
The Impact of Learning Mode on Student Satisfaction with Teaching Quality: Evaluation of Academic Staff Teaching before and during Covid-19

Submitted 10/07/21, 1st revision 26/07/21, 2nd revision 24/08/21, accepted 30/09/21

Justyna Berniak-Woźny¹, Małgorzata Rataj², Marlena Plebańska³

Abstract:

Purpose: Due to the COVID-19 pandemic, Higher Education Institutions (HEIs) were forced to introduce remote education in a short period of time, regardless of the level of their technological competence. As a result, students and faculty changed their study mode from traditional to online within a few days. The aim of this study is to determine the impact of the teaching mode on the teaching quality perceived by students.

Design/Methodology/Approach: A survey of University of Information Technology and Management students was conducted in the summer semester preceding the pandemic in which traditional teaching was performed ($n = 8,462$, with 315 academic staff members evaluated) and in the summer semester during the pandemic where the mode of delivery was online ($n = 15,738$, with 248 academic staff members evaluated).

Findings: A statistical analysis of the results, broken down by academic staff gender, academic title, and field of teaching, shows no significant changes in the evaluation of the quality of academic staff teaching in general.

Practical Implications: The results of the research make it possible to define further directions of academic staff development in order to improve students' satisfaction with the education process and allow for better preparation of universities for the digital transformation in the field of higher education.

Originality/Value: The paper verifies the readiness of teaching staff for distance learning, both from the perspective of teaching skills as well as technical and digital skills.

Keywords: COVID-19, student satisfaction, teaching quality, traditional vs online education.

JEL codes: D22, D81, L21, O33.

Paper type: Research article.

¹University of Information Technology and Management, Rzeszów, Poland, ORCID: 0000-0002-3156-5755; jberniak@wsiz.edu.pl;

²University of Information Technology and Management, Rzeszów, Poland, ORCID: 0000-0002-0469-2687; mrataj@wsiz.edu.pl;

³Vistula University in Warsaw, Poland, ORCID: 0000-0002-1893-5803; m.plebanska@vistula.edu.pl

1. Introduction

The Covid-19 pandemic began in December 2019 in Wuhan, China, and spread across the globe in just a few months. The pandemic has hit all areas of life in tandem with higher education. According to UNESCO (2020) data, the impact of school closings at the beginning of 2020 globally affected 1,576,802,705 students in 192 countries. That is why UNESCO recommended a move to distance learning based on open educational applications so that schools and teachers could reduce the gap in education and thus the negative impact of the lack of access to education for pupils and students (Shehzadi et al., 2020). With the deterioration of the situation in 2020, higher education institutions were forced to switch to hybrid or fully online teaching, regardless of the level of preparation of academic staff and students and the level of infrastructure in the institutions themselves. Higher education institutions of every type switched to online education in an extremely short period of time.

Prior to the pandemic, we had already observed dynamic changes in the teaching strategy of Higher Education Institutions caused by external forces beyond their control, as well as those arising from their internal dynamics (infrastructure, academic staff, student skills, and attitudes towards online forms of education). For decades, researchers have also debated the relative effectiveness of face-to-face and online learning. Many comparative studies have been carried out to investigate whether face-to-face or traditional teaching methods are more productive or whether online or hybrid learning is more effective (Gopal *et al.*, 2021; Lockman and Schirmer, 2020; Pei and Wu, 2019; González-Gómez *et al.*, 2016; Khan *et al.*, 2020). For some, e-learning is better, while others say that online learning is less effective than its traditional version. Still others suggest that a hybrid model (online classes combined with face-to-face lectures) is the most desirable and productive method of educating students.

Several research studies have been carried out in the past on online learning, including student satisfaction, e-learning acceptance, distance learning success factors, and learning effectiveness (Lee, 2014; Yen *et al.*, 2018). In their research, Henriksen *et al.* (2020) also looked at the problems faced by educators when switching from offline to online teaching. However, student perceptions of online learning compared to traditional face-to-face learning have been largely overlooked (Falih *et al.*, 2016). There is little research available that analyses the quality of teachers and online teaching in the context of higher education (Martin, 2020). Few studies also address the satisfaction of students who experienced online learning during the Covid-19 pandemic (Banoor and Issack, 2020).

Therefore, this study attempts to determine the impact of the teaching mode on the teaching quality perceived by students. The pandemic forced educational institutions, including teachers and students, to switch to distance learning in a very short time, without the possibility of preparing both parties for such a rapid and

profound change in the form of education. This change, however, made it possible to verify the readiness of teaching staff for distance learning, both from the perspective of teaching skills as well as technical and digital skills. Assessment of the students' satisfaction with the competencies of teaching staff in the field of remote education will allow further directions of academic staff development to be determined in this area and activities aimed at improving student satisfaction with the education process to be defined.

This work is structured as follows: the next part contains a theoretical introduction to the concept of student satisfaction, with particular emphasis on the impact of the academic staff on the student assessment of the quality of education, as well as on traditional, online, and hybrid education. The second part presents the research methodology and the context in which the research was conducted. Then, the research results are presented and discussed. The article ends with conclusions and practical implications for higher education institutions and recommendations for future research.

