

TEACHING QUALITY ASSESSED BEFORE, DURING AND AFTER COVID-19

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Purpose: The Covid-19 pandemic has become a challenging time for education worldwide. Though different modes of distant learning have already become widely used at many of Higher Education Institutions (HEIs) long before the pandemic, the lockdowns involved total migration of teaching on various platforms of learning content management despite a level of available technological support and skills of teachers. These forced innovations have had a significant impact on the quality of teaching which has not yet been fully assessed in research. Student perception of the change learning environment and their assessment of the quality of the education they received are one of the little-studied problems. The paper presents the study results on how students are satisfied with the teaching quality ensured by different modes of instruction.

Design/methodology/approach: The University of Information Technology and Management has implemented the Course Experience Questionnaire which is a standard tool for semester assessing the quality of courses. For this research in total 40,734 surveys were collected. The study covers the 4 years 2019-2022.

Findings: The statistical analysis of research shows the instruction mode itself does not have a noticeable effect on the acquired knowledge and skills. The technological maturity of the teaching staff these days is a necessity.

Practical implications: What outcomes and implications for practice, applications and consequences are identified? How will the research impact upon the business or enterprise? What changes to practice should be made as a result of this research? What is the commercial or economic impact? Not all papers will have practical implications.

Originality/value: The results of the research and observations show that timely intervention of IT experts and high-performance infrastructure are the pre-requisites needed to teach with ease in traditional, hybrid and online forms.

Keywords: student satisfaction, teaching quality, online education, hybrid education.

Category of the paper: Case study.

1. Introduction

The Covid-18 pandemic has affected education system all over the world, however it also reveals the full extent of its evolving and adaptive nature. Educators at higher education institutions were challenged with many problems and are dealing with these problems effectively despite obstacles, for example insufficient time to react, lack of communication/computer facilities and software resources, insufficient PC skills of teachers etc.

The pandemic led to forced adaptation and promotion of e-learning methods. COVID-related issues continue to be addressed by researchers. Overall, extensive results provide valuable ideas for all professionals in education practice and management, who plan teaching activities during crises affecting public health.

The COVID-19 pandemic has been overcome, nevertheless the experience learned is still has a great value. The pandemic may simulate to a certain extent long-term public crises of other nature which have some common features with the COVID-19 situation, e.g. duration, disorganization of social life in many respects, disturbance in routine services, a threat to human health and life etc. Examples of this abound in today life. In order to establish this point, it is enough to mention the war in Ukraine.

The COVID-19 pandemic preceded the war and partly overlapped with it. Ukrainian colleagues reported in their research publications (Lavrysh et al., 2022; Tsekhmister, 2022) that lockdowns extended the scope of distance learning which became a critical salvation when the war began. Many of other instructional approaches which were implemented because of the pandemic have found a new use in the war time.

In-depth analysis, interpretation, conclusion delivering and decision- making based on wide data collected by researchers all over the world definitely requires a long time not only for data processing, but also to reach a more objective, distant in time point of view. Thus, COVID-related research is going on. No matter how rich available data are, there are and there always will be gaps characteristic of specific countries, learners, instructional modes, education systems etc.

The fast implementation of distance learning has had a significant impact on the quality of teaching which has not yet been fully assessed in research. Student perception of the change learning environment and their assessment of the quality of the education they received are one of the little-studied problems. To address this issue, the study focuses on the analysis of the challenges teachers face in different forms of teaching and create a support system for them.

2. Literature review

The Covid-18 pandemic has enormous consequences on education all over the world that is documented in many details in multiple publications. Earlier papers focused on the importance of migrating from traditional or blended teaching modes to the full-scale distance education, however the performance of students was found relatively low, e.g. in case of teaching medical informatics to international students (Berezovska, Semenets, Vakulenko, 2020). The issue of teaching quality and student satisfaction gradually moved to one of leading positions in literature. Various instructional technology and tools are considered. Web video conferencing ensured student satisfaction, and teaching quality, though a blended mode was found an optimal solution of future course delivery (Fatani, 2020). Modelling, e.g. structural equation modelling, was used to examine "student satisfaction with e-learning, the adaption of online learning channels, digital competency of students' involvement, and academic achievement during COVID-19" (Younas, Muhammad et al., 2022).

