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# THE CHALLENGES AND ISSUES ON THE UNIVERSITY OF ZAGREB DURING COVID-19 CRISIS

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## ABSTRACT

In a very short period, the COVID-19 pandemic moved the process of education at all levels to the online environment. Although e-learning in university education in Croatia is not new, students and teachers of the University of Zagreb are facing new challenges that often call into question the quality of teaching. In order for online teaching to be successful, it is necessary to take into account the criteria related to the successful teaching and learning process and apply them in the online environment. Starting from the assumption that online teaching should meet most of the criteria of face-to-face teaching, we tested the satisfaction of students at the University of Zagreb with online teaching and the extent to which online teaching meets the criteria related to quality face-to-face teaching. Based on the obtained results, we discuss the shortcomings face-to-face of online teaching in relation to face-to-face teaching at the University of Zagreb.

## KEY WORDS

online education, university teaching, quality of online learning, students' attitudes regarding online education

## CLASSIFICATION

JEL: I12, I23

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## INTRODUCTION

The COVID-19 pandemic affected Europe in early 2020 and forced all European countries to find new ways to work, communicate, collaborate, educate. The only solution to these new circumstances has been found in digital technologies. Digital technologies have suddenly become the only possible option for continuing normal life and work. The education system of the Republic of Croatia, as well as the education system of many other European countries, faced new and difficult challenges during the COVID-19 pandemic.

The teaching and learning process had to move to an online education system at all levels in a very short period. If we take into account all levels of education, this transition was perhaps the most painless for the higher education system in the Republic of Croatia, primarily because the social environment for the university student population was not a key factor for learning and progress as for e.g. children in primary school. The process of implementing e-learning at the University of Zagreb began in 2007 with the adoption of a document called the “E-learning Strategy“ [1].

This document, among other things, emphasizes the need to improve the quality of university education through systematic introduction of e-learning and the need to provide support to lecturers and students in achieving new roles in e-learning. In addition to the aforementioned document, another document that indicates the systematic support and implementation of e-learning at the University of Zagreb is the “Strategy for studies and studying of the University of Zagreb“ (2014 - 2025) [2] which emphasizes the importance of encouraging a number of activities related to e-learning - from the development of a virtual environment for learning and teaching, evaluation of e-courses, to the development of online studies.

However, despite all of the abovementioned preparations for working in the online environment in higher education, extensive research on the experiences and needs of higher education staff and students with regard to online teaching at faculties, conducted by the Agency for Science and Higher Education in 2020, showed that both staff and students still consider online teaching to be lower quality than face-to-face teaching. Agency for Science and Higher Education of the Republic of Croatia presented the results of the research in the report “Challenges in Higher Education during the COVID-19 Pandemic and Social Isolation“, and the results show that only 38 % of college teachers consider the quality of online lectures equal to face-to-face lectures. On the other hand, as many as half of students (50 %) believe that the quality of online teaching performance is worse than that before the quarantine.

Such results are not surprising if we take into account that online teaching at higher education institutions in the Republic of Croatia, even in 2020, in terms of implementation, is in its infancy and a very small number of faculties, in fact, conduct online teaching as they prefer live teaching. The reasons for such attitude towards online teaching in Croatia are numerous, and they mainly stem from insufficient education of lecturers aimed at developing the culture of online education, unregulated need for continuing education and training of faculty at online education, and often insufficient material and technical conditions of faculties in the Republic of Croatia for conducting online teaching.

Considering the results of research on the quality of online teaching in higher education in the Republic of Croatia were not very good, two questions arise. The first question is whether something is being done wrong when it comes to online teaching, and the second question is whether a noticeable difference in quality between online and face-to-face education is really possible, if the ultimate goal of education is the learning process?

## **ONLINE DIDACTICS**

Since online education was introduced to education system at all levels, especially higher education, scientists in various fields have been tackling the issue is there and should it be noticeable difference in quality between online and face-to-face education.