2. Literature Review

2.1 Student Satisfaction

One of the critical and most often used key performance indicators in higher education institutions is student satisfaction. This indicator is used to assess curricula, lecturers, and the learning environment (Elassy, 2015) and is translated into an institution's image and reputation. Student satisfaction is affected by the degree to which universities meet or exceed their expectations. University management needs to determine the level of student satisfaction in order to be able to evaluate their performance and to build competitive advantage.

Satisfaction is the experience of happiness felt when we fulfill our needs and desires (Saif, 2014). In marketing, satisfaction refers to the feeling of pleasure or disappointment resulting from confronting the perceived results with expectations (Kotler and Keller, 2012). Student satisfaction is a short-term attitude, resulting from an evaluation of a student's educational experiences (Elliott and Healy, 2001). Elliott and Shin (2002) define student satisfaction as the subjective assessment of learning outcomes and experience. According to Budur *et al.* (2018), student satisfaction means students' ability to compare the desired benefit with the observed effect of a particular product or service. Therefore, student satisfaction can be defined as a function of the relative level of experiences and perceived outcomes of educational services over the period studied, (Carey *et al.*, 2002, Mukhtar, 2015).

The research carried out so far has allowed for a definition of the factors influencing student satisfaction. These factors can be divided into those related to the course content, academic staff, and the students themselves (Endres *et al.*, 2009; Blackmon and Major, 2012; Cochran *et al.*, 2016). Sebastianelli, Swift and Tamimi (2015)

found that the content of the course was the most important factor determining the level of satisfaction. Li, Marsh, and Rienties (2016) and Price, Arthur, and Pauli (2016) found that course design clarity and student-academic staff interaction were positively related to student satisfaction. Li *et al.* (2016) additionally indicated student control (flexibility) as a factor influencing satisfaction, and Price *et al.* (2016) highlighted student goals and motivation.

The academic staff plays a particularly important role in shaping students' satisfaction with the quality of educational services. Teacher quality is one of the most important measures of student satisfaction leading to the outcome of the educational process (Arambewela and Hall, 2009; Munteanu *et al.*, 2010). A high-quality educator is a professional who has unique teaching skills and understands the educational needs of students and is able to satisfy them (Kaufman, 2015). The role of the academic staff is equally important in all modes of delivery. Arbaugh (2010) found that both formal (course design) and informal (communication) factors had an impact on student satisfaction. Thus, defining and understanding the role of the academic staff is essential to further understand students' online learning success in higher education (Martin, 2020).

Many studies emphasise that high-quality teacher-student interaction is an integral part of student learning (Rovai and Jordan 2004; Garrison and Cleveland-Innes 2004). According to Hart (2012), the quality and frequency of interactions between students and teachers, along with the student's established sense of presence, are important predictors of a student's ability to overcome obstacles related to online learning. A particularly important factor influencing the level of student satisfaction is quick feedback (Kinicki *et al.*, 2004), information provided by lecturers and tutors about student performance. Rapid feedback has been found to help create a strong link between academic staff and students, ultimately leading to better learning outcomes (Simsek *et al.*, 2017; Chang, 2011). As research results show, academic staff members who respond quickly to questions and provide timely feedback on assignments tend to help students in online courses improve interaction, actively participate, focus on results, and understand study material (Martin, 2020).

Therefore, the digital competence of lecturers, in addition to the traditional (including the instructor's substantive knowledge, pedagogical knowledge, motivation, and experience) affects the level of student satisfaction (Gray and DiLoreto, 2016). Indeed, the quality of the teaching staff is an important determinant of student satisfaction during online classes. These competencies have undoubtedly been developed and assessed in the case of dedicated online academic staff. The pandemic, however, forced the development of online education competencies in all teachers: they had to adapt to the new environment, improve their technical skills, and at the same time support students in adapting to the new situation.

Prior to the outbreak of the pandemic, instructors in higher education were not routinely trained in the contexts (online environments) in which they had to quickly

find themselves. But even without the impact of the pandemic, the demand for online learning has been increasing, which translates into a need for comprehensive preparation of academic staff to work in new forms of education. More than a decade ago, researchers suggested that due to the complexity of teaching in online environments, professional development should be oriented towards the teacher and the context in which teaching will be delivered (Ferdig, 2010). Currently, this postulate is of particular importance to all stakeholders of higher education, including students, who will translate the effectiveness in this dimension into their satisfaction with the quality of education. Fortunately, the dynamic development of information and communications technology (by leaps and bounds in times of a pandemic) has made it possible for instructors to enjoy high-quality interaction between teacher and student, and in some cases even to increase student involvement and improve their learning outcomes.

2.2 Traditional vs Online Learning

Educational researchers are constantly examining the impact of the learning environment on learning outcomes (Ni, 2013). Particular attention is paid to the impact of online learning on student performance and the satisfaction of academic staff and students. This issue is difficult to study because it is multifaceted and key factors such as platforms and tools, the related possibility of interaction between and within lecturers, digital skills of academic staff and students, and the perception of online education among key actors are changing very dynamically.

