078
	Sig. (2-tailed)	,815	,531	,649	,059
N		583	583	583	583

There is no statistically significant difference between the year of study and life quality rejecting the H3.

Results, Conclusions and Recommendations

This study concluded that the level of distance education faced a rapid implementation due to the given circumstances. The results showed that the current level of distance learning environment is around 85% according to the respondents, but that its implementation is rather poor or not at a sufficient level since there is a significant statistical difference between the test value and the sample value of mean within the tested variables (-,369 to -,875). Yet, many of participants point out distance education was not a common resource known and used by students prior to coronavirus outbreak (89%).

Moreover, a nonparametric one-sample Wilcoxon Signed rank test data analysis partially accepted the H_0 confirming that satisfactory volume of the quality of living conditions during the coronavirus pandemic is not at the gratifying level according to evaluation of student population. It can also be noted that there is a positive correlation between distance learning and students' satisfactory level of life quality in the time of coronavirus pandemic. Also, the results showed there is no

statistically significant difference between the year of study and life quality proposing that current situation equally affected students at all levels with no regard to their obligations and levels of complexity.

In a similar study by Jokić Begić et al. (2020) that investigated life in the Republic of Croatia during the coronavirus pandemic, a special attention that was put on the student population also confirmed the increased differences in teaching loads in relation to contact teaching (30%) and increased scope of tasks. It is an alarming fact that 40% of students had difficulty concentrating due to mental state and anxiety, and as many as 60% had difficulty in self-regulation having a direct connotation with the life quality.

As a result of findings obtained, it can be noted that although alternatives for continuous higher education in the Republic of Croatia were implemented in time, there should be put a special attention on its quality and students' satisfaction levels as well as the overall impact on their life quality. Distance education is more difficult for students because they are less independent in regulation of learning and it is necessary to take this into account while creating teaching content and tasks.

For that reason, the recommendations on how to improve the practice and students' life quality are as follow:

- to provide teaching staff as well as student population with educational workshops on how to use LMS platforms and work environment in a digital sphere of education,
- to harmonize the loads of teaching contents between the contact and the online course realization,
- to create a mental health support group or center at the level of the university in order to facilitate the barriers between distance learning environment and the life quality of students.

There are numerous regulations and recommendations, rules and protocols, all emerging due to coronavirus outbreak, but its effects on higher education sector are yet to be investigated.

References (APA 6th edition)

- [1] Ainley, J., Foreman, J., & Sheret, M. (1991). High school factors that influence students to remain in school. *The Journal of Educational Research*, pp. 69-80. Retrieved from <https://doi.org/10.1080/00220671.1991.10702816>
- [2] Allen, I. E., & Seaman, J. (2005). *Growing by Degrees*. Wellesley, MA: Sloan Consortium.
- [3] Begić, N. J., & Ivana Hromatko, T. J. (2020, June). Kako smo? Život u Hrvatskoj u doba korone. Retrieved from https://web2020.ffzg.unizg.hr/covid19/wp-content/uploads/sites/15/2020/06/Kako-smo_Preliminarni-rezultati_brosura.pdf
- [4] Holmberg, B. (2005). *Theory and Practice of Distance Education* (2 ed.). London, New York: Routledge.
- [5] Mayer, R. (2005). Cognitive Theory of Multimedia Learning. In R. M. (Ed.), *The Cambridge Handbook of Multimedia Learning* (Cambridge Handbooks in Psychology) (pp. 31-48). Cambridge: Cambridge University Press.
- [6] Ministry of Science and Education. (2020, April). Questionnaire on distance learning at higher education level. Retrieved from <https://mzo.gov.hr/dokumenti/10?trazi=1&tip2=&datumod=&datumdo=&pojam=&page=18>
- [7] Rumbley, L. E. (2020). *Coping with COVID-19: International higher education in Europe*. Amsterdam: The European Association for International Education (EAIE).
- [8] Simonson, M., Zvacek, S. M., & Smaldino, S. (2019). *Teaching and Learning at a Distance: Foundations of Distance Education* (7th edition ed.). Charlotte, North Carolina: IAP. doi:1641136286
- [9] UNESCO. (2020, May). COVID-19 educational disruption and response. Retrieved from <https://en.unesco.org/themes/education-emergencies/coronavirus-school-closures>
- [10] World Health Organization. (2001). *The world health report 2001 - Mental Health: New Understanding, New Hope*. Geneva: WHO: Mental Health.
- [11] Zhang, Y., & Ma, Z. F. (2020, March 31). Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *International Journal of Environmental Research and Public Health*, p. 2381.