In this context, a great deal of research and meta-analyses have been done that prove that there are no significant differences between the two modes of education, online and face-to-face [3-6]. In other words, studies have confirmed that a well-prepared, structured and organized face-to-face lecture compared to an equally prepared online lecture results in equal acquisition of knowledge and skills development in students.

Considering the aforementioned studies' results, it is clear that the key to a successful teaching and learning process, regardless of the environment in which it is conducted, online or face-to-face, is a well-designed, well-prepared, organized and conducted lecture [7, 8]. In other words, the criteria for quality teaching are general and apply to both face-to-face teaching and online teaching. Thus, the guidelines for successful online teaching often emphasize the basic postulates of what is considered modern principles of face-to-face education, which arise from constructivist learning theories as a basic of modern teaching and learning, namely: learner-centred approach, emphasizing the importance of the active role of students in the process of constructing their own knowledge, emphasizing the need to initiate motivational processes and communication in the process of teaching and learning, encouraging deep learning and higher cognitive processes, emphasizing the importance of collaborative learning, quality system evaluations, etc. [9-12].

Despite the fact that online education includes basic pedagogical and didactical principles of contemporary teaching process, the fact that online education takes place entirely with the help of information and communication technology [13] should be taken into account. That fact, at least partially, requires new reflection on educational process considering that online environment inherently include certain specific principles which have affect the teaching and learning process. Therefore, it is necessary to take in consideration thinking about theory of online teaching and learning e.g. online didactics [14]. If we were to try defining what online didactics is, we could say it is a developing theory of teaching and learning process within online environment. It has not been written much about online didactics both in Croatia and abroad, but the current situation with COVID-19 emphasized the importance of online didactics and made us believe that the future will bring much more scientific and professional papers dealing with it. Despite the certain specific properties of online education, and those mostly refer to the factor of the newly created exclusive online environment within which process of teaching and learning takes place, the theory of online didactics in most of its part shares basic theoretical principles with traditional educational theories [15].

Everything mentioned above indicates that the successful application of the basic principles of contemporary teaching process, with which didactics deals, is the basis of quality teaching, whether it takes place in the classroom or online, and the key to successful online teaching is an online teacher [16] who should be able and also educated to follow constructivist learning theories and didactic principles of a successful teaching and learning process, regardless of the online environment.

## **RESEARCH OBJECTIVES**

- 1.) To investigate the satisfaction of students at the University of Zagreb with online classes during the COVID-19 pandemic.
- 2.) To examine the factor structure of the questionnaire of attitudes towards online teaching.

## **METHODOLOGY**

### **PARTICIPANTS**

Participants in this study were students of the University of Zagreb whose undergraduate or graduate studies were Agronomy, Croatology, Fine Arts, Graphic Design, History, Mathematics, Philosophy, Psychology and Sociology. A total of 106 students participated in the study. Their age ranged from 20 to 24 years ( $M = 22,2$ ). Seventy-five percent of the participants were female and twenty-five percent were male participants. The selection of participants was based on willingness to participate in the research. Sampling was non-probabilistic, carried out by the snowball method. This method of sampling limits the possibility of generalizing the results to other populations, but we believe that the research provides a good insight into the state of the examined constructs at the University of Zagreb, given that participants were students from different study groups who are guaranteed anonymity, so we assume that their answers were sincere and authentic.