We refer to online education when 80 per cent of the course content is delivered online without direct interaction on campus. Conversely, traditional, face-to-face learning is defined as learning in which all content is delivered in a traditional physical manner. In addition to online and traditional education, there are also indirect or hybrid forms that combine the benefits of direct contact with remote education technology (Ubell, 2017). In this case, 30-79 per cent of the course is online. Recently, a hybrid modality has become an important alternative in overcoming the limitations of online learning, while increasing instructor flexibility in teaching and facilitating a pedagogical transition to more technology-based models (Ho *et al.*, 2016; Shorey *et al.*, 2018).

Finally, there is a fourth form, called an internet-based course, where 1-29 per cent of the course is taken online. While, in reality, this type of course is a traditionally delivered one, it uses internet technology to complement the direct instructions given to students (Allen and Seamans, 2011). Online learning can also be divided into synchronous or asynchronous. Synchronous classes allow for live interaction between academic staff and the students (including audio conferencing, video conferencing, and webchat), while asynchronous technology involves significant time delays between instruction and its receipt (such as e-mail, earlier video or podcast recording, and forums) (Finkelstein, 2006).

Numerous studies on online and traditional education show that the assessment of the effectiveness of both forms, and thus the satisfaction of students and staff, is influenced by numerous factors, including, but not limited to, the students' knowledge base of course materials and their technical capability to navigate throughout the online course, course design complexity as well as the degree of difficulty of course assignments and time intensity, the nature of the communication (synchronous or asynchronous), frequency of interactions between the instructor and the students, and the student's academic course load (Fedynich 2014; Shotwell, 2015). Additionally, according to Bhuasiri *et al.* (2012), factors such as the curriculum, design, technology infrastructure, and course quality are also important. Also, students point to academic staff-driven factors as instructional design, course organisation, direct instruction, and assessment (Mehta, Makani-Lim, Rajan, and Easter, 2017).

Over the last two decades, numerous studies have been conducted on the perception of traditional and online education by students. The results of these studies are very mixed. According to Farmakis and Kaulbach (2013), Katy and Anderson (2006) and Pai (2013), there is little difference between student satisfaction of face-to-face when compared to online education. Research also consistently proves that online teaching methods bring positive learning outcomes for students (Nguyen 2015; Jesus *et al.*, 2017). Numerous studies have found no difference in the performance of online and traditional students, and studies have shown that the inclusion of online learning components improved student performance (US Department of Education, 2010).

According to Allen and Seaman (2013), online courses have been perceived to be inferior to face-to-face courses. On the other hand, research by Khali *et al.* (2020) showed that the online modality has been well-received. Students highlighted that online sessions were time-saving and that their personal performance was improved due to better time management. However, they also indicated that they encountered some challenges, including methodological, perceptual (content), technical, and behavioural both during sessions and in online exams. On the other hand, Kartha (2006) pointed out that the students who were enrolled in the online course were significantly less satisfied with the course, and that they expressed their preferences for the traditional approach to learning. In another study, Cao (2011) examined MBA students' course satisfaction and found that the students were less satisfied with online courses as compared to traditional face-to-face ones. Such discrepancies suggest that student satisfaction with online education is multifactorial and context-dependent.

3. Materials and Methods

As a result of the existing gaps in the research regarding student satisfaction with the academic staff teaching quality depending on the teaching mode, the aim of this study is to determine the impact of the teaching mode on the teaching quality

perceived by students. This section presents the empirical research settings, design, population, and instrument. A student satisfaction survey on traditional and online teaching quality was conducted in a non-public Polish business school and was based on a standard Course Experience Questionnaire. The study was conducted on students in the summer semester preceding the pandemic in which traditional teaching was performed ($n = 8,462$) and in the summer semester with an online mode of delivery during pandemic ($n = 15,738$). Students assessed 315 academic staff members in the 2019 summer session (traditional mode of delivery) and 248 in the 2020 summer session (online mode of delivery). The data analysis was conducted from the perspective of academic staff gender, field of teaching, and academic title.

3.1 Settings

The study was conducted among students at the University of Information Technology and Management in Rzeszów, Poland (UITM). UITM was established in 1996. It is the largest non-public university in southern-east Poland. Currently, there are four faculties at UITM, Management, Applied Computer Science, Media and Social Communication, and Medical. The university is characterised by a high degree of internationalisation, which is reflected in the number of foreign students – 25 per cent of students are international students from over 40 countries. For many years UITM has been conducting online classes using professional distance learning and online collaboration tools, although only as a supplement for the regular classes. Currently, students and teachers can use the Blackboard platform and Cisco Webex.

Thanks to these two platforms, students can participate in online classes conducted by academic staff, work on projects, and collaborate with other students using advanced collaboration tools for text, voice, and video communication. Additionally, students can access various learning materials using devices such as notebooks and smartphones. All students are trained to use the Blackboard and Cisco platforms during the onboarding meetings. Before the pandemic only selected academic staff were trained to create online content and deliver online synchronous and asynchronous classes. When the pandemic started the E-learning Department organised a number of training courses, assisted with online content, and provided a helpdesk to support the academic staff during such a dynamic shift from traditional to online mode of delivery.

