

Research Article

Perceptions of Medical Teachers and Students about Barriers and Capacities in Distance Learning

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ABSTRACT

Background: Currently, distance learning is booming and requires adaptation from students, teachers, and faculty. Identifying constraints is essential as inputs for faculty development. **Purposes:** to identify teacher and medical student perceptions of barriers and capacity in distance learning. **Methods:** This research was conducted using a cross-sectional survey of 42 medical teachers and 613 students Faculty Medicine and Health, Universitas Muhammadiyah Jakarta students. It utilized secondary data from the Quality Assurance Unit in October 2020. Six variables were studied in this research, i.e., technical constraints of distance learning, teachers' perceptions of the essential components in distance learning, student self-perceptions, teachers' and students' perceptions of web conference effectiveness, and teachers' self-perceptions and students' satisfaction. **Results:** The top 5 technical constraints of distance learning complained were signal interference, internet data plan, limited e-literatures, and lack of communication with the faculty. According to the teachers, the essential components were faculty commitment (90%), regulation (85%), technical support (79%), course management, and teaching-learning guidelines (77%). Most students experience learning difficulties during distance learning. However, only 45% of students felt their independent learning method is effective. Teachers and students agreed that web conferencing is ineffective for learning clinical skills but disagreed on cognitive knowledge. 74% of teachers stated that the presentation was engaging. Meanwhile, more than 25% of students were dissatisfied. **Conclusion:** The top 4 technical constraints were signal interference, internet data plan, limited e-literatures, and lack of communication with the faculty. The important components of distance learning were faculty commitment (90%), 83% of students experienced learning difficulties during distance learning.

Keywords: components in distance learning, distance learning, technical constraints of distance learning

INTRODUCTION

Since World Health Organization (WHO) declared the 2019 Coronavirus disease pandemic on March 11, 2020 and it has not been revoked yet, this stipulation has forced all governments in the world to take aggressive and rapid measures to contain

the rate of transmission in order to reduce mortality and morbidity, one approach is to limit population migration in various ways (1).

A total of 1.5 billion students and 63 million teachers worldwide have been impacted by the policy of restricting

population migration due to the closing of face-to-face learning activities at all levels of education (2). As a result, face-to-face learning activities have been closed and replaced with pure distance learning (DL), which of course, requires adaptation on the part of the various parties, be they students, teachers, or management institutions (3,4).

Based on research studies, the adaptation process faced by students and teachers is categorized into several factors, including psychological, physical, and economic obstacles (3,5). As a result of the spread of COVID-19, several psychological impacts have been experienced (4,6,7).

According to a cross-sectional survey conducted in Bangladesh, 15% of the 476 students had depression, and 18.1% had anxiety disorders (8). Distance learning also leaves various physical disorders such as posture and musculoskeletal disorders (9,10). Neither teachers nor students are immune from the effects of economic problems. Financial complaints include reduced income that negatively impacts daily life, loss of income sources, and troubled parents' financial stability (11,12).

In all studies about problems arising from distance learning for teachers and students, at least one or more technical factors are cited, including the atmosphere at home. Lack of support from management institutions, inadequate infrastructure, and insufficient training related to the technology channels are all non-conducive factors (13,14). According to another study, technical barriers included limited interaction and inadequate infrastructure support (15).

According to a study, technical problems and other issues that arise and affect teachers and students can be overcome if efforts are made to improve

teachers' abilities and skills in managing the education system and the tools available (16). A lack of confidence in teachers in applying technical skills and knowledge will probably fail in the DL process, as well as the reverse (17,18). The success of DL also depends on factors that students can influence, starting with their learning environment, self-motivation, personality, disciplinary habits, adaptability to online learning, creativity, and willingness to try new things (19). The way students learn is the basis for the success of a DL. Creativity, self-reflection in social interactions through online media, and how to show collective effort among students are important parts of implementing DL (20–22).

There is an apparent link between the capacities teachers and students possess in carrying out the DL process as a solution to the problems it addresses that needs to be explored in a separate study to identify various barriers and the capacities of the two groups as part of DL. This analysis is intended to provide an overview and framework for policies related to implementing DL in the education community, including secondary and higher education.