### **INSTRUMENT AND PROCEDURE**

The questionnaire used in this study was designed for study purposes in accordance with the theoretical assumptions about aspects of quality teaching. Participants assessed their opinions about quality of online teaching. Demographic items considered age, gender, college, study and study year. The questionnaire consisted of three parts. In the first part, questions were related to the platform that was used in online teaching, and general satisfaction with online teaching, how much students personally managed in online teaching and how well their professors managed. The second part included a series of questions that examine students' satisfaction with certain elements of quality teaching by categories, starting from the assumption that online teaching should meet the same criteria associated with classical teaching: stimulating classroom atmosphere and good teacher-student relations, structuring and planning the lesson, emphasizing learning goals and clarity of teaching, involvement and motivation of students, teaching metacognitive skills, higher order thinking, learning strategies and application of learning, individualization and differentiation of teaching for individual students and groups of students, formative evaluation and giving feedback on learning. The aim was to examine the satisfaction of students with online teaching in order to draw conclusions if online teaching, according to students, meets the criteria of classical teaching. In the third part of the questionnaire, participants were asked two open-ended questions: can they list the advantages of online teaching over classical teaching and what they have missed the most in online teaching. The survey was conducted with online questionnaires using Google Forms. Questionnaires were distributed to students via official e-mail addresses, Google Groups and social networks, with a request to forward the invitation to participate in the research to their colleagues. This article describes empirical results obtained by self-assessment.

## **RESULTS AND DISCUSSION**

### **Descriptive statistics**

Most of the participants, 76,4 % of them, reported that their college teachers used Merlin for online teaching purposes, which was expected considering that Merlin is the official E-learning platform of the University Computing Center of the University of Zagreb. However, as Merlin does not allow live video streaming of lectures, a large number of students reported using the Zoom app, 61,3 % of them, and a smaller proportion of students, 10,4 % of them, stated that their college teachers used Skype. Slightly more than a third of students reported using Google Classroom (39,6 %) or Microsoft Teams (38,7 %). Occasionally, students listed Google Docs (13,2 %) and course websites (6,6 %) in the "other" section, which was not listed as a category in the

questionnaire itself because it was in some way implied, and can be classified as an older method not necessarily related to online teaching, but as an addition to the classic form of teaching.

**Table 1.** The most commonly used platforms for online teaching.\*

	<b>N</b>	<b>%</b>
Merlin	81	76,4
Zoom	65	61,3
Google Classroom	42	39,6
Microsoft Teams	41	38,7
Skype	11	10,4
Class web pages	7	6,6
Google Docs	14	13,2

\*participants could mark multiple responses

The results show a relatively wide range of platforms and applications used with the purpose of achieving quality online teaching as each of these applications has its own unique advantages and capabilities.

**Table 2.** Level of satisfaction with online education in general.

	<b>N</b>	<b>M</b>	<b>Sd</b>
Satisfaction with online education process	106	3,19	1,07
How well did your teachers manage in online education?	106	3,36	1,04
How well did you manage to participate and fulfil the obligations in distance learning?	106	3,82	1,27
I was more active in online learning than in face-to-face learning	106	2,76	1,34

Table 2 shows the answers to questions related to general satisfaction and activity in online teaching. It can be said that the participants rated online classes slightly higher than the middle grade ( $M = 3,19$ ,  $sd = 1,07$ ), they rated their college teachers slightly higher in the context of coping with online teaching ( $M = 3,36$ ,  $sd = 1,04$ ) and they assessed their ability to participate and perform obligations in distance learning with an average grade of  $M = 3,82$  with  $sd = 1,27$ .

### Factor structure and reliability of the questionnaire of attitudes about online education

In order to check the validity of the factor matrix calculation, we checked the Bartlett test of the significance of the correlation matrix, and the Kaiser-Meyer-Olkin sampling adequacy test. The Kaiser-Meyer-Olkin test was 0,84, which is a good value for factorization, and the Bartlett test showed the significance of the correlation matrix with a risk of less than 1 %. The structure of attitudes about online education was examined by the Principal component analysis. Based on the Kaiser-Guttman criterion, six factors with characteristic roots exceeding 1 were retained in the analysis. The factors obtained by the analysis of the principal components explain a total of 75,39 % of the variance of the manifest variables.

**Table 3.** Review of the factor structure of the results on the questionnaire of students' attitudes about online education.