3.2 UITM Academic Staff

The UITM academic staff comprises 218 full-time and over 100 part-time academic teachers. In the study, we covered 315 academic staff members in the 2019 summer session, and 248 in the 2020 summer session. UITM teaching staff come from all around the world (including Australia, England, Germany, Ukraine, Belarus, and Latvia). They teach full-time and part-time students in both Polish and English. In the period covered by the study, 49 per cent of the academic staff were female and

51 per cent were male in the summer of 2019, whereas in the summer of 2020 39 per cent of the academic staff were female, and 61 per cent were male. From the perspective of the academic title, in the summer of 2019 the academic staff consisted of 8 per cent professors, 35 per cent PhDs, and 56 per cent MAs and BAs, whereas in 2020 the academic staff consisted of 10 per cent professors, 32 per cent PhDs, and 58 per cent MAs and BAs. Academic staff members covered the four teaching fields provided by University: Management, Computer Science, Medical Science, and Media Communication.

3.3 Design and Instrument

A standard survey study design was used. The UITM Quality System provides an assessment of course quality based on a standardised Course Experience Questionnaire after every semester. The questionnaire, distributed online to all UITM students, consists of a set of 6 standardised questions referring to the quality of teaching including feedback and interaction. The questions differed slightly depending on whether the classes were held in a traditional (2019) or online (2020) form. In questions 1, 3, and 5A points represent questions for online classes (Table 1). The grading scale in the university education system ranges between 5.0 and 2.0, where 5.0 is very good and 2.0 is a failing grade. We used the same grading scale for the students to assess the teachers. The data collected relate to the two summer semesters before and during the pandemic, with a similar set of subjects. The summer semester 2019 was carried out 100 per cent traditionally, while in the results of the Covid -19 pandemic the summer semester 2020 was carried out 100 per cent online. The main intention of this study was to acquire information on student assessments of the teaching quality depending on the delivery mode, traditional versus online.

3.4 UITM Students

According to the data of the Central Statistical Office, the total number of UITM students in 2020 was 5,424 and 5,320 in 2019. Of this sample, in 2020 4,382 (81 per cent) were undergraduate students and 1,043 (19 per cent) were postgraduate students, and in 2019 4,055 (77 per cent) were undergraduate students and 1,175 (23 per cent) were postgraduate students. With respect to discipline, in 2020 2,177 (40 per cent) were Management students, 2,377 (44 per cent) were Computer Science students, 398 (7 per cent) were Medical Science students, and 473 (9 per cent) were Media Communication students, while in 2019, 2,359 (45 per cent) were Management students, 2,543 (49 per cent) were Computer Science students, 170 (3 per cent) were Medical Science students, and 158 (3 per cent) were Media Communication students. In terms of gender distribution, the population of students was balanced. In 2020 there were 2,784 females (51 per cent) and 2,641 males (49 per cent), and in 2019 2,614 females (50 per cent) and 2,616 males (50 per cent).

4. Results and Discussion

The Course Experience Questionnaire survey comprised 6 questions. In total, 24,200 surveys were collected, including 8,462 in the 2019 summer semester and 15,738 in the 2020 summer semester. 232 questionnaires were rejected because the authors were unable to assign a teacher to a particular field of teaching: these were mostly foreign language teachers not attached to any field of teaching. The average scores for the two periods of studies analysed, summer 2019 and summer 2020, are presented in Table 1. A low standard deviation indicates that the data points tend to be very close to the mean. It shows that students were closely aligned in the assessment of teachers. There was no group of students who rated teachers much worse or much better than other groups did.

Table 1. *The Course Experience Questionnaire results*

Summer semester Questions	2019		2020	
	average	St.dev	average	St.dev
Q1. In your opinion, is the teacher usually thoroughly prepared for classes? Q1A. In your opinion, is the teacher usually thoroughly prepared for online classes?	4.64	0.33	4.58	0.36
Q2. Does s/he give clear enough explanations of the issues that are discussed?	4.56	0.39	4.52	0.40
Q3. Does the teacher try to evoke interest in his/her course? Is s/he creative? Is s/he committed? Does s/he use various methods to stimulate activity and various teaching aids? (Presentations, group work, dialogues, case studies, working with a text, etc.). Q3A. Does the teacher try to evoke interest in his/her course? Is s/he creative? Is s/he committed? Does s/he use various methods to stimulate activity, and various teaching aids (multimedia presentations, group work in BB Collaborate, role-play, case studies, working with a text, uploading materials in an electronic form, video materials)?	4.52	0.41	4.5	0.40
Q4. Has the teacher specified the topics and conditions for receiving a credit clearly? Has s/he followed them?	4.60	0.37	4.57	0.36
Q5. Does s/he readily answer your questions and doubts in classes? Q5A. Does s/he readily answer your questions and doubts in online classes? Does s/he allow you to ask questions through the chat? Does s/he allow you to ask questions through the microphone? Does s/he respond to students' questions? Does s/he react to private messages?	4.64	0.33	4.61	0.35
Q6. Do you feel that your knowledge and/or skills have developed as a result of these classes? Do you feel the teacher fully uses the time of online classes? Does the teacher discuss/comment on/analyse the students' individual work?	4.48	0.39	4.48	0.38

Source: Own creation.