METHODS

This research was conducted using a cross-sectional survey of 42 medical teachers and 613 Faculty Medicine and Health students at Universitas Muhammadiyah Jakarta. The data used was secondary data taken from the Quality Assurance Unit in October 2020 using google form as a self-administered questionnaire with a Likert scale. The response rate was 92% teachers from a total population of 42 teachers and 83% students. There were six variables studied in this research. The six variables in this research,

i.e., technical constraints of distance learning, teachers' perceptions of the essential components in distance learning, student self-perceptions, and teachers' and students' perceptions of web conference effectiveness. The last variables were teachers' self-perceptions and students' satisfaction. Ethical clearance was approved on 29 September 2021 by The Commission of Health Research Ethics Faculty of Medicine and Health, Universitas Muhammadiyah Jakarta (No. 164/PE/KE/FKK-UMJ/IX/2021).

RESULTS

Technical barriers in distance learning

Students complained about technical problems in distance learning; the top 5 obstacles respectively was signal interference (91%). Meanwhile, the highest technical barrier that lecturers complained about was signal disturbances (61%).

Table 1. Students' and lecturers' complaints about technical barriers in distance

Technical barriers	Students (%)	Lecturers (%)
Signal interference	91	61
Requirement of extensive internet data packages	73	41
limited references	45	31
Coordination with the campus	34	46
Collaboration with friends	32	-
Communication with students	-	33
Communication with lecturers	31	-
Difficulty operating devices or applications	15	23
Device limitations	24	9

Teachers' perceptions on the essential components in distance learning

All lecturers respondents agree that lecturers need to understand alternating teaching methods for distance learning.

According to the teachers' perceptions, the essential components for distance learning were Faculty commitment (90%), regulation (85%), technical support (79%), and both course management and teaching-learning guidelines had the same proportion (77%).

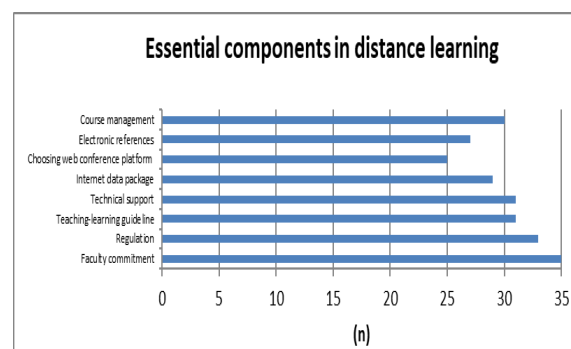


Figure 1. Teachers' perception on essential components in distance learning

Students' perceptions on learning difficulties

There were 83% of students experienced learning difficulties during distance learning. Otherwise, only 45% of respondents who had modified their independent learning felt it was effective. The exact proportion stated that the modification in their independent learning was less effective. In contrast, 10% of respondents did not change their independent learning pattern.

Perceptions of Lecturers and Students on the Effectiveness of Web Conferences for distance learning

Teachers and students agreed that web conference is ineffective for learning clinical skills, as stated by 74% of lecturers and 79% of students. Unlike the case with students' perceptions of the effectiveness of web conferences for lectures, 59% of students stated that they were less effective. In comparison, 92% of lecturers indicated that it was effective.

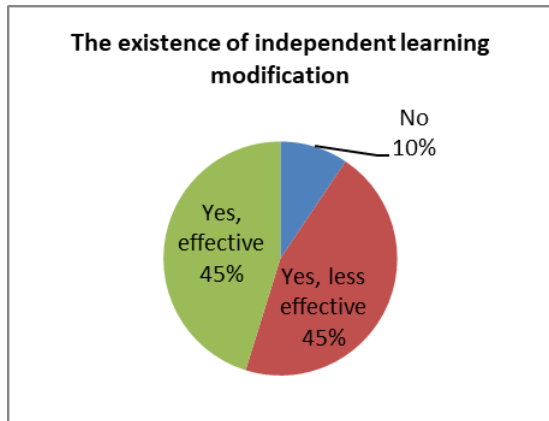


Figure 2. Students' perceptions about modification of their independent learning

Lecturer self-assessment vs. student satisfaction on teaching skills

Being skillful in utilizing Learning Management System (LMS), being active in the LMS to facilitate asynchronous learning, and making attractive learning materials were the lowest skills teachers felt. Three adequate skills refer to teacher perceptions, i.e., guiding students to learn, proficient in applying online learning media, and giving feedback for students.