A large-scale study population (Bezerra et al., 2021) consist of 10,092 students. Online survey completed by these students in 10 countries on 4 continents during the first wave of the COVID-19 pandemic highlighted key factors "which have influenced how students perceive their academic performance during this emergency changeover to e-learning". According to the study results, administrative, technical and learning support delivered by tutors and librarians were key factors of the effectiveness of e-learning. Energetic position, responsiveness, and timely feedback from teachers, as well as overall quality of course delivery and IT infrastructure were among main factors, while IT-related skills of learners and "online interactions with colleagues and teachers were shown to be slightly less important factors, yet still statistically significant". Another research showed student satisfaction "with Google Hangouts the most for lecture delivery, followed by Google Classroom and LMS (Moodle) for course management and assessments" (Almusharraf, Khahro, 2020). Many platforms were used to continue education process. Statistical analysis and a combined sampling method was applied to explore the efficiency of Microsoft Teams implementation (Cruz-Pérez et al., 2020).

Relationship "between quality of learning experience, the second construct student satisfaction and the third construct perceived overall experience among undergraduate students" was explored, and the analysis outcome "reiterates the importance of course content, course structure, lecture-delivery quality, instructor mentoring and student-instructor interactions" (Al Tawil et al., 2022). Numerous papers examine student satisfaction and quality of teaching with specific context of different countries (Nikou, Maslov, 2023; Basuony et al., 2021; Surahman, Sulthoni, 2020; Ananda et al., 2021; Alipour-Anbarani et al., 2023). Hierarchical linear modelling was performed to explore "relationships among student, faculty (adaptations of faculty members to distance education) and institutional (distance learning capacities of the universities) variables that affected satisfaction of the students related to

distance education in higher education institutions in Turkey during COVID-19 pandemic" (Ergin-Kocaturk, Karadag, 2021). This study was carried out at 30 universities and covered almost 15,000 students and nearly 4,000 academics. It was found that "universities with higher distance education capacities got higher satisfaction scores".

Even this concise literature overview gives an idea of how many aspects have been posed by the research on teaching quality and student satisfaction during the COVID-19 pandemic. Elaborate analytical methods and statistics models have been offered to find out determinant factors and their interrelations. Nevertheless, it is important to gather more data on this important issue which continues to be problematic because post-pandemic return to traditional teaching mode is followed by appearing new facet in student attitude to studies.

According to what we were able to find, there are not many studies referring to comparison of data collected during and after COVID-19. Additionally there is lack of data on assessment of teaching quality after COVID-19. This gap of research data has become a focus of our study.

3. Methodology of research

The UITM students were involved in the study conducted in the four years (2019-2022) of summer semesters before, during and after the pandemic. In 2019 and 2022, the summer semester was held entirely in the traditionally form. Online mode became inevitable due to the COVID-19 pandemic in the 2020 summer semester. Hybrid classes were held during the wane of the pandemic.

Total numbers of the UITM students reported by the Central Statistical Office are: 2019 – 5320; 2020 – 5424; 2021 – 5267 and in 2022 – 5236.

Population of Research

In the study, 315 staff members were engaged in the 2019 summer semester; 248 in the 2020 summer semester; 405 in the 2021 summer semester, and 434 in the 2022 summer semester.

In total, 40,734 surveys were collected: $n = 8462$ - traditional teaching in 2019; $n = 15,738$ online mode in 2020; $n = 7182$ hybrid mode of course content delivery in 2021, and $n = 16,734$ - resuming to the traditional teaching in 2022.

General Background of Research

The UITM faculty are very international. They teach courses included in the four major programs offered at the University: Management, Computer Science, Medical Science, and Media Communication.

Distance learning and online collaboration tools have been implementing at the UITM for 20 years to provide online classes in addition to studies on campus. The MOODLE platform and Cisco Webex are tools that are in intensive use now. “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. 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” (Berniak, Plebańska, Rataj, 2021).

Each semester the course quality is analysed using the Course Experience Questionnaire disseminated to students through the UITM Quality System. This questionnaire includes 6 sections of standard questions regarding the teaching quality. The questions are designed to be mode-specific, that is, they bear the imprint of the course delivery mode: traditional – 2019, 2020; online – 2020, hybrid – 2021.