<b>Factor</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
I was motivated for online teaching.	<b>,818</b>	-,215	,025	,079	-,089	-,172
I think the experience of online teaching will help me in the future.	<b>,701</b>	,045	-,135	,179	,043	,250
With the help of online teaching, I learn better.	<b>,726</b>	-,202	-,276	-,188	,036	,197
I communicate more successfully with the lecturer within the online / distance teaching.	-,435	<b>,672</b>	-,025	,200	,069	,151

**Table 3.** Review of the factor structure of the results on the questionnaire of students' attitudes about online education.

(continuation from p.361)

Lecturers are more motivated to work in online teaching than in classical teaching.	−,004	<b>,641</b>	,442	−,124	,073	,183
The relationship between lecturers and students is much more open in online teaching.	−,122	<b>,788</b>	,394	−,035	,125	,193
The lecturers performed quality online classes.	,442	,025	<b>,731</b>	−,160	,088	−,185
Online lectures were clearly structured.	−,076	,252	<b>,770</b>	,050	−,055	,047
It was clear from the lecture what the students were expected to know.	,157	,260	<b>,776</b>	−,265	,003	,083
Students are encouraged to engage in discussions during online classes.	,563	,132	,026	<b>,600</b>	−,152	,202
The active role of students during online lectures is encouraged.	,151	,112	−,023	<b>,634</b>	,123	,155
Students are encouraged to participate in collaborative learning during online lectures.	,029	−,035	−,139	<b>,700</b>		−,328
The lecturers tried to encourage the processes of reasoning, connecting, analyzing with their online lectures.	,028	,245	−,226	−,111	<b>,841</b>	,074
Lecturers used different teaching strategies in online teaching.	,777	,206	−,165	−,324	<b>,009</b>	−,104
The lecturers encouraged the learning process with their lectures during online classes.	,800	,069	−,133a	,085	<b>−,105</b>	−,213
Lecturers gave feedback on time during online classes.	,241	,150	,273	,080	−,023	<b>,733</b>
The feedback was mostly encouraging.	,326	,129	,156	,023	−,059	<b>,783</b>
The way of evaluating knowledge was clearly explained.	,195	,333	,203	−,382	,100	<b>,567</b>

As shown in the Table 3, the results of the factor analysis of assessment factors on the questionnaire of students' attitudes about online teaching. Six factors were extracted by the Principal component analysis, which together explain 75,39 % of the total variance. Based on the results of the factor analysis, six subscales were formed. Internal reliability is good: Cronbach's alpha for each subscale was: 1)  $\alpha = 0,79$ , 2)  $\alpha = 0,85$ , 3)  $\alpha = 0,89$ , 4)  $\alpha = 0,89$ , 5)  $\alpha = 0,76$  and 6,  $\alpha = 0,81$ , and the average correlation between items  $r = 0,69$ .

Items with which the first factor is highly saturated indicate the motivation of students for online learning. Examples of items: *I was motivated for online teaching; I think that the experience of online teaching will help me in the future.* The second factor includes the dimension of a stimulating classroom atmosphere and good teacher-student relations. Examples of items: *I communicate more successfully with a lecturer in online learning; Lecturers are more motivated to work in online teaching than in classical teaching.* The third factor includes claims related to structuring and planning lessons, emphasizing learning goals, and clarity of teaching. Examples of items: *Lectures online were clearly structured; It was clear from the lecture what the students were expected to know.* The fourth factor includes the dimension of teaching metacognitive skills, higher-order thinking, learning strategies, and

applying what has been learned. Examples of items: *Students are encouraged to engage in discussions during online classes; Students are encouraged to participate in collaborative learning during online lectures.* The fifth factor refers to the individualization and differentiation of teaching for individual students and groups of students, and examples are the following items: *Lecturers in online teaching used different teaching strategies; Lecturers in their online lectures tried to encourage the processes of reasoning, connecting, analyzing.* The sixth factor includes formative evaluation and giving feedback on learning, and examples are the following items: *Lecturers gave feedback on time during online classes; The way of evaluating knowledge is clearly explained.* Two particles saturated with multiple factors were excluded from further analysis: *Online lectures were mandatory* and *Exams should be easier given the quality of online teaching.*