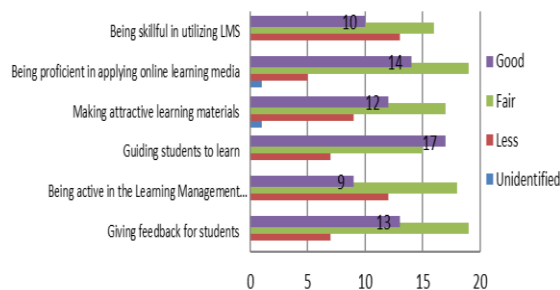


Figure 3. Lecturers' self assessment on teaching skills

More than 70% of students were satisfied with the performance of lecturers and the material presented by lecturers. However, the highest proportions of dissatisfaction were assessed in easiness of the materials to understand, the quality and attractiveness of learning materials, and lecturers' activity in the LMS.

Table 2. Student's response on lecturer's skills

Skills	Satisfied (%)	Unsatisfied (%)
Easiness to understand the materials	70.5	29.5
Quality and attractiveness of learning materials	76.6	23.4
Lecturers' activities in LMS	79.0	21.0
Easiness accessing media	80.7	19.3
Feedback given by the lecturer to you	91.7	8.3
The lecturer's efforts to guide you to study	92.7	7.3

DISCUSSION

Regarding technical barriers, both students and lecturers complained of the four main problems: signal interference, the need for extensive data packets, limited references, and coordination with the campus. Several articles also report these barriers. Signal interference may arise because of the uneven distribution of technological capabilities in each student's home area and the enormous need in a certain period. A sudden condition due to the pandemic without proper preparation causes this. The second problem, the requirement for extensive data packets, is caused by the demands of lecturers and institutions that treat online meetings like offline meetings where the video display of participants shows attendance at the activity. The use of cameras in web conferences increases the need for data transferability. Limited references as the third problem occurred due to the unpreparedness of the electronic literature to its full potential.

In contrast, coordination with the campus is the fourth problem because no official chat platform opted as a communication medium before the pandemic. Thus, institutions need to officially state the chosen platform and develop communication networks at levels for all parties. The faculty needs to pay attention to these four main things in this condition.

All lecturer respondents agree that lecturers need to understand alternating teaching methods for distance learning. This understanding is vital to encourage lecturers themselves to change. It should be supported by other components, i.e., Faculty commitment, regulation, technical support, course management, and teaching-learning guidelines. Those critical components are coherent with other literature and previous studies.

Since the social distancing, web conferences have become an inevitable option. However, teachers and students agreed that web conferencing is ineffective for learning clinical skills, but they disagreed on cognitive knowledge. Most lecturers stated they were effective, while students indicated it was less effective. The different perceptions could be affected by technical barriers hamper students from grasping the information correctly, which lecturers did not realize. This feedback needs further study to evaluate and find better methods, media, and course management to help students achieve learning objectives.

Most of the lecturers indicated that they had provided feedback well. This is in line with student satisfaction in the same aspect, which most of them satisfy with the lecturer's feedback. Otherwise, some teaching skills were stated differently by

the lecturers and students. Most lecturers felt that the material they presented was interesting, but more than a quarter of the students were dissatisfied with this. Regarding the ease of understanding the materials, similar data occurred in which one-third of students were dissatisfied. These results should be the focus of the following faculty development aims.

CONCLUSION

The top 4 of technical constraints were signal interference, internet data plan, limited e-literatures, and lack of communication with the faculty. The important components of distance-learning were faculty commitment, regulation, technical-support, course management and teaching-learning guidelines. Most of students experienced learning difficulties during distance learning. Vast majority of students had modified their independent learning style, otherwise most of students experienced learning difficulties during distance learning.

Teachers agreed that web conferencing could support learning cognitive knowledge. Meanwhile, they disagreed for learning clinical skill. Students agreed that web conferencing could support both learning cognitive knowledge and clinical skills, though only 21% students said it was effective. Teachers' self-perception showed that being proficient in utilizing LMS, being active in the LMS, and making attractive learning materials are three major flaws in their ability.

Mostly, students were satisfied with distance learning. Nevertheless, there were three aspects that reached satisfaction rate under 80%, i.e. easiness to understand learning material presented by teachers,

quality and attractiveness of learning videos, and teacher liveliness in the LMS.

Recommendations based on this research are; 1) The Technical constraints and important components of distance-learning should be encountered. 2) The faculty should develop and evaluate regularly students' learning difficulty and independent learning abilities. 3) Web-conferencing complementary alternatives are subjects to consider especially for learning clinical skills. 4) Faculty development should focus on training teachers in utilizing LMS, making attractive learning materials, and evaluating teachers' activity in the LMS.

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CONFLICT OF INTEREST

We declare that we do not have a conflict of interest and do not have affiliations or relationships with any organization or entity that could raise biased questions or statements in the discussion and conclusion sections of the paper.

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