The data collected during the four years under consideration are presented in Table 1. In the following years, the Human Resources Department improved or changed the individual questions. Questions in brackets have been assigned to the year they were in the survey.

The UITM uses a five-point scale for assessing student knowledge, where 5 is the highest score and 2 is failing grade. Students rated teachers on the same scale.

Table 1.
The Course Experience Questionnaire results

Summer semester	2019		2020		2021		2022	
Questions	Average	St.dev	Average	St.dev	Average	St.dev	Average	St.dev
Q1(2019). Do you think that the teacher is usually well prepared for classes? Q1(2020-2021). Do you think that the teacher is usually well prepared for online classes? Q1(2022). In your opinion, did the teacher create a friendly atmosphere in the classroom?	4.64	0.33	4.58	0.36	4.60	0.43	4.58	0.57
Q2. Does the teacher clearly explain the topic being discussed? Q2(2022) In your opinion, did the instructor convey the issues discussed in an understandable and interesting way?	4.56	0.39	4.52	0.40	4.56	0.43	4.54	0.58

Cont. table 1.

Q3. Is the teacher trying to generate interest in the course? Is How strong are the creativity and dedication of the teacher? Are different stimulation methods and teaching aids used? (Presentations, group work, dialogues, case studies, working with a text, etc.). Q3(2020-2021). Is the teacher trying to generate interest in the course? Is How strong are the creativity and dedication of the teacher? Are different stimulation methods and teaching aids used (multimedia presentations, group work in BB Collaborate, role-play, case studies, working with a text, uploading electronic materials, videos)? Q3(2022). Did the teacher provide additional teaching materials related to the subject?	4.52	0.41	4.5	0.40	4.62	0.41	4.56	0.57
Q4. Has the teacher determined the topics and the rules for obtaining credit for them? Does the teacher adhere to this rules? Q4(2022). Do you think that the topics and conditions for credits were clearly defined and were followed?	4.60	0.37	4.57	0.36	4.62	0.42	4.58	0.57
Q5. Does the teacher readily answer your questions and resolve your doubts during class? Q5(2020-2021). Does the teacher readily answer your questions and resolve your doubts during class? Does the teacher allow you to ask questions via the chat or microphone? Does the teacher answer students' questions and read personal messages? Q5(2022). Did your tutor enable you to have contact with him/her outside of the classroom, e.g. during consultations?	4.64	0.33	4.61	0.35	4.67	0.37	4.53	0.56
Q6. Do you believe that your knowledge and and/or skills have improved due to this activities? Does your the teacher use the learning time effectively? Is individual student work discussed and commented? Q6(2022). Would you recommend this teacher to other students?	4.48	0.39	4.48	0.38	4.60	0.42	4.53	0.59

Source: Own creation.

Data collected over the time period under consideration showed that quality assessment does not depend on the mode of course delivery.

A low standard deviation confirms that the data points are fairly close to the mean. This is an indicator of the unanimity of students in assessing teachers.

Data analysis, results and discussion

When analysing the data, we took into account the gender of the teacher, the courses taught and the academic rank.

Gender

The gender breakdown of teachers during the period under consideration was as follows:

- 2019 - 49 percent female and 51 percent male;
- 2020 - 39 percent female, and 61 percent male;
- 2021 - 50 percent female, and 50 percent male;
- 2022 - 47 percent female, and 53 percent male.

During traditional classes in 2019 and hybrid instruction in 2021, female teachers performed slightly better from the students perspective (Table 2). This can be explained by the fact that female faculty members commonly teach theoretical, social, and humanities disciplines. Typically, students evaluated such classes favourably and tolerantly than courses in applied sciences, however research data shows that gender is not associated with a noticeable influence on the quality of teaching as perceived by students.

This analysis covers the whole spectrum of disciplines taught by all male and female faculty, without dividing between science, technology and humanities. However it seem that the nature of discipline matters and we are planning to conduct more detailed analysis in our future studies to compare the quality of teaching deliver by male and female faculty within disciplines of similar type.

Table 2.

Final points scored by teachers

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
Male 2021	4.57	4.52	4.61	4.62	4.65	4.57	4.59
Male 2022	4.55	4.58	4.59	4.54	4.56	4.54	4.56
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
Female 2021	4.66	4.62	4.66	4.66	4.72	4.66	4.66
Female 2022	4.55	4.60	4.58	4.54	4.57	4.54	4.56

Source: Own creation.