4.1 Gender

In 2019, female teachers did slightly better in the eyes of the students (Table 2). This may be due to the fact that female academic staff members are much more likely to teach theoretical, social sciences, and humanities courses, which are traditionally much better or more easily assessed by the students than hard sciences and practical sciences courses. However, from the research conducted, it does not appear that gender has a significant impact on the quality of teaching perceived by students.

Table 2. Final Teacher scores

Question number	Q1	Q2	Q3	Q4	Q5	Q6	average
Male 2019	4.58	4.47	4.44	4.53	4.57	4.38	4.50
Male 2020	4.58	4.50	4.45	4.53	4.55	4.44	4.51
Female 2019	4.70	4.64	4.60	4.67	4.70	4.57	4.65
Female 2020	4.55	4.45	4.44	4.53	4.57	4.43	4.50

Source: Own creation.

Interestingly, although the quality of male academic staff teaching is perceived by students as worse than the quality of female teaching, in the periods analysed this quality remained on the same level: the form of the classes did not affect the quality of assessment.

On the other hand, the analysis of the results of the female academic staff shows that in comparison to 2019, in the pandemic year 2020 the quality of teaching in the eyes of students slightly decreased in all 6 categories: the quality of online teaching was assessed as worse than that of traditional teaching. This phenomenon undoubtedly requires further research.

4.2 Teaching Field

The differences in the assessment of the quality of teaching from the perspective of the field of teaching are very small, both between the periods analysed and in different aspects. Thus, the mode of delivery does not affect student satisfaction with the quality of education. Regardless of the period, the highest ratings concern Medical Science and Management. At the same time, the lowest ratings are for Computer Science. This may be due to the nature of the courses and the fact that this area is dominated by the male part of the academic staff, which, according to our research, scores slightly lower than that of the female. Detailed results are presented in Table 3.

4.3 Academic Title

When examining how the academic title of a teacher influences the perception of the quality of his/her teaching by students (Table 4), we discovered an interesting

phenomenon: the lower the academic title of a teacher, the better teaching quality is perceived by students.

Table 3. Academic staff versus quality of teaching

Question number	Q1	Q2	Q3	Q4	Q5	Q6	average
Management 2019	4.65	4.51	4.45	4.59	4.58	4.44	4.54
Management 2020	4.61	4.51	4.47	4.55	4.56	4.46	4.53
Computer Science 2019	4.49	4.37	4.30	4.49	4.49	4.26	4.40
Computer Science 2020	4.46	4.33	4.33	4.46	4.51	4.35	4.41
Medical Science 2019	4.68	4.57	4.53	4.56	4.61	4.49	4.57
Medical Science 2020	4.63	4.57	4.51	4.56	4.60	4.51	4.56
Media Communication 2019	4.57	4.49	4.45	4.54	4.60	4.41	4.51
Media Communication 2020	4.60	4.50	4.45	4.56	4.59	4.42	4.52

Source: Own creation.

In the periods analysed, only academic staff with the title of PhD maintained their perceived level of teaching quality. For Professors, MAs and BAs, the result is slightly worse for the pandemic year and online learning. In the case of professors, age may be of significant importance (traditionally, the title of professor in Poland is obtained very late) and the associated lower digital competencies. In the case of the MAs and BAs, the assessment may be influenced by the practical nature of the classes conducted.

This group of academic staff is usually delegated to conduct workshops and laboratories, and practical classes, especially in such fields as Computer Science and Medical Science which remain a significant challenge in online delivery. This aspect, however, requires in-depth research and intensification of effort in the area of both the development of advanced digital and didactic competencies as well as the further development of the virtual learning environment with an emphasis on practical training.

The next step in the analysis of the data collected was to select a group of teachers whose average score from each of the 6 questions (Table 1) is below 4.0. Our goal was to identify the weakest links in the process of building student satisfaction as a starting point for further research and formulating recommendations for universities and other higher education institutions.

Table 4. The academic title versus quality of teaching

Question number	Q1	Q2	Q3	Q4	Q5	Q6	average
Professor 2019	4.55	4.36	4.29	4.49	4.52	4.28	4.42
Professor 2020	4.43	4.31	4.22	4.37	4.36	4.26	4.33
PhD 2019	4.59	4.49	4.45	4.52	4.57	4.41	4.51
PhD 2020	4.61	4.49	4.46	4.53	4.55	4.45	4.52
master and bachelor 2019	4.68	4.62	4.59	4.66	4.69	4.54	4.63
Master and Bachelor 2020	4.58	4.52	4.5	4.57	4.61	4.48	4.54

Source: Own creation.

In the 2019 summer semester (traditional education), the average grade below 4.0 was mainly assigned to men with PhDs teaching in Computer Science. On the other hand, in the summer semester (distance learning), the average grade below 4.0 was awarded mainly to men with the title of professor and also teaching in the Computer Science field. Low student satisfaction in the Computer Science area may result from the fact that the course is precise and strict, difficult to understand, and includes a large number of mathematics classes in the program, which is a challenge for students in both traditional and online form. These results clearly indicate the need for a dedicated approach to supporting academic staff and students in the process of education in the field of Computer Science. Undoubtedly, there are methods and techniques that can improve the quality and efficiency of the process and thus translate into a higher satisfaction of students with the quality of teaching in this area.