**Table 4.** Results by factors / categories or aspects of quality of online education.

	N	Minimum	Maximum	Mean	Std. Deviation
Motivation	104	1,60	4,40	3,09	0,66
Teaching atmosphere	105	1,25	4,75	2,78	0,83
Planning	105	1,00	5,00	3,31	1,00
Student involvement in the education process	105	1,00	4,80	3,17	0,80
Individualization	104	1,29	4,43	3,06	0,75
Feedback	103	1,25	5,00	3,56	0,79
Valid N (listwise)	98				

The results of attitudes on certain aspects of the quality of online teaching show that students are relatively satisfied with the way their college teachers planned, structured and organized online teaching, opportunities for engagement during online teaching and feedback. They are somewhat less satisfied with the teaching atmosphere and the individualization of the teaching process, which is in line with expectations given that the very nature of online teaching reduces the possibility of these aspects of teaching. These results are important considering previous studies that showed that interaction in the classroom, student motivation, course structure, instructor knowledge, and facilitation were positively influencing students' perceived learning outcome and student satisfaction [17]. It was also found that perceived lecturers' feedback has a significant relationship with online learning students' satisfaction [18].

Future studies should examine personality traits and satisfaction with online teaching, especially in the context of the extraversion-introversion dimension. It is logical to assume that more introverted students will be more satisfied with online teaching. It is known that the teaching environment must not be adapted exclusively to one or the other, and that the teacher should not adapt the form of teaching to their preferences and characteristics [19]. From the answers of the participants to the question what they missed the most in online teaching, the level of frustration is visible, which is worrying in some answers, for example: *Normal social life, socializing with colleagues, interacting with professors, some of whom were great at online classes, and some didn't even bother to cope. I never want to hear about or experience online teaching again because it destroys the mental health of all of us.* On the other hand: *Due to the lack of lectures (I didn't have any lectures, only assignments and presentations) I had more time to study, and this was my best solved semester so far. I also gained more experience in writing papers.* Although some studies already pointed that users' personal factors have no direct influence on user satisfaction, while platform availability has the greatest influence on user satisfaction [20], further research is certainly needed to provide clear answers to these current questions.



In the participants' answers to open-ended questions, the emphasis was on the role of college teachers in the teaching process. When asked what they missed the most, most participants mentioned interaction with teachers, the possibility of asking questions directly and obtaining useful guidance in individual consultations. These findings indicate the importance and irreplaceability of the role of college teachers in the education process, even in the case of higher education, which implies a high degree of student independence and a developed ability to self-educate.

## CONCLUSION

The results of the present study showed that most participants were satisfied with the online teaching process. The participants gave the highest grades to the aspects of structuring and planning the lessons, emphasizing learning goals, clarity of teaching and to their own engagement and motivation, and the lowest grades to the stimulating classroom atmosphere. The qualitative part of the research showed that participants differ in the degree of adjustment to online teaching in the sense that some participants prefer online teaching and some do not. However, the vast majority of participants' answers indicate the important role of the college teacher in the teaching process, whether it is classical or online teaching.

On one hand, study results indicate the need for additional education of college teachers that would go in the direction of encouraging a positive online classroom climate as a basic prerequisite for students getting comfortable with virtual learning.

The study also confirmed that successful application of didactic principles related to the teaching and learning process is the foundation of quality in face-to-face or online teaching. It also determined that the key to successful face-to-face as well as online teaching and learning actually is the teacher [13]. This study, like many other similar studies, confirmed that there are no differences between online and face-to-face teaching [3-6], as long as the emphasis is on a well-designed, well-prepared, organized and implemented teaching and learning process.

However, future studies need to involve not just students perspective but perspective of other subjects involved in online education such as college teachers, administration, college management etc.

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