The analysis of the results for female teachers shows that according to 6 survey parameters students rate the work on this category of teachers worse in 2022, when classes resumed in the traditional format, than in 2019, when this format was still the norm. This situation definitely requires further interpreting. Currently we can only suggest that classroom teaching requires some specific skills which should be used and trained on the regular basis. Our next step will be to identify, what these skills are.

Teaching Field

In terms of student satisfaction the mode of instruction is irrelevant to the field of teaching. Detailed results are presented in Table 3.

Table 3.

Field of teaching vs 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
Management 2021	4.58	4.54	4.61	4.63	4.68	4.60	4.61
Management 2022	4.65	4.71	4.67	4.62	4.64	4.64	4.65
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
Computer Science 2021	4.64	4.60	4.66	4.67	4.71	4.64	4.65
Computer Science 2022	4.62	4.58	4.65	4.67	4.72	4.64	4.64

Cont. table 3.

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
Medical Science 2021	4.63	4.58	4.64	4.62	4.68	4.61	4.63
Medical Science 2022	4.39	4.46	4.41	4.37	4.38	4.37	4.40
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
Media Communication 2021	4.35	4.30	4.51	4.15	4.36	4.14	4.30
Media Communication 2022	4.53	4.64	4.61	4.49	4.51	4.52	4.55

Source: Own creation.

The average grade in all fields of teaching ranges from 4,30 to 4,65. No field of teaching was rated particularly worse or better. Also, the individual years when the mode of teaching changed had no influence on the quality of teaching as assessed by students.

Academic Title

The academic rank breakdown of the UITM faculty is as follows:

- 2019 - 8 percent professors, 35 percent PhDs, and 56 percent MAs and BAs;
- 2020 - 10 percent professors, 32 percent PhDs, and 58 percent MAs and BAs;
- 2021 - 12 percent professors, 32 percent PhDs, and 56 percent MAs and Bas;
- 2022 - 11 percent professors, 33 percent PhDs, and 56 percent MAs and BAs.

Analysing the relationship between the academic rank and teaching quality, we found that, from the students' point of view, teacher with lower academic rank teach better than the higher-ranking colleagues. To explain this relation it should be taken in account that lower ranked faculty are mostly involved in teaching applied courses while higher ranked once teach fundamental matters.

Over the analysed periods, teachers with doctoral, master's and bachelor's degrees remained at their level of teaching quality. The situation with professors is somewhat worse, which may be due to age and insufficient digital competencies. Professors mainly give lectures, the theoretical part of the subject, which is always underestimated by students. The applied nature of the classes taught by the MAs and Bas could be favourable for assessing the quality of their teaching.

Table 4.

The academic title vs 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
Professor 2021	4.32	4.25	4.34	4.37	4.43	4.34	4.34
Professor 2022	4.48	4.54	4.53	4.49	4.53	4.50	4.51
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
PhD 2021	4.61	4.58	4.64	4.64	4.72	4.62	4.63
PhD 2022	4.57	4.60	4.60	4.57	4.59	4.56	4.58

Cont. table 4.

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
Master and bachelor 2021	4.69	4.64	4.70	4.70	4.72	4.67	4.69
Master and bachelor 2022	4.55	4.60	4.59	4.54	4.56	4.54	4.56

Source: Original data.

4. Conclusion

The study was undertaken to figure out how the instruction mode influences the quality of teaching perceived by students. The results obtained indicate that the instruction mode itself (traditional, hybrid, online) does not have a noticeable impact on how students evaluate the quality of the education they received. This means that the teaching mode can be chosen accordingly to the prevailing circumstances. “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.” (Berniak, Plebańska, Rataj, 2021).

Thus, further efforts are needed to develop effective approaches of online and offline learning teaching and recommendations for universities and other higher education institutions.

Totally the study highlighted that all instruction modes (traditional, hybrid, online) may be of equally good quality which depends on teachers’ attitude and relevant skills.

The study is somehow limited by the fact that teaching quality was assessed regardless the nature of the course taught itself, only gender and academic rank were taken into consideration. This more detailed analysis will be a topic of future research.

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