In general, during traditional teaching in 2019 teachers had the biggest problems with engaging students. This is covered in point 3 of the survey: “Does the teacher try to evoke interest in his/her course? Is she/he creative? Is she/he committed? Does she/he use various methods to stimulate activity and various teaching aids? (transparencies, computer, group work, dialogues, case studies, working with a text, etc.)”. During traditional teaching in 2020, teachers struggled mostly with the quality of instructions given and again with engaging the class participants which is reflected in the averaged scores of points 2 and 3 of the survey (“2. Does she/he give clear enough explanations of the issues that are discussed? 3.A. Does the teacher try to evoke interest in his/her course? Is she/he creative? Is s/he committed? Does she/he use various methods to stimulate activity, and various teaching aids (multimedia presentations, group work in BB Collaborate, role-play, case studies, working with a text, uploading materials in an electronic form, video materials?”). Thus, in the future academic staff training and development plans those two competencies should be covered.

In the last step, we tested the correlation between three variables (gender, academic title, and teaching field). All survey variables were provided on a nominal scale. Table 5 presents the correlation matrix results. The value of the correlation for the given three variables is very weak. We can say that no relationship exists between the variables studied. The results are an indication to the university's governing body that academic title, gender, and field of study are not necessarily correlated with high-quality teaching.

Table 5. Correlation matrix

	Academic title	Gender	Field of teaching	Average score
Academic title	1.00000			
Gender	-0.00252	1.00000		
Field of teaching	0.11302	-0.05670	1.00000	
Average score	0.15775	-0.01841	0.03327	1.00000

Source: Own creation.

5. Discussion and Conclusions

The aim of this study was to determine the impact of the teaching mode on the teaching quality perceived by students. A survey of University of Information Technology and Management (UITM) students was conducted in the summer semester preceding the pandemic in which traditional teaching was performed (n = 8,462, with 315 academic staff members evaluated) and in the summer semester during the pandemic where the mode of delivery was online (n = 15,738, with 248 academic staff members evaluated). The analysis of the data collected focused on the impact of the teaching mode on student satisfaction regarding teaching quality as to the perspective of academic staff gender, education field, and academic title.

The results of our research confirm that the mode of education itself (traditional vs online) does not significantly affect the assessment of the quality of education. Modern technology used in education enables educators to implement the educational process regardless of the form of communication. Lecturers who have substantive knowledge and are able to convey it in a traditional form do it effectively in an online form as well. Similarly, lecturers who are able to engage students, provide effective feedback, or engage in interactions with students, do it at a comparable level, regardless of the mode of education. With the support of the institution and good infrastructure, the teaching staff can implement the educational procedure both traditionally and online.

On the other hand, from the perspective of increasing student satisfaction, it seems important to examine individual methods of traditional and online work, course design, student-academic staff interactions, student engagement, or the functionality of the remote learning infrastructure. Undoubtedly, due to Covid 19, the term Virtual Learning Environment has acquired a completely new meaning and it is necessary to look at its significance from the perspective of the students and their needs, as well as the effectiveness of the entire process, both from the perspective of the institution, teaching staff and students. There is a need for research to identify other effective online and offline learning methods and to formulate a meticulous model by integrating the optimal proportion of online and traditional learning.

However, the assessment obtained of student satisfaction with the teaching competencies of academic staff in the field of online education allows for further directions of staff development in this area and activities aimed at improving student satisfaction with the education process to be defined. It also supports the observation that it is necessary to constantly develop and support academic staff who feel less confident in online teaching, which translates into perceived poorer student-teacher interactions.

This study has some limitations. The results of this study cannot be generalised as it was conducted only in one business university. Despite the high degree of

internationalisation of the population, it is still a single institution in the context of one country and a particular virtual learning environment. Student satisfaction is a highly contextual phenomenon and carrying out similar research in another higher education institution could bring completely different results influenced by, for example, a different academic staff structure or other infrastructure for distance learning, or the quality of support of students and lecturers in the transition process from traditional to distance learning.

Moreover, data was collected from only one type of respondent, the student. The perspective of academic staff, student support teams, and decision-makers could also give a more holistic perspective. The above points need to be taken into account in future research.

References:

- Allen, I.E., Seaman, J., Poulin, R., Straut, T.T. 2016. Online report card: Tracking online education in the United States. Babson Park: Babson Survey Research Group, Available at: <http://onlinelearningsurvey.com/reports/online-report-card.pdf>.
- Alsaaty, F.M., Carter, E., Abrahams, D., Alshameri, F. 2016. Traditional versus online learning in institutions of higher education: Minority business students' perceptions. *Business and Management Research*, 5(2).
- Arambewela, R., Hall, J. 2009. An empirical model of international student satisfaction. *Asia Pacific Journal of Marketing and Logistics*, 21(4), 555-569.
- Arbaugh, J.B., Desai, A., Rau, B., Sridhar, B.S. 2010. A review of research on online and blended learning in the management disciplines 1994-2009. *Organization Management Journal*, 7(1), 39-55.
- Aronoff, S.C., Evans, B., Fleece, D., Lyons, P., Kaplan, L., Rojas, R. 2010. Integrating evidence based medicine into undergraduate medical education: Combining online instruction with clinical clerkships. *Teaching and Learning in Medicine*, 22(3) 219-223.
- Banoor, R.Y., Issack, S.M. 2020. Learner satisfaction, engagement and performances in an online module: Implications for institutional E-Learning policy. *Education and Information Technologies*, 26(3), 2623-2656.
- Bhuasiri, W., Xaymoungkhoun, O., Zo, H., Rho, J.J., Ciganek, A.P. 2012. Critical success factors for E-learning in developing countries: A comparative analysis between ICT experts and faculty. *Computers & Education*, 58(2), 843-855.
- Blackmon, S.J., Major, C. 2012. Student experiences in online courses: A qualitative research synthesis. *Quarterly Review of Distance Education*, 13(2), 77-85.
- Budur, T., Rashid, C.A., Poturak, M. 2018. Students perceptions on university selection, decision making process: A case study in Kurdistan Region of Iraq. *International Journal of Social Sciences & Educational Studies*, 5(1), 133-144.
- Carey, K., Cambiano, R., De Vore, J. 2002. Student to faculty satisfaction at a Midwestern university in the USA, 93-97. Available at: <https://www.herdsa.org.au/publications/conference-proceedings/research-and-development-higher-education-quality-10>.
- Chang, N. 2011. Pre-service Teachers' views: How did E-feedback through assessment facilitate their learning? *Journal of the Scholarship of Teaching and Learning*, 11(2), 16-33. Available at: <https://files.eric.ed.gov/fulltext/EJ932142.pdf>.

- Cochran, J.D., Baker, H.M., Benson, D., Rhea, W. 2016. Business student perceptions of online learning: Using focus groups for richer understanding of student perspectives. *Organization Management Journal*, 13(3), 149-166.
- Creely, E. 2020. Folk Pedagogies for Teacher Educator Transitions: Approaches to Synchronous Online Learning in the Wake of COVID-19. *Journal of Technology and Teacher Education*, 28(2), 201-209.
- Elassy, N. 2015. The concepts of quality, quality assurance and quality enhancement. *Quality Assurance in Education*, 23(3), 250-261.
- Elliott, K.M., Healy, M.A. 2001. Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education*, 10(4) 1-11.
- Elliott, K.M., Shin, D. 2002. Student satisfaction: An alternative approach to assessing this important concept. *Journal of Higher Education Policy and Management*, 24(2), 197-209.
- Endres, M.L., Chowdhury, S., Frye, C., Hurtubis, C.A. 2009. The multifaceted nature of online MBA student satisfaction and impacts on behavioral intentions. *Journal of Education for Business*, 84(5), 304-312.
- Farmakis, H., Kaulbach, M. 2013. Teaching online? A guide on how to get started. *International Journal of Organizational Innovation*, 6(2), 34-40.
- Fedynich, L., Bradley, K.S., Bradley, J. 2015. Graduate students' perceptions of online learning. *Research in Higher Education Journal*, 27(1).
- Ferdig, R.E. 2010. Continuous Quality Improvement Through Professional Development for Online K-12 Instructors. Michigan Virtual University.
- Finkelstein, J.E. 2006. Learning in real time: Synchronous teaching and learning online. John Wiley & Sons.
- Garrison, D.R., Cleveland-Innes, M. 2004. Critical factors in student satisfaction and success: Facilitating student role adjustment in online communities of inquiry. In J. Bourne and J.C. Moore (Eds.), *Elements of quality online education: Into the mainstream*. Olin College-Sloan-C.
- González-Gómez, D., Jeong, J.S., Airado Rodríguez, D., Cañada-Cañada, F. 2016. Performance and perception in the flipped learning model: An initial approach to evaluate the effectiveness of a new teaching methodology in a general science classroom. *Journal of Science Education and Technology*, 25(3), 450-459.
- Gopal, R., Singh, V., Aggarwal, A. 2021. Impact of online classes on the satisfaction and performance of students during the pandemic period of COVID 19. *Education and Information Technologies*.
- Gray, J.A., DiLoreto, M. 2016. The effects of student engagement, student satisfaction, and perceived learning in online learning environments. *International Journal of Educational Leadership Preparation*, 11(1).
- Ho, A., Lu, L., Thurmaier, K. 2006. Testing the reluctant professor's hypothesis: Evaluating a blended-learning approach to distance education. *Journal of Public Affairs Education*, 12(1), 81-102.
- Jesus, Â., Gomes, M.J., Cruz, A. 2017. Blended versus face-to-face: Comparing student performance in a therapeutics class. *IET Software*, 11(3), 135-140.
- Kartha, C.P. 2006. Learning business statistics: Online vs. traditional. *The Business Review, Cambridge*, 5(1), 27-38.
- Kauffman, H. 2015. A review of predictive factors of student success in and satisfaction with online learning. *Research in Learning Technology*, 23.
- Khalil, R., Mansour, A.E., Fadda, W.A., Almisnid, K., Aldamegh, M., Al-Nafeesah, A., Alkhalifah, A., Al-Wutayd, O. 2020. The sudden transition to synchronized online

- learning during the COVID-19 pandemic in Saudi Arabia: A qualitative study exploring medical students' perspectives. *BMC Medical Education*, 20(1).
- Khan, S., Rabbani, R.M., Thalassinos, I.E., Atif, M. 2020. Corona Virus Pandemic Paving Ways to Next Generation of Learning and Teaching: Futuristic Cloud Based Educational Model. Available at SSRN: <https://ssrn.com/abstract=3669832>.
- Kotler, P., Keller, K. 2012. *Marketing Management*. NJ: Prentice Hall.
- Lee, J. 2014. An exploratory study of effective online learning: Assessing satisfaction levels of graduate students of mathematics education associated with human and design factors of an online course. *The International Review of Research in Open and Distributed Learning*, 15(1).
- Li, N., Marsh, V., Rienties, B. 2016. Modelling and managing learner satisfaction: Use of learner feedback to enhance blended and online learning experience. *Decision Sciences Journal of Innovative Education*, 14(2), 216-242.
- Lockman, A.S., Schirmer, B.R. 2020. Online instruction in higher education: Promising, research-based, and evidence-based practices. *Journal of Education and e-Learning Research*, 7(2), 130-152.
- Martin, A.M. 2020. Instructor qualities and student success in higher education online courses. *Journal of Digital Learning in Teacher Education*, 37(1), 65-80.
- Mehta, R., Makani-Lim, B., Rajan, M.N., Easter, M.K. 2017. Creating online learning spaces for emerging markets: An investigation of the link between course design and student engagement. *Journal of Business & Behavioral Sciences*, 29(1), 116-133.
- Mukhtar, U., Anwar, S., Ahmed, U., Baloch, M.A. 2015. Factors effecting the service quality of public and private sector universities comparatively: an empirical investigation. *Arts, Science & Commerce*, 5(2), 132-142.
- Munteanu, C., Ceobanu, C., Bobalca, C., Anton, O. 2010. An analysis of customer satisfaction in a higher education context. *International Journal of Public Sector Management*, 23(2), 124-140.
- Nguyen, T. 2015. The effectiveness of online learning: Beyond no significant difference and future horizons. *MERLOT Journal of Online Learning and Teaching*, 11(2), 309-319.
- Ni, A.Y. 2013. Comparing the effectiveness of classroom and online learning: Teaching research methods. *Journal of Public Affairs Education*, 19(2), 199-215.
- Pei, L., Wu, H. 2019. Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. *Medical Education Online*, 24(1), 1666538.
- Price, R.A., Arthur, T.Y., Pauli, K.P. 2016. A comparison of factors affecting student performance and satisfaction in online, hybrid and traditional courses. *Business Innovation Journal*, 8(2), 32-40.
- Rovai, A.P., Jordan, H. 2004. Blended learning and sense of community: A comparative analysis with traditional and fully online graduate courses. *The International Review of Research in Open and Distributed Learning*, 5(2).
- Saif, N.I. 2014. The Effect of Service Quality on Student Satisfaction: A Field Study for Health Services Administration Students. *International Journal of Humanities and Social Science*, 4(8), 172-181.
- Sebastianelli, R., Swift, C., Tamimi, N. 2015. Factors affecting perceived learning, satisfaction, and quality in the online MBA: A structural equation modeling approach. *Journal of Education for Business*, 90(6), 296-305.

- Shehzadi, S., Nisar, Q.A., Hussain, M.S., Basheer, M.F., Hameed, W.U., Chaudhry, N.I. 2020. The role of digital learning toward students' satisfaction and university brand image at educational institutes of Pakistan: A post-effect of COVID-19. *Asian Education and Development Studies*, 10(2), 276-294.
- Shorey, S., Siew, A.L., Ang, E. 2018. Experiences of nursing undergraduates on a redesigned blended communication module: A descriptive qualitative study. *Nurse Education Today*, 61, 77-82.
- Shotwell, M., Apigian, C.H. 2015. Student performance and success factors in learning business statistics in online vs. on-ground classes using a web-based assessment platform. *Journal of Statistics Education*, 23(1).
- Simsek, U., Turan, I., Simsek, U. 2017. Social studies teachers' and teacher candidates' perceptions on prompt feedback and communicate high expectations. *People: International Journal of Social Sciences*, 3(1), 332-345.
- The US Department of Education. 2010. Evaluation of Evidence-based practice in online learning: A metanalysis and review of online learning studies. Available at: <https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>.
- Ubell, R. 2017. Why faculty still don't want to teach online. Available at: <https://onlinelearningconsortium.org/faculty-still-dont-want-teach-online/>.
- UNESCO. 2020. Education: From disruption to recovery. Available at: <https://en.unesco.org/covid19/educationresponse>.
- Yen, S., Lo, Y., Lee, A., Enriquez, J. 2018. Learning online, offline, and in-between: Comparing student academic outcomes and course satisfaction in face-to-face, online, and blended teaching modalities. *Education and Information Technologies*, 23(5), 2141-2153.